Initial Options Appraisal Appendix A

Stage 2 Develop and Assess

MAG London Stansted Airport

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MAG London Stansted Airport

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Departure Envelope: SID RWY 22 WEST

Group	Impact	Level of Analysis	DO NOTHING BASELINE'
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the WEST design envelope is entirely based around the existing UTAVA and NUGBO SIDs. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing UTAVA SID overflies a 3,628 people and a total of 1,511 residential buildings. Meanwhile, the NUGBO SID overflies 7,923 people and a total of 3,512 residential buildings.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing UTAVA/NUGBO SIDs does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. The existing procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing UTAVA/NUGBO SIDs, the modal track length is 39.98km (21.59NM) and 39.14km (21.13NM) respectively.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining existing procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing UTAVA SID does not overfly any AONBs or National Parks but it does overfly 1 Country Park and 7 SSSIs. The existing NUGBO SID does not overfly any AONBs or National Parks but it does overfly 1 Country Park and 7 SSSIs.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing UTAVA/NUGBO SIDs, the track length 39.98km (21.59NM) and 39.14km (21.13NM) respectively.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.

Group	Impact	OPTION 1A	OPTION 6A	OPTION 7A
Communities	Noise impact on health and quality of life	Option 1A is an RNAV replication of the current UTAVA SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 1A overflies 3,693 people and a total of 1,528 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 1A performs worse than the existing UTAVA SID and is therefore considered to be of dis-benefit.	Option 6A is an RNAV1 option based on the current UTAVA SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 6A overflies 2,883 people and a total of 1,424 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 6A performs better than the existing UTAVA SID and is therefore considered to be beneficial.	Option 7A is an RNP1 option based on the current UTAVA SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 7A overflies 2,416 people and a total of 1,206 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 7A performs better than the existing UTAVA SID and is therefore considered to be beneficial.
Communities	Air Quality	As per the baseline scenario, Option 1A does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 6A does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 7A does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Option 1A has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 1A is 39.09km (21.11NM). Based on this, when compared to the baseline scenario, Option 1A is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 6A has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 6A is 38.28km (20.67NM). Based on this, when compared to the baseline scenario, Option 6A is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 7A has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 7A is 37.26km (20.12NM). Based on this, when compared to the baseline scenario, Option 7A is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
Wider Society	Capacity and resilience	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Option 1A does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 7 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1A is equal in that it does not overfly any AONBs or National Parks and an equal number of Country Parks and SSSIs. As such this option is deemed to be of equal benefit.	Option 6A does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 7 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 6A is equal in that it does not overfly any AONBs, National Parks and Country Parks, but overflies fewer SSSIs. As such this option is deemed to be beneficial.	Option 7A does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 3 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 7A is equal in that it does not overfly any AONBs, National Parks and Country Parks, but overflies fewer SSSIs. As such this option is deemed to be beneficial.
Wider Society	Biodiversity	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Option 1A does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 39.09km (21.11NM) long. When compared to the baseline scenario, Option 1A is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 6A does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 38.28km (20.67NM) long. When compared to the baseline scenario, Option 6A is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 7A does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 37.26km (20.12NM) long. When compared to the baseline scenario, Option 7A is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.

Group	Impact	OPTION 9A	OPTION 2B	OPTION 8B	OPTION 11B
Communities	Noise impact on health and quality of life	Option 9A is an RNAV1 option based on the current UTAVA SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 9A overflies 3,051 people and a total of 1,310 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 9A performs better than the existing UTAVA SID and is therefore considered to be beneficial.	Option 2B is an RNAV replication of the current NUGBO SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 2B overflies 3,293 people and a total of 1,389 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 2B performs better than the existing NUGBO SID and is therefore considered to be beneficial.	Option 8B is an RNAV1 option based on the current NUGBO SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 8B overflies 3,159 people and a total of 1,366 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 8B performs better than the existing NUGBO SID and is therefore considered to be beneficial.	Option 8B is an RNAV1 option based on the current NUGBO SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 8B overflies 11,385 people and a total of 5,126 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 8B performs worse than the existing NUGBO SID and is therefore considered to be a dis-benefit.
Communities	Air Quality	As per the baseline scenario, Option 9A does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 2B does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 8B does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 11B does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Option 9A has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 9A is 37.09km (20.02NM). Based on this, when compared to the baseline scenario, Option 9A is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 2B has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 2B is 40.07km (21.64NM). Based on this, when compared to the baseline scenario, Option 2B is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 8B has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 8B is 39.72km (21.45NM). Based on this, when compared to the baseline scenario, Option 8B is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 11B has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 11B is 34.99km (18.89NM). Based on this, when compared to the baseline scenario, Option 11B is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
Wider Society	Capacity and resilience	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Option 9A does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 9A is equal in that it does not overfly any AONBs, National Parks and Country Parks, but overflies fewer SSSIs. As such this option is deemed to be beneficial.	Option 2B does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 7 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 2B is equal in that it does not overfly any AONBs or National Parks and an equal number of Country Parks and SSSIs. As such this option is deemed to be of equal benefit.	Option 8B does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 3 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 8B is equal in that it does not overfly any AONBs, National Parks and Country Parks, but overflies fewer SSSIs. As such this option is deemed to be beneficial.	Option 11B does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 11B is equal in that it does not overfly any AONBs, National Parks and Country Parks, but overflies fewer SSSIs. As such this option is deemed to be beneficial.
Wider Society	Biodiversity	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Option 9A does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 37.09km (20.02NM) long. When compared to the baseline scenario, Option 9A is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 2B does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 40.07km (21.64NM) long. When compared to the baseline scenario, Option 2B is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 8B does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 39.72km (21.45NM) long. When compared to the baseline scenario, Option 8B is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 11B does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 34.99km (18.89NM) long. When compared to the baseline scenario, Option 11B is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 1A	OPTION 6A
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at London Stansted Airport is contracted out to a third-party organisation. This existing commercial contract between London Stansted Airport and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs	Air Traffic Control at London Stansted Airport is contracted out to a third-party organisation. This existing commercial contract between London Stansted Airport and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to existing procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in an increase in ATCO workload.	Several possible conflicts with London Luton traffic were identified. However, it is not clear whether these would occur below 7,000ft, or above 7,000ft which would be outside the scope of this ACP. That said, it is acknowledged as a possible hazard affecting the wider London airspace modernisation programme. Furthermore, mitigations such as tactical intervention by ATC could be put in place. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged but cannot be determined at this time. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Several possible conflicts with London Luton traffic were identified. However, it is not clear whether these would occur below 7,000ft, or above 7,000ft which would be outside the scope of this ACP. That said, it is acknowledged as a possible hazard affecting the wider London airspace modernisation programme. Furthermore, mitigations such as tactical intervention by ATC could be put in place. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged but cannot be determined at this time. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 1A performs worse in terms of greenhouse gas emissions and fuel burn but better in terms of noise impact, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 1A has been rejected as it overflies the most people and residential buildings within the WEST A envelope.	When compared to the baseline scenario, Option 6A performs worse in terms of greenhouse gas emissions and fuel burn but better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 6A is assessed as Favourable: it performs better than Options 1A and 9A but worse than Option 7A in terms of population and residential buildings overflown.

Group	Impact	Level of Analysis	OPTION 7A	OPTION 9A	
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	Air Traffic Control at London Stansted Airport is contracted out to a third-party organisation. This existing commercial contract between London Stansted Airport and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs	Air Traffic Control at London Stansted Airport is contracted out to a third-party organisation. This existing commercial contract between London Stansted Airport and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs	
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	Several possible conflicts with London Luton traffic were identified. However, it is not clear whether these would occur below 7,000ft, or above 7,000ft which would be outside the scope of this ACP. That said, it is acknowledged as a possible hazard affecting the wider London airspace modernisation programme. Furthermore, mitigations such as tactical intervention by ATC could be put in place. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged but cannot be determined at this time. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Several possible conflicts with London Luton traffic were identified. However, it is not clear whether these would occur below 7,000ft, or above 7,000ft which would be outside the scope of this ACP. That said, it is acknowledged as a possible hazard affecting the wider London airspace modernisation programme. Furthermore, mitigations such as tactical intervention by ATC could be put in place. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged but cannot be determined at this time. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	
		Summary of Analysis	When compared to the baseline scenario, Option 7A performs worse in terms of greenhouse gas emissions and fuel burn but better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 7A is selected as the Preferred Option within the WEST A envelope. When compared to the other 'A' options within this envelope, it overflies the least number of people and residential buildings.	When compared to the baseline scenario, Option 9A performs worse in terms of greenhouse gas emissions and fuel burn but better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 9A is assessed as Acceptable: it performs better than Option 1A but worse than Options 7A and 6A in terms of population and residential buildings overflown.	

Group	Impact	Level of Analysis	OPTION 2B	OPTION 8B	OPTION 11B
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	Air Traffic Control at London Stansted Airport is contracted out to a third-party organisation. This existing commercial contract between London Stansted Airport and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs	Air Traffic Control at London Stansted Airport is contracted out to a third-party organisation. This existing commercial contract between London Stansted Airport and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs	Air Traffic Control at London Stansted Airport is contracted out to a third-party organisation. This existing commercial contract between London Stansted Airport and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	Several possible conflicts with London Luton traffic were identified. However, it is not clear whether these would occur below 7,000ft, or above 7,000ft which would be outside the scope of this ACP. That said, it is acknowledged as a possible hazard affecting the wider London airspace modernisation programme. Furthermore, mitigations such as tactical intervention by ATC could be put in place. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged but cannot be determined at this time. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Several possible conflicts with London Luton traffic were identified. However, it is not clear whether these would occur below 7,000ft, or above 7,000ft which would be outside the scope of this ACP. That said, it is acknowledged as a possible hazard affecting the wider London airspace modernisation programme. Furthermore, mitigations such as tactical intervention by ATC could be put in place. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged but cannot be determined at this time. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Several possible conflicts with London Luton traffic were identified. However, it is not clear whether these would occur below 7,000ft, or above 7,000ft which would be outside the scope of this ACP. That said, it is acknowledged as a possible hazard affecting the wider London airspace modernisation programme. Furthermore, mitigations such as tactical intervention by ATC could be put in place. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged but cannot be determined at this time. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.
		Summary of Analysis	When compared to the baseline scenario, Option 2B performs worse in terms of greenhouse gas emissions and fuel burn but better in terms of noise impact, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 2B is assessed as Favourable. Although it is longer than Option 8B and Option 11B, when compared to Option 11B, Option 2B provides a greater benefit in terms of people and residential buildings overflown.	When compared to the baseline scenario, Option 8B performs worse in terms of greenhouse gas emissions and fuel burn but better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 8B is selected as the Preferred Option within the West B envelope. This option provides a greater benefit in terms of population overflown and residential buildings overflown. However, it is acknowledged that this option is longer than Option 11B, but is shorter than Option 2B.	When compared to the baseline scenario, Option 11B performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 11B is assessed as Acceptable: it performs worse in terms of population and residential buildings overflown when compared to both the baseline scenario and Options 2B and 8B.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Departure Envelope: SID RWY 22 EAST

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 1	OPTION 2	OPTION 3
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the EAST design envelope is entirely based around the existing CLN 1E SID. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing CLN 1E SID overflies a 2,095 people and a total of 926 residential buildings.	Option 0 is a RNP1 reproduction of the current CLN 1E SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 0 overflies 4,608 people and a total of 2,025 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 0 performs worse and as such is deemed to be of a dis-benefit.	Option 1 is a RNP1 reproduction of the current CLN 1E SID which incorporates a 8% climb gradient. This represents a higher climb gradient than the baseline scenario, meaning aircraft are able to climb higher, reducing their noise impact on local communities. Based on the change sponsors analysis, Option 1 overflies 2,317 people and a total of 1,047 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 1 performs worse and as such is deemed to be of a dis-benefit.	Option 2 is an RNP1 route which is based around the current CLN 1E SID which incorporates a 8% climb gradient. This represents a higher climb gradient than the baseline scenario, meaning aircraft are able to climb higher, reducing their noise impact on local communities. Based on the change sponsors analysis, Option 2 overflies 2,505 people and a total of 1,148 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 2 performs worse and as such is deemed to be of a dis-benefit.	Option 3 is an RNP1 route which is based around the current CLN 1E SID which incorporates a 8% climb gradient. This represents a higher climb gradient than the baseline scenario, meaning aircraft are able to climb higher, reducing their noise impact on local communities. Based on the change sponsors analysis, Option 3 overflies 2,735 people and a total of 1,391 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 3 performs worse and as such is deemed to be of a dis-benefit.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing CLN 1E SID does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.	As per the baseline scenario, Option 0 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 1 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 2 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 3 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing CLN 1E SID, the modal track length is 38.50km (20.79NM).	Option 0 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 0 is 36.96km (19.96NM). Based on this, when compared to the baseline scenario, Option 0 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 1 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 1 is 36.96km (19.96NM). Based on this, when compared to the baseline scenario, Option 1 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 2 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 2 is 37.14km (20.05NM). Based on this, when compared to the baseline scenario, Option 2 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 3 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 3 is 37.03km (20.00NM). Based on this, when compared to the baseline scenario, Option 3 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing CLN 1E SID does not overfly any AONBs, National Parks or SSSIs but it does overfly 1 Country Park.	Option 0 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 0 is equal in that it does not overfly any AONBs or National Parks. However, this option does overfly an equal number of country parks and more SSSIs when compared to the baseline scenario.	Option 1 does not overfly any AONBs, National Parks or SSSIs. However, it has been identified that this option overflies 1 Country Park. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1 is equal in that it does not overfly any AONBs, National Parks or SSSIs. This option does overfly an equal number of country parks when compared to the baseline scenario.	Option 2 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 2 is equal in that it does not overfly any AONBs or National Parks. However, this option does overfly an equal number of country parks and more SSSIs when compared to the baseline scenario.	Option 3 does not overfly any AONBs, National Parks or SSSIs. However, it has been identified that this option overflies 1 Country Park. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 3 is equal in that it does not overfly any AONBs, National Parks or SSSIs. This option does overfly an equal number of country parks when compared to the baseline scenario.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 1	OPTION 2	OPTION 3
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing CLN 1E SID, the track length is 38.50km (20.79NM).	Option 0 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 36.96km (19.96NM) long. When compared to the baseline scenario, Option 0 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 1 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 36.96km (19.96NM) long. When compared to the baseline scenario, Option 1 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 2 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 37.14km (20.05NM) long. When compared to the baseline scenario, Option 2 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 3 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 37.03km (20.00NM) long. When compared to the baseline scenario, Option 3 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in a possible increase in ATCO workload.	Possible conflict with London Luton, London City, London Southend and Heathrow traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton, London City, London Southend and Heathrow traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton, London City, London Southend and Heathrow traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton, London City, London Southend and Heathrow traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the 'Do Nothing baseline' scenario, Option 0 is worse in terms of noise impact and tranquillity but provides benefits in relation to greenhouse gas emissions, fuel burn, capacity/resilience and the economic impact of effective capacity. It must be noted that this option includes a 6% climb gradient, which is equal to the baseline scenario, but lower than the remaining options within this design envelope. This option performs worse than the baseline scenario with regards to noise impact, emissions, tranquillity and fuel burn but provides an equal benefit on the remainder of the criteria assessed. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance within the IOA, this option has been rejected as it overflies the greatest number of people and residential buildings when compared to all the other options within this envelope.	When compared to the 'Do Nothing baseline' scenario, Option 1 is worse in terms of noise impact but provides benefits in relation to greenhouse gas emissions, fuel burn, capacity/resilience and the economic impact of effective capacity. All other criteria have been assessed as providing equal benefit other than noise impact, emissions and fuel burn due to the longer track length when compared to the existing CLN 1E SID. It is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 1 is selected as the Preferred Option within the RW 22 EAST design envelope. When compared to the other options, Option 1 overflies the least number of people and residential buildings.	When compared to the 'Do Nothing baseline' scenario, Option 2 is worse in terms of noise impact and tranquillity but provides benefits in relation to capacity/resilience and the economic impact of effective capacity. It must be noted that this option includes a 8% climb gradient, which is greater than the baseline scenario, resulting in fewer people/residential buildings overflown compared to a 6% option (Option 0), equal to the baseline scenario, but lower than the remaining options within this design envelope. This option performs worse than the baseline scenario with regards to noise impact, emissions, tranquillity and fuel burn but provides an equal benefit on the remainder of the criteria assessed. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance within the IOA, this option is assessed as Favourable as it overflies less people and residential buildings than Option 1 but more than the remaining options.	When compared to the 'Do Nothing baseline' scenario, Option 3 is worse in terms of noise impact but provides benefits in relation to capacity/resilience and the economic impact of effective capacity. All other criteria have been assessed as providing equal benefit other than noise impact, emissions and fuel burn due to the larger track length when compared to the existing CLN 1E SID. It is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 3 is assessed as Acceptable as it overflies more people and residential buildings than Options 1 and 2 but less than Option 0.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 1	OPTION 2	OPTION 3
		Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.				

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Departure Envelope: SID RWY 22 SOUTH EAST

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 1	OPTION 2	OPTION 3	OPTION 4	OPTION 5
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the SOUTH EAST design envelope is entirely based around the existing DET 1R SID. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing DET SID overflies a 10,515 people and a total of 4,443 residential buildings.	Option 0 is an RNAV replication of the current DET1R SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 0 overflies 29,878 people and a total of 13,198 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 0 performs worse and as such is deemed as a dis-benefit.	Option 1 is an RNAV replication of the current DET1R SID which incorporates a 8% climb gradient. This represents a higher climb gradient than the baseline scenario, meaning aircraft are able to climb higher, reducing their noise impact on local communities. Based on the change sponsors analysis, Option 1 overflies 10,542 people and a total of 4,500 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 1 performs worse and as such is deemed as a dis-benefit.	Option 2 is an RNP1 replication of the current DET1R SID which incorporates a 8% climb gradient. This represents a higher climb gradient than the baseline scenario, meaning aircraft are able to climb higher, reducing their noise impact on local communities. Based on the change sponsors analysis, Option 2 overflies 10,224 people and a total of 4,300 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 2 performs better and as such is beneficial.	Option 3 is an RNP1 route which incorporates a 8% climb gradient. This represents a higher climb gradient than the baseline scenario, meaning aircraft are able to climb higher, reducing their noise impact on local communities. Based on the change sponsors analysis, Option 3 overflies 3,275 people and a total of 1,502 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 3 performs better and as such is beneficial.	Option 4 is an RNP1 route which incorporates a 8% climb gradient. This represents a higher climb gradient than the baseline scenario, meaning aircraft are able to climb higher, reducing their noise impact on local communities. Based on the change sponsors analysis, Option 4 overflies 12,061 people and a total of 5,534 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 4 performs worse and as such is deemed as a dis-benefit.	Option 5 is an RNP1 route which incorporates a 8% climb gradient. This represents a higher climb gradient than the baseline scenario, meaning aircraft are able to climb higher, reducing their noise impact on local communities. Based on the change sponsors analysis, Option 5 overflies 3,968 people and a total of 1,759 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 5 performs better and as such is beneficial.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing DET 1R SID does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.	As per the baseline scenario, Option 0 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 1 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable, but given the increased climb gradient associated with this option, overflight below 1,000ft is mitigated further. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 2 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable, but given the increased climb gradient associated with this option, overflight below 1,000ft is mitigated further. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 3 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable, but given the increased climb gradient associated with this option, overflight below 1,000ft is mitigated further. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 4 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable, but given the increased climb gradient associated with this option, overflight below 1,000ft is mitigated further. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 5 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable, but given the increased climb gradient associated with this option, overflight below 1,000ft is mitigated further. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing DET 1R SID, the modal track length is 31.34km (16.92NM).	Option 0 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 0 is 29.84km (16.11NM). Based on this, when compared to the baseline scenario, Option 0 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 1 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 1 is 29.84km (16.11NM). Based on this, when compared to the baseline scenario, Option 1 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 2 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 2 is 29.88km (16.13NM). Based on this, when compared to the baseline scenario, Option 2 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 3 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 3 is 30.65km (16.55NM). Based on this, when compared to the baseline scenario, Option 3 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 4 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 4 is 30.36km (16.39NM). Based on this, when compared to the baseline scenario, Option 4 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as a beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 5 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 5 is 30.39km (16.41NM). Based on this, when compared to the baseline scenario, Option 5 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as a beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing DET 1R SID does not overfly any AONBs, National Parks or SSSIs but it does overfly X Country Park.	Option 0 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 3 Country Parks and the 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 0 is equal in that it does not overfly any AONBs or National Parks. However, this option does overfly amore country parks and more SSSIs when compared to the baseline scenario.	Option 1 does not overfly any AONBs, National Parks or SSSIs. However, it has been identified that this option overflies 1 Country Park. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1 is equal in that it does not overfly any AONBs, National Parks or SSSIs. This option does overfly an equal number of country parks when compared to the baseline scenario.	Option 2 does not overfly any AONBs, National Parks or SSSIs. However, it has been identified that this option overflies 1 Country Park. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 3 is equal in that it does not overfly any AONBs, National Parks or SSSIs. This option does overfly an equal number of country parks when compared to the baseline scenario.	Option 3 does not overfly any AONBs, National Parks or SSSIs. However, it has been identified that this option overflies 1 Country Park. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 3 is equal in that it does not overfly any AONBs, National Parks or SSSIs. This option does overfly an equal number of country parks when compared to the baseline scenario.	Option 4 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 4 is equal in that it does not overfly any AONBs or National Parks. However, this option does overfly an equal number of country parks and more SSSIs when compared to the baseline scenario.	Option 5 does not overfly any AONBs, National Parks or SSSIs. However, it has been identified that this option overflies 1 Country Park. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 5 is equal in that it does not overfly any AONBs, National Parks or SSSIs. This option does overfly an equal number of country parks when compared to the baseline scenario.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	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From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. 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It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing DET 1R SID, the track length is 31.34km (16.92NM).	Option 0 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 29.84km (16.11NM) long. When compared to the baseline scenario, Option 0 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 1 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 29.84km (16.11NM) long. When compared to the baseline scenario, Option 1 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 2 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 29.88km (16.13NM) long. When compared to the baseline scenario, Option 2 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 3 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 30.65km (16.55NM) long. When compared to the baseline scenario, Option 3 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 4 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 30.36km (16.39NM) long. When compared to the baseline scenario, Option 4 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 5 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 30.39km (16.41NM) long. When compared to the baseline scenario, Option 5 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 1	OPTION 2	OPTION 3	OPTION 4	OPTION 5
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in an increase in ATCO workload.	Possible conflict with London Luton, London City, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton, London City, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton, London City, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	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Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 0 performs worse in terms of noise impact but better in terms of greenhouse gas emissions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, this option has been rejected on the grounds that it overflies the greatest number of people and residential buildings within this design envelope.	When compared to the baseline scenario, Option 1 provides a benefit or equal benefit in terms of air quality, greenhouse gas emissions, fuel burn, tranquillity, capacity and resilience and economic impact from effective increased capacity. This option overflies more people and residential buildings compared to the existing modal track of the DET 1R SID. The higher climb gradient of this option (8%) is advantageous as it means the aircraft can achieve a higher altitude quicker, reducing the impact of noise, air quality and emissions at lower levels. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance within the IOA, Option 1 is rejected. This option overflies more people and residential buildings than the Preferred, Favourable and Acceptable options.	When compared to the baseline scenario, Option 2 provides a benefit or equal benefit in terms of noise impact, air quality, greenhouse gas emissions, fuel burn, tranquillity, capacity and resilience and economic impact of effective increased capacity. This option overflies fewer people and residential buildings compared to the existing modal track of the DET 1R SID. The higher climb gradient of this option (8%) is advantageous as it means the aircraft can achieve a higher altitude quicker, reducing the impact of noise, air quality and emissions at lower levels. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on assessment within the IOA, this option is assessed as Acceptable. The rationale being that it overflies more people and residential buildings than Options 3 and 5 but less than the remaining options within this design envelope.	When compared to the baseline scenario, Option 3 provides a benefit or equal benefit in terms of noise impact, air quality, greenhouse gas emissions, tranquillity, fuel burn, capacity and resilience and economic impact from effective increased capacity. This option overflies fewer people and residential buildings compared to the existing modal track of the DET 1R SID. The higher climb gradient of this option (8%) is advantageous as it means the aircraft can achieve a higher altitude quicker, reducing the impact of noise, air quality and emissions at lower levels. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 3 has been selected as the Preferred Option, as it overflies the least number of people and residential buildings within this design envelope.	When compared to the baseline scenario, Option 4 performs worse in terms of noise impact, greenhouse gas emissions, tranquillity and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, this option has been rejected. This option provides a number of dis-benefits in terms of noise, emissions, tranquillity and fuel burn.	When compared to the baseline scenario, Option 5 provides a benefit or equal benefit in terms of noise impact, air quality, greenhouse gas emissions, fuel burn, tranquillity, capacity and resilience and economic impact of increased effective capacity. This option overflies fewer people and residential buildings compared to the existing modal track of the DET 1R SID. The higher climb gradient of this option (8%) is advantageous as it means the aircraft can achieve a higher altitude quicker, reducing the impact of noise, air quality and emissions at lower levels. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance within the IOA, Option 5 is assessed as Favourable. This options overflies more people and residential buildings than the Preferred Option, but less than all other options within this envelope

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

71288 019 Draft B

Departure Envelope: SID RWY 22 SOUTH WEST

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 1	OPTION 3	OPTION 4	OPTION 5	OPTION 6
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the SOUTH WEST design envelope is based on departures heading directly south west following the initial climb out from Runway 22. In today's operation, any aircraft wishing to fly in this direction would be required to route via the NUGBO SID. As such the existing NUGBO SID will be utilised as the baseline scenario for this design envelope. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing NUGBO SID overflies 7,923 people and a total of 3,512 residential buildings.	Option 1 is an RNAV1 route which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 1 overflies 55,473 people and a total of 25,902 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 1 performs worse than the existing NUGBO SID.	Option 3 is an RNAV1 route which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 3 overflies 28,054 people and a total of 12,239 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 3 performs worse than the existing NUGBO SID.	Option 4 is an RNAV1 route which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 4 overflies 61,218 people and a total of 35,133 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 4 performs worse than the existing NUGBO SID.	Option 5 is an RNAV1 route which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 5 overflies 34,913 people and a total of 15,704 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 5 performs worse than the existing NUGBO SID.	Option 6 is an RNAV1 route which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 6 overflies 31,919 people and a total of 14,0484 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 6 performs worse than the existing NUGBO SID.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing NUGBO SID does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.	Unlike the baseline scenario, Option 1 directly overflies 3 AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be a dis-benefit in terms of air quality.	As per the baseline scenario, Option 3 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 4 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	Unlike the baseline scenario, Option 5 directly overflies 1 AQMA. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	Unlike the baseline scenario, Option 6 directly overflies 1 AQMA. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing NUBGO SID, the modal track length is 39.14km (21.13NM).	Option 1 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 1 is 29.84km (16.11NM). Based on this, when compared to the baseline scenario, Option 1 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen deemed to be beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 3 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 3 is 29.84km (16.11NM). Based on this, when compared to the baseline scenario, Option 3 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen deemed to be beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 4 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 1 is 30.42km (16.43NM). Based on this, when compared to the baseline scenario, Option 4 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen deemed to be beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 5 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 5 is 30.32km (16.37NM). Based on this, when compared to the baseline scenario, Option 5 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen deemed to be beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 6 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 6 is 30.37km (16.40NM). Based on this, when compared to the baseline scenario, Option 6 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing NUGBO SID does not overfly any AONBs or National Parks but it does overfly 1 Country Park and 7 SSSIs.	Option 1 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 2 Country Parks and the 8 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1 is equal in that it does not overfly any AONBs or National Parks. However, this option is deemed to provide a dis-benefit as it overflies more Country Parks and SSSIs compared to the baseline scenario.	Option 3 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Parks and the 11 SSSIs. With regards to Country Parks, this is equal to the baseline scenario. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 3 is equal in that it does not overfly any AONBs or National Parks and overflies 1 Country Park. However, this option is deemed to provide a dis-benefit as it overflies more SSSIs compared to the baseline scenario.	Option 4 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 4 Country Parks and the 7 SSSIs. With regards to SSSIs, this is equal to the baseline scenario. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 3 is equal in that it does not overfly any AONBs or National Parks and overflies 7 SSSIs. However, this option is deemed to provide a dis-benefit as it overflies more Country Parks compared to the baseline scenario.	Option 5 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 2 Country Parks and the 9 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 5 is equal in that it does not overfly any AONBs or National Parks. However, this option is deemed to provide a dis-benefit as it overflies more Country Parks and SSSIs compared to the baseline scenario.	Option 4 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 12 SSSIs. With regards to Country Parks, this is equal to the baseline scenario. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 3 is equal in that it does not overfly any AONBs or National Parks and overflies 1 Country Park. However, this option is deemed to provide a dis-benefit as it overflies more SSSIs compared to the baseline scenario.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 1	OPTION 3	OPTION 4	OPTION 5	OPTION 6
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing NUGBO SID, the track length is 39.14km (21.13NM).	Option 1 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 29.84km (16.11NM) long. When compared to the baseline scenario, Option 1 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 3 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 29.84km (16.11NM) long. When compared to the baseline scenario, Option 3 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 4 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 30.42km (16.43NM) long. When compared to the baseline scenario, Option 4 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 5 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 30.32km (16.37NM) long. When compared to the baseline scenario, Option 5 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 6 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 30.37km (16.40NM) long. When compared to the baseline scenario, Option 6 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in an increase in ATCO workload.	Possible conflict with London Luton, London City, Heathrow, London Biggin Hill and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as is reasonably practicable'. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton, London City, Heathrow, London Biggin Hill and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. 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Possible conflict with London Luton, London City, Heathrow, London Biggin Hill and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as is reasonably practicable'. This is very specific to exact aircraft routing combinations.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 1 performs worse in terms of noise impact and air quality but better in terms of greenhouse gas emmisions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 1 has been rejected as it provides a dis-benefit in terms of number of people and residential properties overflown. Furthermore, it performs poorly in terms of air quality, which some of the other options within this design envelope do not.	When compared to the baseline scenario, Option 3 performs worse in terms of noise impact and tranquillity but better in terms of greenhouse gas emmsions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 3 is selected as the Preferred Option. This is because it overflies fewer people and residential buildings than all options within this design envelope.	When compared to the baseline scenario, Option 4 performs worse in terms of noise impact and tranquillity but better in terms of greenhouse gas emmsions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 4 is rejected as it provides a dis-benefit in terms of people and residential properties overflown. This option overflies more people than any other option within this envelope.	When compared to the baseline scenario, Option 5 performs worse in terms of noise impact, air quality and tranquillity but better in terms of greenhouse gas emissions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 5 is assessed as Acceptable as it overflies more people and residential buildings than Options 1 and 4 but less than Options 3 and 6.	When compared to the baseline scenario, Option 6 performs worse in terms of noise impact and air quality but better in terms of greenhouse gas emmisions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 6 is assessed as Favourable. Whilst it is not the shortest in terms of track length, it is the second best performing option in terms of people and residential properties overflown.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Departure Envelope: SID RWY 22 SOUTH

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 1	OPTION 2	OPTION 3	OPTION 4	OPTION 5	OPTION 6
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the SOUTH design envelope is entirely based around the existing LAM SID. The LAM SID is mainly utilised by aircraft departing STN heading to nearby London airports. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. In addition, as aircraft utilising the LAM SID are heading to nearby airports, they do not typically reach 7,000ft. For the purposes of the IOA, overflight has been assessed up to 4,000ft. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing LAM SID overflies a 2,696 people and a total of 1,197 residential buildings.	Option 0 is an RNAV replication of the existing LAM SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 0 overflies 29,444 people and a total of 12,530 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 0 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.	Option 1 is an RNAV replication of the existing LAM SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 1 overflies 7,350 people and a total of 3,353 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 1 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.	Option 2 is an RNP1 replication of the existing LAM SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 2 overflies 6,885 people and a total of 3,048 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 2 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.	Option 3 is an RNAV1 route based on the existing LAM SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 3 overflies 6,560 people and a total of 3,121 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 3 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.	Option 4 is an RNP1 route based on the existing LAM SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 4 overflies 7,627 people and a total of 3,437 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 4 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.	Option 5 is an RNP1 route based on the existing LAM SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 5 overflies 10,744 people and a total of 4,781 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 5 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.	Option 6 is an RNP1 route based on the existing LAM SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 6 overflies 3,170 people and a total of 1,417 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 6 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing LAM SID does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.	Unlike the baselie scenario, Option 0 directly overflies 2 AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed seen as providing a dis-benefit.	As per the baseline scenario, Option 1 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 2 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 3 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 4 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 5 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 6 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing LAM SID, the modal track length is 13.78km (7.44NM). As previously described this has been measured to 4,000ft.	Option 0 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 0 is 32.48km (17.54NM). Based on this, when compared to the baseline scenario, Option 0 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 1 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 1 is 32.48km (17.54NM). Based on this, when compared to the baseline scenario, Option 1 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 2 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 2 is 32.28km (17.43NM). Based on this, when compared to the baseline scenario, Option 2 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 3 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 3 is 30.82km (16.64NM). Based on this, when compared to the baseline scenario, Option 3 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 4 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 4 is 30.32km (16.37NM). Based on this, when compared to the baseline scenario, Option 4 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 5 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 5 is 31.05km (16.77NM). Based on this, when compared to the baseline scenario, Option 5 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 6 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 6 is 30.03km (16.21NM). Based on this, when compared to the baseline scenario, Option 6 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing LAM SID does not overfly any AONBs, National Parks or SSSIs but it does overfly 1 Country Park.	Option 0 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 3 Country Parks and the 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 0 is equal in that it does not overfly any AONBs or National Parks. However, this option is deemed to provide a dis-benefit as it overflies more Country Parks and SSSIs compared to the baseline scenario.	Option 1 does not overfly any AONBs, National Parks or SSSIs. This option does overfly 1 Country Park, making these criteria equal to the baseline scenario. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1 is equal in that it does not overfly any AONBs, National Parks or SSSIs but does overfly 1 Country Park. This is the same as the baseline scenario and as such, this option is deemed to be of equal benefit.	Option 2 does not overfly any AONBs, National Parks or SSSIs. This option does overfly 1 Country Park, making these criteria equal to the baseline scenario. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 2 is equal in that it does not overfly any AONBs, National Parks or SSSIs but does overfly 1 Country Park. This is the same as the baseline scenario and as such, this option is deemed to be of equal benefit.	Option 3 does not overfly any AONBs or National Parks. This option does overfly 1 Country Park, making it equal with the baseline scenario. However, this option does overfly 3 SSSIs, more than the baseline scenario. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 3 is equal in that it does not overfly any AONBs, National Parks and an equal number of Country Parks. However, this option is deemed to be of dis-benefit because it overflies more SSSIs.	Option 4 does not overfly any AONBs or National Parks. This option does overfly 1 Country Park, making it equal with the baseline scenario. However, this option does overfly 1 SSSI, more than the baseline scenario. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 4 is equal in that it does not overfly any AONBs, National Parks and an equal number of Country Parks. However, this option is deemed to be of dis-benefit because it overflies more SSSIs.	Option 4 does not overfly any AONBs or National Parks. This option does overfly 1 Country Park, making it equal with the baseline scenario. However, this option does overfly 4 SSSIs, more than the baseline scenario. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 4 is equal in that it does not overfly any AONBs, National Parks and an equal number of Country Parks. However, this option is deemed to be of dis-benefit because it overflies more SSSIs.	Option 4 does not overfly any AONBs or National Parks. This option does overfly 1 Country Park, making it equal with the baseline scenario. However, this option does overfly 1 SSSI, more than the baseline scenario. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 4 is equal in that it does not overfly any AONBs, National Parks and an equal number of Country Parks. However, this option is deemed to be of dis-benefit because it overflies more SSSIs.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. 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Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. 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It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing LAM SID, the track length is 13.78km (7.44NM). As previously described, for the purposes of the IOA overflight analysis, the LAM SID has been measured up to 4,000ft.	Option 0 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 32.48km (17.54NM) long. When compared to the baseline scenario, Option 0 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 1 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 32.48km (17.54NM) long. When compared to the baseline scenario, Option 1 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 2 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 32.28km (17.43NM) long. When compared to the baseline scenario, Option 2 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 3 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 30.82km (16.64NM) long. When compared to the baseline scenario, Option 3 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 4 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 30.32km (16.37NM) long. When compared to the baseline scenario, Option 4 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 5 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 31.05km (16.77NM) long. When compared to the baseline scenario, Option 5 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 6 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 30.03km (16.21NM) long. When compared to the baseline scenario, Option 6 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in an increase in ATCO workload.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.

Impact	OPTION 0	OPTION 1
Infrastructure costs	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Operational costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Deployment costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but would increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but would increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.
Summary of Analysis	When compared to the baseline scenario, Option 0 performs worse in terms of noise impact, air quality, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 0 has been rejected. The rationale being that it is the longest of all the options within the SOUTH envelope, meaning it has the worst impact in terms of emissions and fuel burn.	When compared to the baseline scenario, Option 1 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 1 has been rejected. This option overflies more people and residential buildings than the preferred option, and is longer than most of the other optiions within this envelope, and consequently has a greater impact on emissions and fuel burn.

Impact	OPTION 2	OPTION 3
Infrastructure costs	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Operational costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Deployment costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but would increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but would increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.
Summary of Analysis	When compared to the baseline scenario, Option 2 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 2 is assessed as Acceptable. This option overflies more people and residential buildings than the Preferred option, and is also slightly longer.	When compared to the baseline scenario, Option 3 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 3 is assessed as Favourable. This option overflies more people and residential buildings than Option 6, but fewer than Option 2. It is also shorter than Option 2, meaning it performs better in terms of emissions and fuel burn.

Impact	OPTION 4	OPTION 5
Infrastructure costs	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Operational costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Deployment costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but would increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but would increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.
Summary of Analysis	When compared to the baseline scenario, Option 4 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 4 has been rejected. This option overflies more people and residential propertiesthan the Preferred Option, and the Favoured option, but is not the worse performing option in this envelope.	When compared to the baseline scenario, Option 5 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 5 has been rejected. This option overflies more people and residential properties than the Preferred, Favourable and Acceptable options. It is also not the shortest option within this envelope,and therefore does not perform as well in terms of emissions and fuel burn.

Impact	OPTION 6
Infrastructure costs	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Operational costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Deployment costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but would increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.
Summary of Analysis	When compared to the baseline scenario, Option 6 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 6 is selected as the Preferred Option. It overflies the least number of people and residential properties within this envelope, and is the shortest route option within this envelope, meaning it has the least impact in terms of emissions and fuel burn.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Departure Envelope: SID RWY 22 NORTH

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 1	OPTION 5	OPTION 7	OPTION 8
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the NORTH design envelope is entirely based around the existing BKY SID. The BKY SID is mainly utilised by aircraft departing STN heading to nearby London airports. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. In addition, as aircraft utilising the BKY SID are heading to nearby airports, they do not typically reach 7,000ft. For the purposes of the IOA, overflight has been assessed up to 4,000ft. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing BKY SID overflies 1,186 people and a total of 509 residential buildings.	Option 0 is a PBN replication of the existing BKY SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 0 overflies 3,732 people and a total of 1,606 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 0 performs worse than the existing BKY SID, as such this option is deemed as a dis-benefit.	Option 1 is a RNAV1 replication of the existing BKY SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 1 overflies 3,232 people and a total of 1,343 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 1 performs worse than the existing BKY SID, as such this option is deemed as a dis-benefit.	Option 5 is a RNAV1 route based on the existing BKY SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 5 overflies 2,320 people and a total of 1,014 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 5 performs worse than the existing BKY SID, as such this option is deemed as a dis-benefit.	Option 7 is a RNP1 route based on the existing BKY SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 7 overflies 2,823 people and a total of 1,201 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 7 performs worse than the existing BKY SID, as such this option is deemed as a dis-benefit.	Option 8 is a RNP1 route based on the existing BKY SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 8 overflies 2,010 people and a total of 871 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 8 performs worse than the existing BKY SID, as such this option is deemed as a dis-benefit.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing BKY SID does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.	As per the baseline scenario, Option 0 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 1 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 5 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 7 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 8 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing BKY SID, the modal track length is 15.35km (8.29NM). As previously described this has been measured to 4,000ft.	Option 0 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 0 is 43.21km (23.33NM). Based on this, when compared to the baseline scenario, Option 0 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 1 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 1 is 43.21km (23.33NM). Based on this, when compared to the baseline scenario, Option 1 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 5 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 5 is 44.02km (23.77NM). Based on this, when compared to the baseline scenario, Option 5 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 7 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 7 is 42.66km (23.04NM). Based on this, when compared to the baseline scenario, Option 7 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 8 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 8 is 42.57km (22.98NM). Based on this, when compared to the baseline scenario, Option 8 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing BKY SID does not overfly any AONBs or National Parks but it does overfly 1 Country Park and 2 SSSIs.	Option 0 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 6 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 0 is equal in that it does not overfly any AONBs or National Parks and an equal number of Country Parks. However, this option is deemed to provide a dis-benefit as it overflies more SSSIs compared to the baseline scenario.	Option 1 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 6 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1 is equal in that it does not overfly any AONBs or National Parks and an equal number of Country Parks. However, this option is deemed to provide a dis-benefit as it overflies more SSSIs compared to the baseline scenario.	Option 5 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 5 is equal in that it does not overfly any AONBs or National Parks and an equal number of both Country Parks and SSSIs. As such, this option is seen as being of equal benefit when compared to the baseline scenario.	Option 7 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 5 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 7 is equal in that it does not overfly any AONBs or National Parks and an equal number of Country Parks. However, this option is deemed to provide a dis-benefit as it overflies more SSSIs compared to the baseline scenario.	Option 8 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 8 is equal in that it does not overfly any AONBs or National Parks and an equal number of both Country Parks and SSSIs. As such, this option is seen as being of equal benefit when compared to the baseline scenario.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 1	OPTION 5	OPTION 7	OPTION 8
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing BKY SID, the track length is 15.35km (8.29NM). As previously described, for the purposes of the IOA overflight analysis, the BKY SID has been measured up to 4,000ft.	Option 0 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 43.21km (23.33NM) long. When compared to the baseline scenario, Option 0 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 1 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 43.21km (23.33NM) long. When compared to the baseline scenario, Option 1 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 5 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 44.02km (23.77NM) long. When compared to the baseline scenario, Option 5 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 7 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 42.66km (23.04NM) long. When compared to the baseline scenario, Option 7 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 8 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 42.57km (22.98NM) long. When compared to the baseline scenario, Option 8 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for London Stansted Airport to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in an increase in ATCO workload.	Possible conflict with London Luton and Cambridge traffic was identified (although the conflict with Cambridge traffic was deemed to be outside controlled airspace). Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to as low as is reasonably practical. This is very specific to exact aircraft routing combinations. At this time, there is an additional unknown hazard relating to interactions with military traffic operating in the vicinity of RAF Mildenhall/RAF Lakenheath. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations. ATC tactical intervention could also be applied. Furthermore, design options within this envelope are likely to conflict with the STN missed approach procedure. This increases complexity, leading to a possible increase in ATCO workload as ATC tactical intervention may be required. An additional hazard bespoke to this design envelope is containment within Controlled Airspace. Although this design envelope is contained within Controlled Airspace, some design options will soon run outside controlled airspace as they leave the	Possible conflict with London Luton and Cambridge traffic was identified (although the conflict with Cambridge traffic was deemed to be outside controlled airspace). Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to as low as is reasonably practical. 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At this time, there is an additional unknown hazard relating to interactions with military traffic operating in the vicinity of RAF Mildenhall/RAF Lakenheath. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations. ATC tactical intervention could also be applied. Furthermore, design options within this envelope are likely to conflict with the STN missed approach procedure. This increases complexity, leading to a possible increase in ATCO workload as ATC tactical intervention may be required. An additional hazard bespoke to this design envelope is containment within Controlled Airspace. Although this design envelope is contained within Controlled Airspace, some design options will soon run outside controlled airspace as they leave the
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 0 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 0 has been rejected. The rationale being that this option overflies the greatest number of people and residential buildings when compared to all of the other options within this design envelope.	When compared to the baseline scenario, Option 1 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 1 has been rejected based on the fact that it overflies more people and residential buildings than options 8,5 and 7.	When compared to the baseline scenario, Option 5 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 5 has been assessed as Favourable because it overflies more people and residential buildings than Option 8, but less than the remaining options within this envelope.	When compared to the baseline scenario, Option 7 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 7 is assessed as Acceptable. This option it overflies more people and residential buildings than Options 5 and 8 but less than Options 0 and 1.	When compared to the baseline scenario, Option 8 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 8 has been selected as the Preferred Option within the NORTH envelope. When compared to the other options in this envelope, it overflies fewer people and residential buildings than any other option within this envelope.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

71288 019 Draft B

Departure Envelope: SID RWY 22 NORTH EAST

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 3	OPTION 4
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the NORTH EAST design envelope is entirely based around the existing CLN 1E SID. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing CLN 1E SID overflies a 2,095 people and a total of 926 residential buildings.	Option 3 is a RNP1 route in a new design envelope, compared to CLN 1E SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 3 overflies 28,146 people and a total of 12,601 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 3 performs worse and as such is deemed to be of a dis-benefit.	Option 4 is a RNP1 route in a new design envelope, compared to CLN 1E SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 4 overflies 7,740 people and a total of 3,176 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 4 performs worse and as such is deemed to be of a dis-benefit.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing CLN 1E SID does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.	As per the baseline scenario, Option 3 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 4 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing CLN 1E SID, the modal track length is 38.50km (20.79NM).	Option 3 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 3 is 51.40km (27.45NM). Based on this, when compared to the baseline scenario, Option 3 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 4 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 4 is 54.09km (29.20NM). Based on this, when compared to the baseline scenario, Option 4 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing CLN 1E SID does not overfly any AONBs, National Parks or SSSIs but it does overfly 1 Country Park.	Option 3 does not overfly any AONBs, National Parks or SSSIs. However, it has been identified that this option overflies 2 Country Parks, which is the same as the baseline scenario. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 3 is equal in that it does not overfly any AONBs, National Parks or SSSIs. This option does overfly an equal number of SSSIs, but does overfly more Country Parks. As such, this option is seen as a dis-benefit in terms of Tranquillity.	Option 4 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 4 is equal in that it does not overfly any AONBs or National Parks. This option does overfly an equal number of Country Parks, but does overfly more SSSIs. As such, this option is seen as a dis-benefit in terms of Tranquillity.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 3	OPTION 4
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing CLN 1E SID, the track length is 38.50km (20.79NM).	Option 3 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 51.40km (27.75NM) long. When compared to the baseline scenario, Option 3 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 4 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 54.09km (29.20NM) long. When compared to the baseline scenario, Option 4 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 3	OPTION 4
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in a possible increase in ATCO workload.	Possible conflict with London Luton, London Southend and Cambridge traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations. Furthermore, possible interaction with the existing STN ABBOT hold was identified; therefore, ATC tactical intervention may be required to maintain safe separation between departing and arriving aircraft. Procedure design constraints act as an additional mitigation in this instance.	Possible conflict with London Luton, London Southend and Cambridge traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on from this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations. Furthermore, possible interaction with the existing STN ABBOT hold was identified; therefore, ATC tactical intervention may be required to maintain safe separation between departing and arriving aircraft. Procedure design constraints act as an additional mitigation in this instance.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 3 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 3 has been deemed as Favourable. When compared to the other option in this envelope, it overflies more people and residential buildings than any other option within this envelope, hence why it has been deemed as Favourable rather than Preferred.	When compared to the baseline scenario, Option 4 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 4 is selected as the Preferred Option. This option overflies fewer people and residential buildings than the other option within this envelope.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Departure Envelope: SID RWY 04 SOUTH

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the SOUTH design envelope is entirely based around the existing LAM SID. The LAM SID is mainly utilised by aircraft departing STN heading to nearby London airports. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. In addition, as aircraft utilising the LAM SID are heading to nearby airports, they do not typically reach 7,000ft. For the purposes of the IOA, overflight has been assessed up to 4,000ft. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing LAM SID overflies a 931 people and a total of 462 residential buildings.	Option 0 is an PBN replication of the existing LAM SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 0 overflies 11,663 people and a total of 5,818 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 0 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing LAM SID does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.	As per the baseline scenario, Option 0 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing LAM SID, the modal track length is 17.60km (9.50NM). As previously described this has been measured to 4,000ft.	Option 0 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 0 is 42.48km (22.94NM). Based on this, when compared to the baseline scenario, Option 0 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing LAM SID does not overfly any AONBs or National Parks, but does overfly 1 Country Park and 2 SSSIs.	Option 0 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 0 is equal in that it does not overfly any AONBs or National Parks and an equal number of Country Parks. Option 0 is deemed to be beneficial because it overflies fewer SSSIs when compared to the baseline scenario.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing LAM SID, the track length is 17.60km (9.50NM). As previously described, for the purposes of the IOA overflight analysis, the LAM SID has been measured up to 4,000ft.	Option 0 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 42.48km (22.94NM) long. When compared to the baseline scenario, Option 0 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.

Group	Impact	OPTION 1	OPTION 2	OPTION 3
Communities	Noise impact on health and quality of life	Option 1 is an PBN replication of the existing LAM SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 1 overflies 10,260 people and a total of 5,141 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 1 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.	Option 2 is an RNP1 replication of the existing LAM SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 2 overflies 10,627 people and a total of 5,277 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 2 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.	Option 3 is an RNAV1 route based on the existing LAM SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 3 overflies 5,393 people and a total of 2,223 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 3 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.
Communities	Air Quality	As per the baseline scenario, Option 1 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 2 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 3 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Option 1 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 1 is 42.48km (22.94NM). Based on this, when compared to the baseline scenario, Option 1 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 2 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 2 is 42.22km (22.80NM). Based on this, when compared to the baseline scenario, Option 2 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 3 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 3 is 43.88km (23.70NM). Based on this, when compared to the baseline scenario, Option 3 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
Wider Society	Capacity and resilience	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Option 1 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1 is equal in that it does not overfly any AONBs or National Parks and an equal number of Country Parks. Option 1 is deemed to be beneficial because it overflies fewer SSSIs when compared to the baseline scenario.	Option 2 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 2 is equal in that it does not overfly any AONBs or National Parks and an equal number of Country Parks. Option 2 is deemed to be beneficial because it overflies fewer SSSIs when compared to the baseline scenario.	Option 3 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 3 is equal in that it does not overfly any AONBs or National Parks and an equal number of Country Parks. Option 3 is deemed to be of equal benefit as it overflies an equal number of SSSIs when compared to the baseline scenario.
Wider Society	Biodiversity	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Option 1 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 42.48km (22.94NM) long. When compared to the baseline scenario, Option 1 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 2 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 42.22km (22.80NM) long. When compared to the baseline scenario, Option 2 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 3 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 43.88km (23.70NM) long. When compared to the baseline scenario, Option 3 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.

Group	Impact	OPTION 4	OPTION 5	OPTION 6
Communities	Noise impact on health and quality of life	Option 4 is an RNAV1 route based on the existing LAM SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 4 overflies 3,254 people and a total of 1,548 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 4 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.	Option 5 is an RNAV1 route based on the existing LAM SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 5 overflies 5,387 people and a total of 2,147 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 5 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.	Option 6 is an RNAV1 route based on the existing LAM SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 6 overflies 5,631 people and a total of 2,330 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 6 performs worse than the existing LAM SID, as such this option is deemed as a dis-benefit.
Communities	Air Quality	As per the baseline scenario, Option 4 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 5 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 6 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Option 4 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 4 is 43.42km (23.44NM). Based on this, when compared to the baseline scenario, Option 4 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 5 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 5 is 43.24km (23.35NM). Based on this, when compared to the baseline scenario, Option 5 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 6 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 6 is 45.77km (24.72NM). Based on this, when compared to the baseline scenario, Option 6 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
Wider Society	Capacity and resilience	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Option 4 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 4 is equal in that it does not overfly any AONBs or National Parks and an equal number of Country Parks. Option 4 is deemed to be of equal benefit as it overflies an equal number of SSSIs when compared to the baseline scenario.	Option 5 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 5 is equal in that it does not overfly any AONBs or National Parks and an equal number of Country Parks. Option 5 is deemed to be of equal benefit as it overflies an equal number of SSSIs when compared to the baseline scenario.	Option 6 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 6 is equal in that it does not overfly any AONBs or National Parks and an equal number of Country Parks. Option 6 is deemed to be of equal benefit as it overflies an equal number of SSSIs when compared to the baseline scenario.
Wider Society	Biodiversity	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Option 4 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 43.42km (23.44NM) long. When compared to the baseline scenario, Option 4 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 5 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 43.24km (23.35NM) long. When compared to the baseline scenario, Option 5 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 6 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 45.77km (24.72NM) long. When compared to the baseline scenario, Option 6 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in an increase in ATCO workload.	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 0 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 0 has been rejected as it overflies more people and residential buildings than any other option within this envelope.

Impact	OPTION 1	OPTION 2	OPTION 3
Operational costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Deployment costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.
Summary of Analysis	When compared to the baseline scenario, Option 1 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 1 has been rejected as it overflies more people and residential buildings than Options 3, 4 and 5.	When compared to the baseline scenario, Option 2 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 2 has been rejected as it overflies more people and residential buildings than Options 3, 4 and 5.	When compared to the baseline scenario, Option 3 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 3 is assessed as Acceptable as it more people and residential buildings than Options 4 and 5, but fewer than those overflown by the other options within this envelope.

Impact	OPTION 4	OPTION 5	OPTION 6
Operational costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Deployment costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.	Possible conflict with London Luton, London Southend, Heathrow and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. Some of the design options within this envelope consist of an 8% climb gradient. This may not be achievable by some aircraft that operate at STN, resulting in potential conflicts with other aircraft. To mitigate this, climb gradient requirements could be published.
Summary of Analysis	When compared to the baseline scenario, Option 4 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 4 has been selected as the Preferred Option as it overflies the least number of people and residential buildimgs when compared to all the other options within the SOUTH envelope.	When compared to the baseline scenario, Option 5 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 5 is assessed as Favourable as it overflies fewer people and residential buildings than Option 3, but more people and residential buildings than Option 4 (the Preferred Option).	When compared to the baseline scenario, Option 6 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 6 has been rejected as it overflies more people and residential buildings than Options 3, 4 and 5.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Departure Envelope: SID RWY 04 SOUTH EAST

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 1	OPTION 2	OPTION 3	OPTION 4
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the SOUTH EAST design envelope is entirely based around the existing DET 1D SID. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing DET SID overflies a 2,493 people and a total of 1,219 residential buildings.	Option 0 is a replication of the current DET1D SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 0 overflies 9,053 people and a total of 3,849 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 0 performs worse and as such is deemed as a dis-benefit.	Option 1 is a replication of the current DET1D SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 1 overflies 2,048 people and a total of 973 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 1 performs better and as such is deemed as beneficial.	Option 2 is a RNP1 route based on the current DET1D SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 2 overflies 2,289 people and a total of 1,042 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 2 performs better and as such is deemed as beneficial.	Option 3 is a RNP1 route based on the current DET1D SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 3 overflies 2,142 people and a total of 1,027 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 3 performs better and as such is deemed as beneficial.	Option 4 is a RNP1 route based on the current DET1D SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 4 overflies 1,837 people and a total of 946 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 4 performs better and as such is deemed as beneficial.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing DET 1D SID does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.	As per the baseline scenario, Option 0 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 1 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 2 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 3 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 4 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing DET 1D SID, the modal track length is 37.59km (20.30NM).	Option 0 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 0 is 38.30km (20.68NM). Based on this, when compared to the baseline scenario, Option 0 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 1 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 1 is 38.30km (20.68NM). Based on this, when compared to the baseline scenario, Option 1 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 2 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 2 is 33.97km (18.34NM). Based on this, when compared to the baseline scenario, Option 2 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 3 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 3 is 36.84km (19.89NM). Based on this, when compared to the baseline scenario, Option 3 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 4 has been designed to support continuous climb operations, however, an element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 4 is 39.48km (21.32NM). Based on this, when compared to the baseline scenario, Option 4 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing DET 1D SID does not overfly any AONBs, National Parks but does overfly 1 Country Park and 2 SSSIs.	Option 0 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Parks and 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 0 is equal in that it does not overfly any AONBs or National Parks and overflies an equal number of country parks and SSSIs. As such this option is deemed to be of equal benefit with regards to Tranquillity.	Option 1 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Parks and 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1 is equal in that it does not overfly any AONBs or National Parks and overflies an equal number of country parks and SSSIs. As such this option is deemed to be of equal benefit with regards to Tranquillity.	Option 2 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Parks and 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 2 is equal in that it does not overfly any AONBs or National Parks and overflies an equal number of country parks and SSSIs. As such this option is deemed to be of equal benefit with regards to Tranquillity.	Option 3 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Parks and 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 3 is equal in that it does not overfly any AONBs or National Parks and overflies an equal number of country parks and SSSIs. As such this option is deemed to be of equal benefit with regards to Tranquillity.	Option 4 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Parks and 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 4 is equal in that it does not overfly any AONBs or National Parks and overflies an equal number of country parks and SSSIs. As such this option is deemed to be of equal benefit with regards to Tranquillity.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 1	OPTION 2	OPTION 3	OPTION 4
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing DET 1D SID, the track length is 37.59km (20.30NM).	Option 0 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 38.30km (20.68NM) long. When compared to the baseline scenario, Option 0 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 1 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 38.30km (20.68NM) long. When compared to the baseline scenario, Option 1 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 2 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 33.97km (18.34NM) long. When compared to the baseline scenario, Option 2 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 3 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 36.84km (19.89NM) long. When compared to the baseline scenario, Option 3 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 4 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 39.48km (21.32NM) long. When compared to the baseline scenario, Option 4 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in an increase in ATCO workload.	Possible conflict with London Luton, London Southend, Heathrow, London City and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton, London Southend, Heathrow, London City and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton, London Southend, Heathrow, London City and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton, London Southend, Heathrow, London City and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton, London Southend, Heathrow, London City and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 0 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 0 has been rejected as it overflies the greatest number of people and residential buildings in this design envelope.	When compared to the baseline scenario, Option 1 performs worse in terms of greenhouse gas emissions and fuel burn but better in terms of noise impact, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 1 has been deemed as Favourable as it overflies more people and residential buildings than Option 4 but less than the remaining options within this design envelope.	When compared to the baseline scenario, Option 2 performs better in terms of noise impact, greenhouse gas emissions, fuel burn capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 2 has been rejected as it overflies more people and residential buildings than Options 4, 1 and 3.	When compared to the baseline scenario, Option 3 performs better in terms of noise impact, greenhouse gas emissions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 3 has been deemed Acceptable as it overflies more people and residential buildings than Options 4 and 1 but less than the remaining options within this envelope.	When compared to the baseline scenario, Option 4 performs worse in terms of noise greenhouse gas emissions and fuel burn but better in terms of noise impact, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 0 has been selected as the Preferred Option within this design envelope as it overflies the fewest number of people and residential buildings.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Departure Envelope: SID RWY 04 WEST

Group	Impact	Level of Analysis	DO NOTHING BASELINE'
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the WEST design envelope is entirely based around the existing UTAVA and NUGBO SIDs. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing UTAVA SID overflies a 9,848 people and a total of 4,773 residential buildings. Meanwhile, the NUGBO SID overflies 2,855 people and a total of 1,296 residential buildings.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing UTAVA/NUGBO SIDs does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing UTAVA/NUBGO SIDs, the modal track length is 40.63km (21.94NM) and 40.18km (21.69NM) respectively.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing UTAVA SID does not overfly any AONBs, National Parks or Country Parks but it does overfly 3 SSSI. The existing NUGBO SID does not overfly any AONBs1 National Parks or Country Parks but it does overfly 2 SSSIs.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing UTAVA/NUGBO SIDs, the track length 40.63km (21.94NM) and 40.18km (21.69NM) respectively.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.

Group	Impact	OPTION 1A	OPTION 3A	OPTION 5A	OPTION 9A
Communities	Noise impact on health and quality of life	Option 1A is an RNAV replication of the current UTAVA SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 1A overflies 3,144 people and a total of 1,396 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 1A performs better than the existing UTAVA SID and is therefore considered to be beneficial.	Option 3A is an RNP1 replication of the current UTAVA SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 3A overflies 2,843 people and a total of 1,263 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 3A performs better than the existing UTAVA SID and is therefore considered to be beneficial.	Option 5A is an RNP1 route based on the current UTAVA SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 5A overflies 2,650 people and a total of 1,245 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 5A performs better than the existing UTAVA SID and is therefore considered to be beneficial.	Option 9A is an RNP1 route based on the current UTAVA SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 9A overflies 3,648 people and a total of 1,667 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 9A performs better than the existing UTAVA SID and is therefore considered to be beneficial.
Communities	Air Quality	As per the baseline scenario, Option 1A does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 3A does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 5A does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 9A does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Option 1A has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 1A is 39.52km (21.34NM). Based on this, when compared to the baseline scenario, Option 1A is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as benefitial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 3A has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 3A is 37.54km (20.27NM). Based on this, when compared to the baseline scenario, Option 3A is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as benefitial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 5A has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 5A is 37.21km (20.09NM). Based on this, when compared to the baseline scenario, Option 5A is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as benefitial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 9A has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 9A is 36.23km (19.56NM). Based on this, when compared to the baseline scenario, Option 9A is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as benefitial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.
Wider Society	Capacity and resilience	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Option 1A does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1A is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option does overfly less SSSIs and as such as deemed to be beneficial when compared to the baseline scenario.	Option 3A does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 2 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 3A is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option does overfly less SSSIs and as such as deemed to be beneficial when compared to the baseline scenario.	Option 5A does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 2 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 5A is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option does overfly less SSSIs and as such as deemed to be beneficial when compared to the baseline scenario.	Option 9A does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 2 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 9A is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option does overfly less SSSIs and as such as deemed to be beneficial when compared to the baseline scenario.
Wider Society	Biodiversity	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Option 1A does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 39.52km (21.34NM) long. When compared to the baseline scenario, Option 1A is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is benefitial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 3A does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 37.54km (20.27NM) long. When compared to the baseline scenario, Option 3A is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is benefitial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 5A does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 37.21km (20.09NM) long. When compared to the baseline scenario, Option 5A is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is benefitial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 9A does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 36.23km (19.56NM) long. When compared to the baseline scenario, Option 9A is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is benefitial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.

Group	Impact	OPTION 2B	OPTION 4B	OPTION 6B	OPTION 8B
Communities	Noise impact on health and quality of life	Option 2B is an RNP1 route based on the current NUGBO SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 2B overflies 2,739 people and a total of 1,239 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 2B performs better than the existing NUGBO SID and is therefore considered to be beneficial.	Option 4B is an RNP1 replication of the current NUGBO SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 4B overflies 2,388 people and a total of 1,074 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 4B performs better than the existing NUGBO SID and is therefore considered to be beneficial.	Option 4B is an RNP1 route based on the current NUGBO SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 4B overflies 8,938 people and a total of 4,073 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 4B performs worse than the existing NUGBO SID and is therefore considered to be of dis-benefit.	Option 8B is an RNP1 route based on the current NUGBO SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 8B overflies 8,938 people and a total of 4,073 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 8B performs worse than the existing NUGBO SID and is therefore considered to be of dis-benefit.
Communities	Air Quality	As per the baseline scenario, Option 2B does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 4B does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 6B does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 8B does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Option 2B has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 2B is 38.32km (20.69NM). Based on this, when compared to the baseline scenario, Option 2B is longer and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 4B has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 4B is 36.12km (19.50NM). Based on this, when compared to the baseline scenario, Option 4B is longer and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 6B has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 6B is 35.42km (19.13NM). Based on this, when compared to the baseline scenario, Option 6B is longer and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 8B has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 8B is 35.42km (19.13NM). Based on this, when compared to the baseline scenario, Option 8B is longer and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.
Wider Society	Capacity and resilience	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Option 2B does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 2B is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies an equal number of SSSIs in comparison to the baseline scenario, as such it is deemed to be of equal benefit in terms of Tranquillity.	Option 4B does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 4B is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies an equal number of SSSIs in comparison to the baseline scenario, as such it is deemed to be of equal benefit in terms of Tranquillity.	Option 6B does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 6B is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies less SSSIs in comparison to the baseline scenario, as such it is deemed to be beneficial in terms of Tranquillity.	Option 8B does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 8B is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option does overfly less SSSIs and as such as deemed to be beneficial when compared to the baseline scenario.
Wider Society	Biodiversity	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Option 2B does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 38.32km (20.69NM) long. When compared to the baseline scenario, Option 2B is shorter and at this stage it assumed will require a lesser amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 4B does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 36.12km (19.50NM) long. When compared to the baseline scenario, Option 4B is shorter and at this stage it assumed will require a lesser amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 6B does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 35.42km (19.13NM) long. When compared to the baseline scenario, Option 6B is shorter and at this stage it assumed will require a lesser amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 8B does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 35.42km (19.13NM) long. When compared to the baseline scenario, Option 8B is shorter and at this stage it assumed will require a lesser amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 1A	OPTION 3A
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in an increase in ATCO workload.	Possible conflict with London Luton traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to ‘as low as reasonably practicable’. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to ‘as low as reasonably practicable’. This is very specific to exact aircraft routing combinations.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 1A performs worse in terms of greenhouse gas emissions and fuel burn better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 1A is assessed as Acceptable as it overflies fewer people and residential buildings than Option 9A, but more than those overflown by Options 3A and 5A.	When compared to the baseline scenario, Option 3A performs worse in terms of greenhouse gas emissions and fuel burn better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 3A is assessed as Favourable as although it overflies more people and residential buildings than Option 5A (the Preferred Option) is overflies less than the other options within the WEST A envelope.

Group	Impact	OPTION 5A	OPTION 9A	OPTION 2B
Airport / Air navigation service provider	Operational costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Possible conflict with London Luton traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to ‘as low as reasonably practicable’. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to ‘as low as reasonably practicable’. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to as low ‘as reasonably practicable’. This is very specific to exact aircraft routing combinations.
	Summary of Analysis	When compared to the baseline scenario, Option 5A performs worse in terms of greenhouse gas emissions and fuel burn better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 5A is selected as Preferred Option as it overflies the least number of people and residential buildings than the options within the WEST A envelope.	When compared to the baseline scenario, Option 9A performs worse in terms of greenhouse gas emissions and fuel burn better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 9A has been rejected as it overflies the greatest number of people and residential buildings when compared to other options within the WEST A envelope.	When compared to the baseline scenario, Option 2B performs better in terms of noise impact, greenhouse gas emissions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 2B has been deemed Acceptable as it overflies more people and residential buildings than Options 4B and 6B but less than the remaining options within this design envelope.

Group	Impact	OPTION 4B	OPTION 6B	OPTION 8B
Airport / Air navigation service provider	Operational costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Possible conflict with London Luton traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to as low ‘as reasonably practicable’. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to as low ‘as reasonably practicable’. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to as low ‘as reasonably practicable’. This is very specific to exact aircraft routing combinations.
	Summary of Analysis	When compared to the baseline scenario, Option 4B performs better in terms of noise impact, greenhouse gas emissions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 4B is selected as the Preferred Option as it overflies the least people and residential buildings when compared to other options within the WEST B envelope.	When compared to the baseline scenario, Option 4B performs better in terms of noise impact, greenhouse gas emissions, fuel burn, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 6B has been deemed as Favourable as it overflies more people and residential buildings than Option 4B but less than the remaining options within this design envelope.	When compared to the baseline scenario, Option 8B performs worse in terms of noise impact but better in terms of greenhouse gas emissions, fuel burn, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 8B has been rejected as it overflies the greatest number of people and residential buildings within this design envelope.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Departure Envelope: SID RWY 04 NORTH EAST

Group	Impact	Level of Analysis	DO NOTHING BASELINE[1]	OPTION 1	OPTION 4	OPTION 7	OPTION 8
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the NORTH EAST design envelope is entirely based around the existing CLN SID. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing CLN SID overflies a 19,776 people and a total of 8,923 residential buildings.	Option 1 is a RNAV1 route in a new design envelope, compared to CLN 1E SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 1 overflies 18,905 people and a total of 10,199 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 1 performs worse and as such is deemed to be of dis-benefit.	Option 4 is a RNAV1 route in a new design envelope, compared to CLN 1E SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 4 overflies 18,665 people and a total of 10,167 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 4 performs worse and as such is deemed to be of dis-benefit.	Option 7 is a RNAV1 route in a new design envelope, compared to CLN 1E SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 7 overflies 4,333 people and a total of 2,018 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 7 performs better and as such is deemed to be beneficial.	Option 8 is a RNAV1 route in a new design envelope, compared to CLN 1E SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 8 overflies 9,509 people and a total of 5,182 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 8 performs better and as such is deemed to be beneficial.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing CLN SID does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.	As per the baseline scenario, Option 1 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 4 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 7 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 7 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing CLN SID, the modal track length is 31.52km (17.02NM).	Option 1 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 1 is 38.42km (20.74NM). Based on this, when compared to the baseline scenario, Option 1 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 4 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 4 is 38.18km (20.61NM). Based on this, when compared to the baseline scenario, Option 4 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 7 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 7 is 38.74km (20.92NM). Based on this, when compared to the baseline scenario, Option 7 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 8 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 8 is 38.39km (20.73NM). Based on this, when compared to the baseline scenario, Option 8 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing CLN SID does not overfly any AONBs or National Parks but it does overfly 2 Country Parks and 1 SSSI.	Option 1 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 3 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1 is equal in that it does not overfly any AONBs, National Parks or Country Parks. However, this option does overfly more SSSIs. As such this option is of a dis-benefit.	Option 4 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 4 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 4 is equal in that it does not overfly any AONBs, National Parks or Country Parks. However, this option does overfly more SSSIs. As such this option is of a dis-benefit.	Option 7 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 7 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option does overfly an equal number of SSSIs and as such as deemed to be of equal benefit when compared to the baseline scenario.	Option 8 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 5 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 8 is equal in that it does not overfly any AONBs, National Parks or Country Parks. However, this option does overfly more SSSIs. As such this option is of a dis-benefit.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 1	OPTION 4	OPTION 7	OPTION 8
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing CLN SID, the track length is 31.52km (17.02NM).	Option 1 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 38.42km (20.74NM) long. When compared to the baseline scenario, Option 1 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 4 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 38.18km (20.61NM) long. When compared to the baseline scenario, Option 4 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 7 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 38.74km (20.92NM) long. When compared to the baseline scenario, Option 7 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 8 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 38.39km (20.73NM) long. When compared to the baseline scenario, Option 8 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in an increase in ATCO workload.	Possible conflict with London Luton, London Southend, Heathrow, London City, Cambridge and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations. Furthermore, possible interaction with the existing STN ABBOT hold was identified, therefore, ATC tactical intervention may be required to maintain safe separation between departing and arriving aircraft. Procedure design constraints act as an additional mitigation in this instance.	Possible conflict with London Luton, London Southend, Heathrow, London City, Cambridge and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations. Furthermore, possible interaction with the existing STN ABBOT hold was identified, therefore, ATC tactical intervention may be required to maintain safe separation between departing and arriving aircraft. Procedure design constraints act as an additional mitigation in this instance.	Possible conflict with London Luton, London Southend, Heathrow, London City, Cambridge and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations. Furthermore, possible interaction with the existing STN ABBOT hold was identified, therefore, ATC tactical intervention may be required to maintain safe separation between departing and arriving aircraft. Procedure design constraints act as an additional mitigation in this instance.	Possible conflict with London Luton, London Southend, Heathrow, London City, Cambridge and RAF Northolt traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to 'as low as reasonably practicable'. This is very specific to exact aircraft routing combinations. Furthermore, possible interaction with the existing STN ABBOT hold was identified, therefore, ATC tactical intervention may be required to maintain safe separation between departing and arriving aircraft. Procedure design constraints act as an additional mitigation in this instance.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 1 performs worse in terms of tranquillity, greenhouse gas emissions and fuel burn but better in terms of population overflown, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 1 has been rejected as it overflies the greatest number of people within this design envelope.	When compared to the baseline scenario, Option 4 performs worse in terms of tranquillity, greenhouse gas emissions and fuel burn but better in terms of population overflown, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 4 has been deemed as Acceptable as it overflies more people and residential buildings than Options 7 and 8 but less than Option 1.	When compared to the baseline scenario, Option 7 performs worse in terms of greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 7 is selected as the Preferred Option as it overflies the fewest number of people and residential buildings within this design envelope.	When compared to the baseline scenario, Option 8 performs worse in terms of tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 8 is assessed as Favourable as it overflies more people and residential buildings than Option 7 but less than the remaining options within this design envelope.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 1	OPTION 4	OPTION 7	OPTION 8

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Departure Envelope: SID RWY 04 EAST

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 1	OPTION 2	OPTION 4	OPTION 5
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the EAST design envelope is entirely based around the existing CLN 4S SID. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing CLN 4S SID overflies a 19,776 people and a total of 8,923 residential buildings.	Option 0 is a PBN reproduction of the current CLN 4S SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 0 overflies 16,461 people and a total of 7,475 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 0 performs better and as such is deemed to be beneficial.	Option 1 is a RNAV1 reproduction of the current CLN 4S SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 1 overflies 12,279 people and a total of 5,182 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 1 performs better and as such is deemed to be beneficial.	Option 2 is a RNP1 route based on the current CLN 4S SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 2 overflies 13,066 people and a total of 5,485 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 2 performs better and as such is deemed to be beneficial.	Option 4 is a RNAV1 route based on the current CLN 4S SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 4 overflies 7,751 people and a total of 3,531 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 4 performs better and as such is deemed to be beneficial.	Option 5 is a RNP1 route based on the current CLN 4S SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 5 overflies 5,720 people and a total of 2,610 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 5 performs better and as such is deemed to be beneficial.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing CLN 4S SID does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.	As per the baseline scenario, Option 0 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 1 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 2 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 4 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 5 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing CLN 4S SID, the modal track length is 31.52km (17.02NM).	Option 0 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 0 is 29.75km (16.06NM). Based on this, when compared to the baseline scenario, Option 0 is shorter and is therefore expected to emit slightly less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 1 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 1 is 29.75km (16.06NM). Based on this, when compared to the baseline scenario, Option 1 is shorter and is therefore expected to emit slightly less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 2 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 2 is 29.82km (16.10NM). Based on this, when compared to the baseline scenario, Option 2 is shorter and is therefore expected to emit slightly less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 4 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 4 is 32.27km (17.42NM). Based on this, when compared to the baseline scenario, Option 4 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 5 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 5 is 32.35km (17.47NM). Based on this, when compared to the baseline scenario, Option 5 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing CLN 4S SID does not overfly any AONBs or National Parks but it does overfly 2 Country Parks and 1 SSSI.	Option 0 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 2 Country Parks and the 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 0 is equal in that it does not overfly any AONBs or National Parks and overflies an equal number of Country Parks and SSSIs. As such, this option is seen as providing equal benefit in terms of Tranquillity.	Option 1 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 2 Country Parks and the 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1 is equal in that it does not overfly any AONBs or National Parks and overflies an equal number of Country Parks and SSSIs. As such, this option is seen as providing equal benefit in terms of Tranquillity.	Option 2 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 2 Country Parks and the 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 2 is equal in that it does not overfly any AONBs or National Parks and overflies an equal number of Country Parks and SSSIs. As such, this option is seen as providing equal benefit in terms of Tranquillity.	Option 4 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and the 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 4 is equal in that it does not overfly any AONBs or National Parks and overflies an equal number of Country Parks. However, this option overflies more SSSIs than the baseline scenario. As such, this option is seen as providing a dis-benefit in terms of Tranquillity.	Option 5 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 2 Country Parks and the 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 5 is equal in that it does not overfly any AONBs or National Parks and overflies an equal number of Country Parks. However, this option overflies more SSSIs than the baseline scenario. As such, this option is seen as providing a dis-benefit in terms of Tranquillity.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing CLN 4S SID, the track length is 31.52km (17.02NM).	Option 0 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 29.75km (16.06NM) long. When compared to the baseline scenario, Option 0 is shorter and at this stage it assumed will require a lesser amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 1 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 29.75km (16.06NM) long. When compared to the baseline scenario, Option 1 is shorter and at this stage it assumed will require a lesser amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 2 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 29.82km (16.10NM) long. When compared to the baseline scenario, Option 2 is shorter and at this stage it assumed will require a lesser amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 4 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 32.27km (17.42NM) long. When compared to the baseline scenario, Option 4 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 5 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 32.35km (17.47NM) long. When compared to the baseline scenario, Option 5 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 1	OPTION 2	OPTION 4	OPTION 5
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in an increase in ATCO workload.	Possible conflict with London Luton, London Southend, Heathrow, London City traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to ‘as low as reasonably practicable’. This is very specific to exact aircraft routing combinations. Furthermore, possible interaction with the existing STN ABBOT hold was identified, therefore, ATC tactical intervention may be required to maintain safe separation between departing and arriving aircraft. Procedure design constraints act as an additional mitigation in this instance.	Possible conflict with London Luton, London Southend, Heathrow, London City traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to ‘as low as reasonably practicable’. This is very specific to exact aircraft routing combinations. Furthermore, possible interaction with the existing STN ABBOT hold was identified, therefore, ATC tactical intervention may be required to maintain safe separation between departing and arriving aircraft. Procedure design constraints act as an additional mitigation in this instance.	Possible conflict with London Luton, London Southend, Heathrow, London City traffic was identified. 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Furthermore, possible interaction with the existing STN ABBOT hold was identified, therefore, ATC tactical intervention may be required to maintain safe separation between departing and arriving aircraft. Procedure design constraints act as an additional mitigation in this instance.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 1 performs better in terms of noise impact, emissions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 0 has been rejected. This option overflies the most people and residential buildings when compared to all the other options within this design envelope.	When compared to the baseline scenario, Option 1 performs better in terms of noise impact, emissions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 1 is deemed to be Acceptable as it overflies more people and residential buildings than Option 5 and 4 but less than the remaining options within this design envelope.	When compared to the baseline scenario, Option 1 performs better in terms of noise impact, emissions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 2 has been rejected as it overflies more people and residential buildings than Options 5, 4 and 1.	When compared to the baseline scenario, Option 4 performs worse in terms of tranquillity, greenhouse gas emissions and fuel burn but better in terms of noise impact, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 4 is deemed to be Favourable as it overflies more people and residential buildings than Option 5 but less than the remaining options within this design envelope.	When compared to the baseline scenario, Option 5 performs worse in terms of tranquillity, greenhouse gas emissions and fuel burn but better in terms of noise impact, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 5 selected as the Preferred Option as it overflies the least number of people and residential buildings when compared to all other options within the EAST envelope.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Departure Envelope: SID RWY 04 NORTH

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 2	OPTION 3	OPTION 4	OPTION 5	OPTION 6
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of today's operation, the NORTH design envelope is entirely based around the existing BKY SID. The BKY SID is mainly utilised by aircraft departing STN heading to nearby London airports. To provide the most representative use of the baseline scenario, the overflight analysis conducted on this SID was based on the modal tracks in 2019 as opposed to the lateral track published on the UK AIP. Furthermore, to provide an authentic comparison, the modelling was carried out based on a 6% climb gradient rather than 3.3% as per the published SID. In addition, as aircraft utilising the BKY SID are heading to nearby airports, they do not typically reach 7,000ft. For the purposes of the IOA, overflight has been assessed up to 4,000ft. This provides a more realistic comparison when compared to today's operation. It must also be acknowledged that an element of radar vectoring is required to maintain safe separation distances. Based on the above, it has been determined that the existing BKY SID overflies a 443 people and a total of 251 residential buildings.	Option 0 is a RNAV1 replication of the existing BKY SID which incorporates a 6% climb gradient. Based on the change sponsors analysis, Option 0 overflies 3,929 people and a total of 1,794 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 0 performs worse than the existing BKY SID, as such this option is deemed as a dis-benefit.	Option 2 is a PBN replication of the existing BKY SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 2 overflies 2,656 people and a total of 1,204 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 2 performs worse than the existing BKY SID, as such this option is deemed as a dis-benefit.	Option 3 is an RNAV1 route based on the existing BKY SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 3 overflies 1,743 people and a total of 811 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 3 performs worse than the existing BKY SID, as such this option is deemed as a dis-benefit.	Option 4 is a RNP1 route based on the existing BKY SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 4 overflies 2,377 people and a total of 1,232 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 4 performs worse than the existing BKY SID, as such this option is deemed as a dis-benefit.	Option 5 is a RNP1 route based on the existing BKY SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 5 overflies 3,609 people and a total of 1,607 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 5 performs worse than the existing BKY SID, as such this option is deemed as a dis-benefit.	Option 6 is a RNP1 route based on the existing BKY SID which incorporates a 8% climb gradient. Based on the change sponsors analysis, Option 6 overflies 1,791 people and a total of 866 residential buildings. When compared to the baseline scenario, in terms of population and residential buildings overflown, Option 6 performs worse than the existing BKY SID, as such this option is deemed as a dis-benefit.
Communities	Air Quality	Initial Options Appraisal: Qualitative	With regards to air quality, the existing BKY SID does not directly overfly any AQMAs. Given the 6% climb gradient included within the Do Nothing scenario, the impact of aircraft below 1,000ft with regards to local air quality is limited to areas within the immediate area surrounding the airport.	As per the baseline scenario, Option 0 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 2 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 3 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 4 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 5 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.	As per the baseline scenario, Option 6 does not directly overfly any AQMAs. Furthermore, as per CAP 1616 (para B74), due to mixing and dispersion, the impact on air quality above 1,000ft is likely to be insignificant. There are areas within the immediate area surrounding the airport that will be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the baseline scenario, this option is deemed to be of equal benefit.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current routes do not support continuous climb operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing BKY SID, the modal track length is 10.64km (5.74NM). As previously described this has been measured to 4,000ft.	Option 0 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 0 is 40.90km (22.08NM). Based on this, when compared to the baseline scenario, Option 0 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 2 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 2 is 37.98km (20.51NM). Based on this, when compared to the baseline scenario, Option 2 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 3 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 3 is 34.43km (18.59NM). Based on this, when compared to the baseline scenario, Option 3 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 4 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 4 is 33.24km (17.95NM). Based on this, when compared to the baseline scenario, Option 4 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 5 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 5 is 38.15km (20.60NM). Based on this, when compared to the baseline scenario, Option 5 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 6 has been designed to support continuous climb operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 6 is 31.98km (17.27NM). Based on this, when compared to the baseline scenario, Option 6 is longer and is therefore expected to emit slightly more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity however, due to the reliance on ground-based navigational aids, resilience would be significantly affected, following their removal in December 2022.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include SSSIs and Country Parks within the IOA analysis to maintain consistency with other Stage 2 documentation. The existing BKY SID does not overfly any AONBs, National Parks or Country Parks but it does overfly 1 SSSI.	Option 0 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 0 is equal in that it does not overfly any AONBs, National Parks or Country Parks. However, this option does overfly more SSSIs and as such as deemed to be of dis-benefit when compared to the baseline scenario.	Option 2 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 2 is equal in that it does not overfly any AONBs, National Parks or Country Parks. However, this option does overfly more SSSIs and as such as deemed to be of dis-benefit when compared to the baseline scenario.	Option 3 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 3 is equal in that it does not overfly any AONBs, National Parks or Country Parks. However, this option does overfly more SSSIs and as such as deemed to be of dis-benefit when compared to the baseline scenario.	Option 4 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 3 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 4 is equal in that it does not overfly any AONBs, National Parks or Country Parks. However, this option does overfly more SSSIs and as such as deemed to be of dis-benefit when compared to the baseline scenario.	Option 5 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 1 SSSI. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 5 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option does overfly an equal number of SSSIs and as such as deemed to be of equal benefit when compared to the baseline scenario.	Option 6 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 4 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 6 is equal in that it does not overfly any AONBs, National Parks or Country Parks. However, this option does overfly more SSSIs and as such as deemed to be of dis-benefit when compared to the baseline scenario.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of designated sites in terms of Biodiversity such as SPAs, SACs, RAMSAR Sites and SSSIs. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. 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General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. 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General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous climb operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the departure and approach phase. Furthermore, in the case of the modal path of the existing BKY SID, the track length is 10.64km (5.74NM). As previously described, for the purposes of the IOA overflight analysis, the BKY SID has been measured up to 4,000ft.	Option 0 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 40.90km (22.08NM) long. When compared to the baseline scenario, Option 0 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 2 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 37.98km (20.51NM) long. When compared to the baseline scenario, Option 2 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 3 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 34.43km (18.59NM) long. When compared to the baseline scenario, Option 3 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 4 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 33.24km (17.95NM) long. When compared to the baseline scenario, Option 4 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 5 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 38.15km (20.60NM) long. When compared to the baseline scenario, Option 5 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 6 does support continuous climb operations, meaning that aircraft would not be required to level off during departure, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 31.98km (17.27NM) long. When compared to the baseline scenario, Option 6 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 0	OPTION 2	OPTION 3	OPTION 4	OPTION 5	OPTION 6
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional procedures however maintaining access to ground-based equipment (currently operated by NERL) may be prohibitively expensive, should this commercial option be implemented.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing London Stansted Airport using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, London Stansted Airport predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft departing STN would continuously require radar vectoring (should CAP1781 not be implemented), resulting in an increase in ATCO workload.	Possible conflict with London Luton and Cambridge traffic was identified. Procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO workload. Leading on form this, possible unknown interaction with the wider enroute network is acknowledged, but at this time, this cannot be determined. At this time, there is an additional unknown hazard relating to interactions with military traffic operating in the vicinity of RAF Mildenhall/RAF Lakenheath. The design process may also help to mitigate this hazard to as low 'as reasonably practicable'. This is very specific to exact aircraft routing combinations. ATC tactical intervention could also be applied. An additional hazard bespoke to this design envelope is containment within Controlled Airspace. Although this design envelope is contained within Controlled Airspace, some design options will soon run outside controlled airspace as they leave the designated procedure. ATC tactical intervention or additional instructions on the AIP could act as mitigations for this. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to as low as is reasonably practical. This is very specific to exact aircraft routing combinations.	Possible conflict with London Luton and Cambridge traffic was identified. 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The design process may also help to mitigate this hazard to as low 'as reasonably practicable'. This is very specific to exact aircraft routing combinations. ATC tactical intervention could also be applied. An additional hazard bespoke to this design envelope is containment within Controlled Airspace. Although this design envelope is contained within Controlled Airspace, some design options will soon run outside controlled airspace as they leave the designated procedure. ATC tactical intervention or additional instructions on the AIP could act as mitigations for this. In addition, it was identified that due to the dispersion of traffic departing STN, a degree of tactical intervention may be required to maintain safe separations standards. The design process may also help to mitigate this hazard to as low as is reasonably practical. This is very specific to exact aircraft routing combinations.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not support continuous climb operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 0 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 0 has been rejected as it overflies the greatest number of people and residential buildings within this envelope.	When compared to the baseline scenario, Option 2 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 2 has been rejected as it overflies more people and residential buildings than Options 3, 6 and 4.	When compared to the baseline scenario, Option 3 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 3 has been selected as the Preferred Option as it overflies the least number of people and residential buildings when compared to the other options in this envelope.	When compared to the baseline scenario, Option 4 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 4 has been deemed Acceptable as it overflies more people and residential buildings than Option 3 and 6, but fewer than the remaining options within this envelope.	When compared to the baseline scenario, Option 5 performs worse in terms of noise impact, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 5 has been rejected as it overflies more people and residential buildings than Options 3, 6 and 4.	When compared to the baseline scenario, Option 6 performs worse in terms of noise impact, tranquillity, greenhouse gas emissions and fuel burn but better in terms of capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with some routes operated by other nearby airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 6 has been deemed Favourable as it overflies more people and residential buildings than Option 3, but fewer than the remaining options within this envelope.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Design Area: RWY 04 2,000ft Transitions

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 8 (EAST)	OPTION 22 (EAST)	OPTION 9 (WEST)	OPTION 12 (WEST)	OPTION 14 (WEST)	OPTION 16 (WEST)	OPTION 17 (WEST)
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	The 'Do Nothing baseline' for arrivals consists of Modal tracks that have been generated. These modal tracks have been created by the change sponsor to provide an accurate representation of what occurs in today's operation. For comparison purposes within the IOA, Easterly and Central B options are compared to a defined Easterly Modal Track. The East Modal track overflies 34,093 people and 15,298 residential buildings. Westerly options are compared to a 'Modal Modal' track, which combines two lateral modal tracks from the West and South West. The 'Modal Modal' track overflies 32,158 people and 15,379 residential buildings.	Option 8 is a Transition which contains an IAF to the south-east of STN at 7,000ft. This option enables a continuous descent approach at 3.8%% (2.2 Degrees). In terms of noise impact, Option 8 overflies 23,727 people and 12,651 residential buildings. When compared to the baseline scenario, this option overflies less people and fewer residential buildings and as such is seen as beneficial.	Option 22 is a Transition which contains an IAF to the east of STN at 7,000ft. This option enables a continuous descent approach at 3.5%% (2 Degrees). In terms of noise impact, Option 22 overflies 27,445 people and 14,291 residential buildings. When compared to the baseline scenario, this option overflies less people and fewer residential buildings and as such is seen as beneficial.	Option 9 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent approach at 3.8%% (2.2 Degrees). In terms of noise impact, Option 22 overflies 30,921 people and 14,278 residential buildings. When compared to the baseline scenario, this option overflies less people and fewer residential buildings and as such is seen as beneficial.	Option 12 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent approach at 4.4%% (2.5 Degrees). In terms of noise impact, Option 12 overflies 35,030 people and 15,963 residential buildings. When compared to the baseline scenario, this option overflies more people and more residential buildings and as such is seen as a dis-benefit.	Option 14 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent approach at 3.6%% (2.1 Degrees). In terms of noise impact, Option 14 overflies 29,382 people and 13,374 residential buildings. When compared to the baseline scenario, this option overflies less people and fewer residential buildings and as such is seen as beneficial.	Option 16 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent approach at 4.1%% (2.3 Degrees). In terms of noise impact, Option 16 overflies 31,449 people and 14,345 residential buildings. When compared to the baseline scenario, this option overflies less people and fewer residential buildings and as such is seen as beneficial.	Option 17 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent approaches at 3.5%% (2 Degrees). In terms of noise impact, Option 17 overflies 31,621 people and 14,539 residential buildings. When compared to the baseline scenario, this option overflies less people and fewer residential buildings and as such is seen as beneficial.
Communities	Air Quality	Initial Options Appraisal: Qualitative	No change to air quality is predicted in maintaining baseline conditions, the majority of the existing procedures involve overflight above 1,000ft, other than the areas in the immediate vicinity of STN. For safety reasons, aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. In terms of AQMAs, both the Easterly modal track does not overfly any AQMAs. However, the 'Modal Modal' tracks each overfly 1 AQMA each. Overflight of these AQMAs occurs when the aircraft is above 1,000ft.	As per the baseline scenario, Option 8 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 8 is seen to be of equal benefit.	As per the baseline scenario, Option 22 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 22 is seen to be of equal benefit.	In terms of air quality, Option 9 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 9 is seen as beneficial.	In terms of air quality, Option 12 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 12 is seen as beneficial.	In terms of air quality, Option 14 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 14 is seen as beneficial.	In terms of air quality, Option 16 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 16 is seen as beneficial.	In terms of air quality, Option 17 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 17 is seen as beneficial.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current arrival operations do not support continuous descent approaches. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring. Existing procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to the proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis; this will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. With regards to the modal track lengths, the easterly modal track is 54.55km (29.45NM) long. Meanwhile, the 'Modal Modal' track is 57.27km (30.92NM) in length.	Option 8 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 8 is 54.39km (29.37NM). Based on this, when compared to the baseline scenario, Option 8 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 22 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 22 is 57.89km (31.26NM). Based on this, when compared to the baseline scenario, Option 22 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 9 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 9 is 54.39km (29.37NM). Based on this, when compared to the baseline scenario, Option 9 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 12 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 12 is 48.72km (26.31NM). Based on this, when compared to the baseline scenario, Option 12 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 14 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 14 is 56.11km (30.30NM). Based on this, when compared to the baseline scenario, Option 14 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 16 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 16 is 50.84km (27.45NM). Based on this, when compared to the baseline scenario, Option 16 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 17 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 17 is 57.52km (31.06NM). Based on this, when compared to the baseline scenario, Option 17 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining existing procedures would maintain current capacity and resilience.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include Internationally (SACs, SPAs, RAMSAR) and Nationally (SSSIs and National Nature Reserves) designated habitats and Country Parks. Neither of the modal tracks produced overfly any AONBs and National Parks. However, the Easterly modal track overflies 5 Country Parks and 11 SSSIs while the 'Modal Modal' track overflies 1 Country Park and 14 SSSIs.	Option 8 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 9 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 8 is equal in that it does not overfly any AONBs or National Parks. This option overflies less Country Parks and SSSIs in comparison to the baseline scenario. As such, this option is deemed to be beneficial.	Option 22 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 2 Country Park and 7 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 22 is equal in that it does not overfly any AONBs or National Parks. This option overflies fewer Country Parks and SSSIs in comparison to the baseline scenario. As such, this option is deemed to be beneficial.	Option 9 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 10 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 9 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies less SSSIs in comparison to the baseline scenario. As such, this option is deemed to be beneficial.	Option 12 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 9 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 12 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies fewer SSSIs in comparison to the baseline scenario. As such, this option is deemed to be beneficial.	Option 14 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 11 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 14 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies fewer SSSIs in comparison to the baseline scenario. As such, this option is deemed to be beneficial.	Option 16 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 10 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 16 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies less SSSIs in comparison to the baseline scenario. As such, this option is deemed to be beneficial.	Option 17 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 9 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 17 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies less SSSIs in comparison to the baseline scenario. As such, this option is deemed to be beneficial.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of Internationally (SACs, SPAs, RAMSAR) or Nationally (SSSIs, National Nature Reserves) designated sites. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of existing procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for STN to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for STN to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for STN to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for STN to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for STN to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for STN to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for STN to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for STN to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for STN to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for STN to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for STN to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for STN to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for STN to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for STN to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for STN to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for STN to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous descent approaches. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the approach phase. In the case of the Easterly modal track, this is 54.55km (29.45NM) long. Meanwhile, the 'Modal Modal' track is 57.27km (30.92NM) in length.	Option 8 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 54.39km (29.37NM) long. When compared to the baseline scenario, Option 8 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 22 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 57.89km (31.26NM) long. When compared to the baseline scenario, Option 22 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 9 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 54.39km (29.37NM) long. When compared to the baseline scenario, Option 9 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 12 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 48.72km (26.31NM) long. When compared to the baseline scenario, Option 12 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 14 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 56.11km (30.30NM) long. When compared to the baseline scenario, Option 14 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 16 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 50.84km (27.45NM) long. When compared to the baseline scenario, Option 16 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 17 does support continuous descent operations, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 57.52km (31.06NM) long. When compared to the baseline scenario, Option 17 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for London Stansted Airport to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 8 (EAST)	OPTION 22 (EAST)
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain the existing conventional arrival procedures.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the existing procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing arrival arrangements do not support continuous descent operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 8 performs better in terms of noise impact, greenhouse gas emissions, tranquillity, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 8 has been selected as the Preferred Option within the 2,000ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 8 overflies 31,801 people. This combination overflies the least number of people when compared to the other corresponding options within this design envelope (2,000ft EAST).	When compared to the baseline scenario, Option 22 performs worse in terms of greenhouse gas emissions and fuel burn but better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 22 is deemed Favourable within the 2,000ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 22 overflies 37,283 people. This combination overflies more people than Option 8, but less than the other corresponding options within this design envelope (2,000ft EAST).

Impact	OPTION 9 (WEST)	OPTION 12 (WEST)	OPTION 14 (WEST)
Infrastructure costs	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Operational costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Deployment costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Possible conflict with STN proposed SIDs. Given this there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.
Summary of Analysis	When compared to the baseline scenario, Option 9 performs better in terms of noise impact, air quality, greenhouse gas emissions, tranquillity, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 9 has been selected as the Preferred Option within the 2,000ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 9 overflies 36,840 people. This combination overflies the least number of people when compared to the other corresponding options within this design envelope (2,000ft WEST).	When compared to the baseline scenario, Option 12 performs better in terms of noise impact, air quality, greenhouse gas emissions, tranquillity, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 12 has been rejected as part the 2,000ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 12 overflies 41,935 people. This combination overflies more people than Option 9, 16 and 17, but less than the other corresponding options within this design envelope (2,000ft WEST).	When compared to the baseline scenario, Option 14 performs better in terms of noise impact, air quality, greenhouse gas emissions, tranquillity, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 14 has been rejected as part the 2,000ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 14 overflies 50,651 people. This combination overflies more people than Option 9, 16 and 17, but less than the other corresponding options within this design envelope (2,000ft WEST).

Impact	OPTION 16 (WEST)	OPTION 17 (WEST)
Infrastructure costs	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Operational costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe ‘Improved Operational Efficiency’ as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Deployment costs	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.
Summary of Analysis	When compared to the baseline scenario, Option 16 performs better in terms of noise impact, air quality, greenhouse gas emissions, tranquillity, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 16 is deemed Favourable within the 2,000ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 16 overflies 39,080 people. This combination overflies more people than Option 9, but less than the other corresponding options within this design envelope (2,000ft WEST).	When compared to the baseline scenario, Option 17 performs worse in terms of greenhouse gas emissions and fuel burn but better in terms of noise impact, air quality, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 17 is deemed Acceptable within the 2,000ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 17 overflies 39,308 people. This combination overflies more people than Option 9 and 16, but less than the other corresponding options within this design envelope (2,000ft WEST).

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Design Area: RWY 04 2,500ft Transitions

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 1 (EAST)	OPTION 10 (EAST)	OPTION 19 (EAST)	OPTION 20 (EAST)	OPTION 21 (EAST)	OPTION 14 (WEST)	OPTION 16 (WEST)	OPTION 2B (CENTRAL)
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	The 'Do Nothing baseline' for arrivals consists of Modal tracks that have been generated. These modal tracks have been created by the change sponsor to provide an accurate representation of what occurs in today's operation. For comparison purposes within the IOA, Easterly and Central B options are compared to a defined Easterly Modal Track. The East Modal track overflies 34,093 people and 15,298 residential buildings. Westerly and Central A options are compared to a 'Modal Modal' track, which combines two lateral modal tracks from the West and South West. The 'Modal Modal' track overflies 32,158 people and 15,379 residential buildings.	Option 1 is a Transition which contains an IAF to the south-east of STN at 7,000ft. This option enables a continuous descent operations at 3.8% (2.2 Degrees). In terms of noise impact, Option 1 overflies 21,033 people and 10,169 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 10 is a Transition which contains an IAF to the south-east of STN at 7,000ft. This option enables a continuous descent operations at 3.8% (2.2 Degrees). In terms of noise impact, Option 10 overflies 14,121 people and 7,078 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 19 is a Transition which contains an IAF to the south-east of STN at 7,000ft. This option enables a continuous descent operations at 3.4% (1.95 Degrees). In terms of noise impact, Option 19 overflies 20,144 people and 9,773 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 20 is a Transition which contains an IAF to the south-east of STN at 7,000ft. This option enables a continuous descent operations at 3.3% (1.9 Degrees). In terms of noise impact, Option 20 overflies 20,480people and 9,914 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 21 is a Transition which contains an IAF to the east of STN at 7,000ft. This option enables a continuous descent operations at 3% (1.7 Degrees). In terms of noise impact, Option 21 overflies 24,170 people and 11,202 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 14 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent operations at 3.1% (1.7 Degrees). In terms of noise impact, Option 14 overflies 28,635 people and 13,381 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 16 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent operations at 3.5% (2 Degrees). In terms of noise impact, Option 16 overflies 31,915 people and 15,197 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 2B is a Transition which contains an IAF approximately overhead STN at 7,000ft. This option enables a continuous descent operations at 3.4% (2 Degrees). In terms of noise impact, Option 2B overflies 26,150 people and 12,171 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.
Communities	Air Quality	Initial Options Appraisal: Qualitative	No change to air quality is predicted in maintaining baseline conditions, the majority of the extant procedures involves overflight above 1,000ft, other than the areas in the immediate vicinity of STN. For safety reasons, aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. In terms of AQMAs, both the Easterly modal track does not overfly any AQMAs. However, the 'Modal Modal' tracks does overfly 1 AQMA each. Overflight of these AMQAs occurs when the aircraft is above 1,000ft.	In terms of air quality, Option 1 overflies 1 AQMA. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 1 overflies more AQMAs and as such is seen as being of dis-benefit.	In terms of air quality, Option 10 overflies 1 AQMA. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 10 overflies more AQMAs and as such is seen as being of dis-benefit.	In terms of air quality, Option 19 overflies 1 AQMA. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 19 overflies more AQMAs and as such is seen as being of dis-benefit.	In terms of air quality, Option 20 overflies 1 AQMA. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 20 overflies more AQMAs and as such is seen as being of dis-benefit.	In terms of air quality, Option 21 overflies 1 AQMA. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 21 overflies more AQMAs and as such is seen as being of dis-benefit.	As per the baseline scenario, Option 14 overflies 1 AQMA. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 14 is seen to be of equal benefit.	As per the baseline scenario, Option 16 overflies 1 AQMA. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 16 is seen to be of equal benefit.	In terms of air quality, Option 2B overflies 1 AQMA. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 2B overflies more AQMAs and as such is seen as being of dis-benefit.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current arrival operations do not support continuous descent. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring. Existing procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. With regards to the modal track lengths, the easterly modal track is 54.55km (29.45NM) long. Meanwhile, the 'Modal Modal' track is 57.27km (30.92NM) in length.	Option 1 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 1 is 52.98km (28.61NM). Based on this, when compared to the baseline scenario, Option 1 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volume of greenhouse gases released.	Option 10 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 10 is 53.37km (28.82NM). Based on this, when compared to the baseline scenario, Option 10 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volume of greenhouse gases released.	Option 19 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 19 is 57.28km (30.93NM). Based on this, when compared to the baseline scenario, Option 19 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volume of greenhouse gases released.	Option 20 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 20 is 58.30km (31.48NM). Based on this, when compared to the baseline scenario, Option 20 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volume of greenhouse gases released.	Option 21 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 21 is 62.07km (33.51NM). Based on this, when compared to the baseline scenario, Option 21 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volume of greenhouse gases released.	Option 14 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 14 is 61.86km (33.40NM). Based on this, when compared to the baseline scenario, Option 14 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volume of greenhouse gases released.	Option 16 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 16 is 56.34km (30.42NM). Based on this, when compared to the baseline scenario, Option 16 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volume of greenhouse gases released.	Option 2B has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 2B is 56.78km (30.66NM). Based on this, when compared to the baseline scenario, Option 2B is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volume of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining existing procedures would maintain current capacity and resilience.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include Internationally (SACs, SPAs, RAMSAR) and Nationally (SSSIs and National Nature Reserves) designated habitats and Country Parks. Neither of the modal tracks produced overfly any AONBs and Nationsl Parks. However, the Easterly modal track overflies 5 Country Parks and 11 SSSIs while the 'Modal Modal' track overflies 1 Country Park and 14 SSSIs.	Option 1 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 3 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1 is equal in that it does not overfly any AONBs or National Parks. This option overflies fewer Country Parks and SSSIs when compared to the baseline scenario. As such, this option is deemed to be beneficial.	Option 10 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 4 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 10 is equal in that it does not overfly any AONBs or National Parks. This option overflies fewer Country Parks and SSSIs compared to the baseline scenario. As such, this option is deemed to be beneficial.	Option 19 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 4 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 19 is equal in that it does not overfly any AONBs or National Parks. This option overflies fewer Country Parks and SSSIs compared to the baseline scenario. As such, this option is deemed to be beneficial.	Option 20 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 3 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 20 is equal in that it does not overfly any AONBs or National Parks. This option overflies fewer Country Parks and SSSIs compared to the baseline scenario. As such, this option is deemed to be beneficial.	Option 21 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 2 Country Parks and 4 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 21 is equal in that it does not overfly any AONBs or National Parks. This option overflies fewer Country Parks and SSSIs compared to the baseline scenario. As such, this option is deemed to be beneficial.	Option 14 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 11 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 14 is equal in that it does not overfly any AONBs or National Parks. This option overflies overflies an equal number of Country Parks but fewer SSSIs compared to the baseline scenario. As such, this option is deemed to be beneficial.	Option 16 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 8 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 16 is equal in that it does not overfly any AONBs or National Parks. This option overflies overflies an equal number of Country Parks but fewer SSSIs compared to the baseline scenario. As such, this option is deemed to be beneficial.	Option 2B does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 2 Country Parks and 4 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 2B is equal in that it does not overfly any AONBs or National Parks. This option overflies fewer Country Parks and SSSIs compared to the baseline scenario. As such, this option is deemed to be beneficial.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of Internationally (SACs, SPAs, RAMSAR) or Nationally (SSSIs, National Nature Reserves) designated sites. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. 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Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. 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It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous descent approaches. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the approach phase. In the case of the Easterly modal track, this is 54.55km (29.45NM) long. Meanwhile, the 'Modal Modal' track is 57.27km (30.92NM) in length.	Option 1 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 52.98km (28.61NM) long. When compared to the baseline scenario, Option 1 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 10 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 53.37km (28.82NM) long. When compared to the baseline scenario, Option 10 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 19 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 57.28km (30.93NM) long. When compared to the baseline scenario, Option 19 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 20 does support continuous descent operations, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 58.30km (31.48NM) long. When compared to the baseline scenario, Option 20 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 21 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 62.07km (33.51NM) long. When compared to the baseline scenario, Option 21 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 14 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 61.86km (33.40NM) long. When compared to the baseline scenario, Option 14 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 16 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 56.34km (30.42NM) long. When compared to the baseline scenario, Option 16 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 2B supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 56.78km (30.66NM) long. When compared to the baseline scenario, Option 2B is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional arrival procedures.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 1 (EAST)	OPTION 10 (EAST)
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the extant conventional procedures.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing arrival arrangements do not support continuous descent operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 1 performs worse in terms of air quality but better in terms of noise impact, greenhouse gas emissions, tranquillity, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 1 has been rejected as part the 2,500ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 1 overflies 30,759 people. This combination overflies more people than Option 10, 19 and 20, but less than the other corresponding options within this design envelope (2,500ft EAST).	When compared to the baseline scenario, Option 10 performs worse in terms of air quality but better in terms of noise impact, greenhouse gas emissions, tranquillity, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 10 has been selected as the Preferred Option within the 2,500ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 10 overflies 24,009 people. This combination overflies the least number of people when compared to the other corresponding options within this design envelope (2,500ft EAST).

Level of Analysis	OPTION 19 (EAST)	OPTION 20 (EAST)	OPTION 21 (EAST)
Initial Options Appraisal: Qualitative	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.
Summary of Analysis	When compared to the baseline scenario, Option 19 performs worse in terms of air quality, greenhouse gas emissions and furl burn but better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 10 has been selected as the Preferred Option within the 2,500ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 10 overflies 24,009 people. This combination overflies the least number of people when compared to the other corresponding options within this design envelope (2,500ft EAST).	When compared to the baseline scenario, Option 20 performs worse in terms of air quality, greenhouse gas emissions and furl burn but better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 20 is deemed Acceptable within the 2,500ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 20 overflies 29,824 people. This combination overflies more people than Option 10 and 19, but less than the other corresponding options within this design envelope (2,500ft EAST).	When compared to the baseline scenario, Option 21 performs worse in terms of air quality, greenhouse gas emissions and furl burn but better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 21 has been rejected as part the 2,500ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 21 overflies 30,497 people. This combination overflies more people than Option 10, 19 and 20, but less than the other corresponding options within this design envelope (2,500ft EAST).

Level of Analysis	OPTION 14 (WEST)	OPTION 16 (WEST)	OPTION 2B (CENTRAL)
Initial Options Appraisal: Qualitative	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.
Summary of Analysis	When compared to the baseline scenario, Option 14 performs worse in terms of greenhouse gas emissions and furl burn but better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 14 is deemed Favourable within the 2,500ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 14 overflies 50,083 people. This combination overflies more people than Option 16, but less than the other corresponding options within this design envelope (2,500ft WEST).	When compared to the baseline scenario, Option 16 performs worse in terms of greenhouse gas emissions and furl burn but better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 16 has been selected as the Preferred Option within the 2,500ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 16 overflies 38,069 people. This combination overflies the least number of people when compared to the other corresponding options within this design envelope (2,500ft WEST).	When compared to the baseline scenario, Option 2B performs worse in terms of air quality, greenhouse gas emissions and furl burn but better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 2B has been selected as the Preferred Option within the 2,500ft CENTRAL envelope. When this option is assessed alongside its corresponding option for Runway 22, in total Option 2B overflies 42,161 people.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

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Design Area: RWY 22 2,000ft Transitions

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 8 (EAST)	OPTION 22 (EAST)	OPTION 9 (WEST)	OPTION 12 (WEST)	OPTION 14 (WEST)	OPTION 16 (WEST)	OPTION 17 (WEST)
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	The 'Do Nothing baseline' for arrivals consists of Modal tracks that have been generated. These modal tracks have been created by the change sponsor to provide an accurate representation of what occurs in today's operation. For comparison purposes within the IOA, Easterly options are compared to a defined Easterly Modal Track. The East Modal track overflies 28,637 people and 14,434 residential buildings. Westerly options are compared to a 'Modal Modal' track, which combines two lateral modal tracks from the West and South West. The 'Modal Modal' track overflies 23,020 people and 11,004 residential buildings.	Option 8 is a Transition which contains an IAF to the south-east of STN at 7,000ft. This option enables a continuous descent approach at 5.3% (3 Degrees). In terms of potential noise impact, Option 8 overflies 8,074 people and 3,601 residential buildings. When compared to the baseline scenario, this option overflies less people and fewer residential buildings and as such is seen as beneficial.	Option 22 is a Transition which contains an IAF to the east of STN at 7,000ft. This option enables a continuous descent approach at 5.8% (3.3 Degrees). In terms of potential noise impact, Option 22 overflies 9,838 people and 4,357 residential buildings. When compared to the baseline scenario, this option overflies less people and fewer residential buildings and as such is seen as beneficial.	Option 9 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent approach at 5.3% (3 Degrees). In terms of potential noise impact, Option 9 overflies 5,919 people and 2,811 residential buildings. When compared to the baseline scenario, this option overflies less people and fewer residential buildings and as such is seen as beneficial.	Option 12 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent approach at 3.8% (2.2 Degrees). In terms of potential noise impact, Option 12 overflies 6,905 people and 3,233 residential buildings. When compared to the baseline scenario, this option overflies less people and fewer residential buildings and as such is seen as beneficial.	Option 14 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent approach at 6.2% (3.6 Degrees). In terms of potential noise impact, Option 14 overflies 21,269 people and 10,211 residential buildings. When compared to the baseline scenario, this option overflies less people and fewer residential buildings and as such is seen as beneficial.	Option 16 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent approach at 4.7% (2.7 Degrees). In terms of potential noise impact, Option 16 overflies 7,631 people and 3,538 residential buildings. When compared to the baseline scenario, this option overflies less people and fewer residential buildings and as such is seen as beneficial.	Option 17 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent approach at 4.8% (2.75 Degrees). In terms of potential noise impact, Option 17 overflies 7,687 people and 3,673 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.
Communities	Air Quality	Initial Options Appraisal: Qualitative	No change to air quality is predicted in maintaining baseline conditions, the majority of the extant procedures involves overflight above 1,000ft, other than the areas in the immediate vicinity of STN. For safety reasons, aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. In terms of AQMAs, both the Easterly and 'Modal Modal' tracks overfly 1 AQMA each. Overflight of these AMQAs occurs when the aircraft is above 1,000ft.	In terms of air quality, Option 8 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 8 is seen as beneficial.	In terms of air quality, Option 22 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 22 is seen as beneficial.	In terms of air quality, Option 9 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 9 is seen as beneficial.	In terms of air quality, Option 12 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 12 is seen as beneficial.	In terms of air quality, Option 14 overflies 1 AQMA. Overflight of this AQMA occurs when aircraft would be above 1,000ft. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 14 is deemed to be of equal benefit in terms of air quality.	In terms of air quality, Option 16 does overfly 1 AQMA. Overflight if this AQMA occurs when aircraft would be above 1,000ft. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 16 is deemed to be of equal benefit in terms of air quality.	In terms of air quality, Option 17 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 ft are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 17 is seen as beneficial.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current arrival operations do not support continuous descent to both runways. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring. Existing procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis; this will be conducted in Stage 3. In order to make a comparison, track milage is used as a proxy using the theory that the shorter the track mileage, the less greenhouse gases are emitted. With regards to the modal track lengths, the easterly modal track is 42.43km (22.91NM) long. Meanwhile, the 'Modal Modal' track is 45.01km (24.31NM) in length.	Option 8 has been designed to support a continuous descent approach, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 8 is 42.71km (23.06NM). Based on this, when compared to the baseline scenario, Option 8 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volume of greenhouse gases released.	Option 22 has been designed to support continuous descent approaches, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 22 is 40.37km (21.80NM). Based on this, when compared to the baseline scenario, Option 22 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 9 has been designed to support continuous descent approaches, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 9 is 42.71km (23.06NM). Based on this, when compared to the baseline scenario, Option 9 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 12 has been designed to support continuous descent approaches, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 12 is 54.22km (29.27NM). Based on this, when compared to the baseline scenario, Option 12 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 14 has been designed to support continuous descent approaches, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 14 is 38.52km (20.80NM). Based on this, when compared to the baseline scenario, Option 14 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse volumes released.	Option 16 has been designed to support continuous descent approaches, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 16 is 46.09km (24.89NM). Based on this, when compared to the baseline scenario, Option 16 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 17 has been designed to support continuous descent approaches, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 17 is 45.53km (24.58NM). Based on this, when compared to the baseline scenario, Option 17 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volume of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining the existing procedures would maintain current capacity and resilience.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include Internationally (SACs, SPAs, RAMSAR) and Nationally (SSSIs and National Nature Reserves) designated habitats and Country Parks. Neither of the modal tracks produced overfly any AONBs, National Parks or Country Parks. However, the Easterly modal track overflies 2 SSSIs while the 'Modal Modal' track overflies 6 SSSIs.	Option 8 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 3 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 8 is equal in that it does not overfly any AONBs or National Parks. However, this option does overfly more Country Parks and SSSIs. As such, this option is deemed to be of dis-benefit when compared to the baseline scenario.	Option 22 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 2 Country Parks and 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 8 is equal in that it does not overfly any AONBs or National Parks. This option overflies an equal number of SSSIs. However, this option does overfly more Country Parks. As such, this option is deemed to be of dis-benefit when compared to the baseline scenario.	Option 9 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 5 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 9 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies less SSSIs than the baseline scenario, as such it is seen as beneficial.	Option 12 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 4 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 12 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies less SSSIs than the baseline scenario, as such it is seen as beneficial.	Option 14 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 5 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 14 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies less SSSIs than the baseline scenario, as such it is seen as beneficial.	Option 16 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 5 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 16 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies less SSSIs than the baseline scenario, as such it is seen as beneficial.	Option 17 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 5 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 17 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies less SSSIs than the baseline scenario, as such it is seen as beneficial.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of Internationally (SACs, SPAs, RAMSAR) or Nationally (SSSIs, National Nature Reserves) designated sites. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. 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As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of existing procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for STN to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for STN to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for STN to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. 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It is not proportionate for STN to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for STN to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for STN to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous descent approaches. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the approach phase. In the case of the Easterly modal track, this is 42.43km (22.91NM) long. Meanwhile, the 'Modal Modal' track is 45.01km (24.31NM) in length.	Option 8 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP 1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 42.71km (23.06NM) long. When compared to the baseline scenario, Option 8 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 22 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 40.37km (21.80NM) long. When compared to the baseline scenario, Option 22 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 9 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 42.71km (23.06NM) long. When compared to the baseline scenario, Option 9 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 12 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP 1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 54.22km (29.27NM) long. When compared to the baseline scenario, Option 12 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 14 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 38.52km (20.80NM) long. When compared to the baseline scenario, Option 14 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 16 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 46.09km (24.89NM) long. When compared to the baseline scenario, Option 16 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 17 supports a continuous descent approach, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 45.53km (24.58NM) long. When compared to the baseline scenario, Option 17 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 8 (EAST)	OPTION 22 (EAST)	OPTION 9 (WEST)	OPTION 12 (WEST)	OPTION 14 (WEST)	OPTION 16 (WEST)	OPTION 17 (WEST)
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain the existing conventional arrival procedures.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the existing procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe, including use of the existing conventional procedures.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing arrival arrangements do not support continuous descent approaches, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 8 performs worse in terms of tranquillity, greenhouse gas emissions and fuel burn, but better in terms of noise impact, air quality, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 8 has been selected as the Preferred Option within the 2,000ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 8 overflies 31,801 people. This combination overflies the least number of people when compared to the other corresponding options within this design envelope (2,000ft EAST).	When compared to the baseline scenario, Option 22 performs worse in terms of tranquillity, but better in terms of noise impact, air quality, greenhouse gas emissions, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 22 is deemed Favourable within the 2,000ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 22 overflies 37,283 people. This combination overflies more people than Option 8, but less than the other corresponding options within this design envelope (2,000ft EAST).	When compared to the baseline scenario, Option 9 performs better in terms of noise impact, air quality, greenhouse gas emissions, fuel burn, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 9 has been selected as the Preferred Option within the 2,000ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 9 overflies 36,840 people. This combination overflies the least number of people when compared to the other corresponding options within this design envelope (2,000ft WEST).	When compared to the baseline scenario, Option 12 performs worse in terms of greenhouse gas emissions and fuel burn, but better in terms of noise impact, air quality, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 12 has been rejected as part the 2,000ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 12 overflies 41,935 people. This combination overflies more people than Option 9, 16 and 17, but less than the other corresponding options within this design envelope (2,000ft WEST).	When compared to the baseline scenario, Option 14 performs better in terms of noise impact, greenhouse gas emissions, fuel burn, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 14 has been rejected as part the 2,000ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 14 overflies 50,651 people. This combination overflies more people than Option 9, 16 and 17, but less than the other corresponding options within this design envelope (2,000ft WEST).	When compared to the baseline scenario, Option 16 performs worse in terms of greenhouse gas emissions and fuel burn, but better in terms of noise impact, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 16 is deemed Favourable within the 2,000ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 16 overflies 39,080 people. This combination overflies more people than Option 9, but less than the other corresponding options within this design envelope (2,000ft WEST).	When compared to the baseline scenario, Option 17 performs worse in terms of greenhouse gas emissions and fuel burn, but better in terms of noise impact, air quality, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 17 is deemed Acceptable within the 2,000ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 17 overflies 39,308 people. This combination overflies more people than Option 9 and 16, but less than the other corresponding options within this design envelope (2,000ft WEST).

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.

MAG STN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

71288 019 Arrivals Draft A

Design Area: RWY 22 2,500ft Transitions

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 1 (EAST)	OPTION 10 (EAST)	OPTION 19 (EAST)	OPTION 20 (EAST)	OPTION 21 (EAST)	OPTION 14 (WEST)	OPTION 16 (WEST)	OPTION 2B (CENTRAL)
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	The 'Do Nothing baseline' for arrivals consists of Modal tracks that have been generated. These modal tracks have been created by the change sponsor to provide an accurate representation of what occurs in today's operation. For comparison purposes within the IOA, Easterly and Central B options are compared to a defined Easterly Modal Track. The East Modal track overflies 28,637 people and 14,434 residential buildings. Westerly options are compared to a 'Modal Modal' track, which combines two lateral modal tracks from the West and South West. The 'Modal Modal' track overflies 23,020 people and 11,004 residential buildings.	Option 1 is a Transition which contains an IAF to the south-east of STN at 7,000ft. This option enables a continuous descent operations at 3.8% (2.2 Degrees). In terms of noise impact, Option 1 overflies 9,726 people and 4,159 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 10 is a Transition which contains an IAF to the south-east of STN at 7,000ft. This option enables a continuous descent operations at 3.8% (2.2 Degrees). In terms of noise impact, Option 10 overflies 9,888 people and 4,306 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 19 is a Transition which contains an IAF to the south-east of STN at 7,000ft. This option enables a continuous descent operations at 4.3% (2.5 Degrees). In terms of noise impact, Option 19 overflies 9,493 people and 4,081 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 20 is a Transition which contains an IAF to the south-east of STN at 7,000ft. This option enables a continuous descent operations at 4.1% (2.3 Degrees). In terms of noise impact, Option 20 overflies 9,344 people and 4,507 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 21 is a Transition which contains an IAF to the east of STN at 7,000ft. This option enables a continuous descent operations at 5% (2.9 Degrees). In terms of noise impact, Option 21 overflies 6,327 people and 2,946 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 14 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent operations at 5% (2.9 Degrees). In terms of noise impact, Option 14 overflies 21,448 people and 10,340 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 16 is a Transition which contains an IAF to the north-west of STN at 7,000ft. This option enables a continuous descent operations at 4% (2.3 Degrees). In terms of noise impact, Option 16 overflies 6,154 people and 2,974 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.	Option 2B is a Transition which contains an IAF approximately overhead STN at 7,000ft. This option enables a continuous descent operations at 3.4% (2 Degrees). In terms of noise impact, Option 2B overflies 16,011 people and 6,598 residential buildings. When compared to the baseline scenario, this option overflies less people and residential buildings and as such is seen as beneficial.
Communities	Air Quality	Initial Options Appraisal: Qualitative	No change to air quality is predicted in maintaining baseline conditions, the majority of the extant procedures involves overflight above 1,000ft, other than the areas in the immediate vicinity of STN. For safety reasons, aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. In terms of AQMAs, both the Easterly and 'Modal Modal' tracks overfly 1 AQMA each. Overflight of these AMQAs occurs when the aircraft is above 1,000ft.	In terms of air quality, Option 1 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 1 is seen as beneficial.	In terms of air quality, Option 10 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 10 is seen as beneficial.	In terms of air quality, Option 19 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 19 is seen as beneficial.	In terms of air quality, Option 20 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 20 is seen as beneficial.	In terms of air quality, Option 21 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 21 is seen as beneficial.	As per the baseline scenario, Option 14 overflies 1 AQMA. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 14 is seen to be of equal benefit.	In terms of air quality, Option 16 does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 16 is seen as beneficial.	In terms of air quality, Option 2B does not overfly any AQMAs. Furthermore, as per CAP 1616 Para B74, due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Based on the above, when compared to the baseline scenario, Option 2B is seen as beneficial.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current arrival operations do not support continuous descent. It must be noted that the exact track length flown by aircraft may vary slightly due to the nature of radar vectoring. Extant procedures do not support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options. Within Stage 2 of the CAP 1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison, track milage is used based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. With regards to the modal track lengths, the easterly modal track is 42.43km (22.91NM) long. Meanwhile, the 'Modal Modal' track is 45.01km (24.31NM) in length.	Option 1 has been designed to support continuous descent operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 1 is 53.15km (28.70NM). Based on this, when compared to the baseline scenario, Option 1 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 10 has been designed to support continuous descent operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 10 is 53.44km (28.85NM). Based on this, when compared to the baseline scenario, Option 10 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 19 has been designed to support continuous descent operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 19 is 48.78km (26.34NM). Based on this, when compared to the baseline scenario, Option 19 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 20 has been designed to support continuous descent operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 20 is 50.33km (27.17NM). Based on this, when compared to the baseline scenario, Option 20 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 21 has been designed to support continuous descent operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 21 is 44.03km (23.77NM). Based on this, when compared to the baseline scenario, Option 21 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 14 has been designed to support continuous descent operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 14 is 44.22km (23.88NM). Based on this, when compared to the baseline scenario, Option 14 is shorter and is therefore expected to emit less greenhouse gases. As such, this is seen as beneficial. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 16 has been designed to support continuous descent operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 16 is 51.48km (27.79NM). Based on this, when compared to the baseline scenario, Option 16 is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.	Option 2B has been designed to support continuous descent operations, however, an element of radar vectoring may be required to manage aircraft separation distances. The track mileage of Option 2B is 56.95km (30.75NM). Based on this, when compared to the baseline scenario, Option 2B is longer and is therefore expected to emit more greenhouse gases. As such, this is seen as a dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact amounts of greenhouse gases released.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain current capacity and resilience.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience for airlines and operators.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP 1616, Appendix B, Para B76, change sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. Although no specific areas were identified by community engagement, the change sponsor has decided to include Internationally (SACs, SPAs, RAMSAR) and Nationally (SSSIs and National Nature Reserves) designated habitats and Country Parks. Neither of the modal tracks produced overfly any AONBs, National Parks or Country Parks. However, the Easterly modal track overflies 2 SSSIs while the 'Modal Modal' track overflies 6 SSSIs.	Option 1 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 3 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 1 is equal in that it does not overfly any AONBs or National Parks. However, this option does overfly more Country Parks and SSSIs. As such, this option is deemed to be of dis-benefit when compared to the baseline scenario.	Option 10 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 10 is equal in that it does not overfly any AONBs or National Parks. This option overflies an equal number of SSSIs. However, this option does overfly more Country Parks. As such, this option is deemed to be of dis-benefit when compared to the baseline scenario.	Option 19 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 19 is equal in that it does not overfly any AONBs or National Parks. This option overflies an equal number of SSSIs. However, this option does overfly more Country Parks. As such, this option is deemed to be of dis-benefit when compared to the baseline scenario.	Option 20 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 1 Country Park and 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 20 is equal in that it does not overfly any AONBs or National Parks. This option overflies an equal number of SSSIs. However, this option does overfly more Country Parks. As such, this option is deemed to be of dis-benefit when compared to the baseline scenario.	Option 21 does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 2 Country Parks and 2 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 21 is equal in that it does not overfly any AONBs or National Parks. This option overflies an equal number of SSSIs. However, this option does overfly more Country Parks. As such, this option is deemed to be of dis-benefit when compared to the baseline scenario.	Option 14 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 5 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 14 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies less SSSIs in comparison to the baseline scenario. As such, this option is deemed to be beneficial.	Option 16 does not overfly any AONBs, National Parks or Country Parks. However, it has been identified that this option overflies 3 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 16 is equal in that it does not overfly any AONBs, National Parks or Country Parks. This option overflies less SSSIs in comparison to the baseline scenario. As such, this option is deemed to be beneficial.	Option 2B does not overfly any AONBs or National Parks. However, it has been identified that this option overflies 2 Country Parks and 4 SSSIs. Overflight of these areas is expected to occur at a higher altitude, minimising the impact of aircraft noise and emissions on these areas. When compared to the baseline scenario, Option 2B is equal in that it does not overfly any AONBs or National Parks. However, this option does overfly more Country Parks and SSSIs. As such, this option is deemed to be of dis-benefit when compared to the baseline scenario.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Analysis conducted by the change sponsor shows that the existing operations at STN overfly or fly within the vicinity of Internationally (SACs, SPAs, RAMSAR) or Nationally (SSSIs, National Nature Reserves) designated sites. In today's operation, aircraft are flying above 1,000ft when passing over these sites. Due to the effects of mixing and dispersion, there is a limited impact, in terms of the air quality specific to these sites. STN acknowledges that there are sites within the vicinity of the airport; any potential impact will be assessed by further analysis in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	The change sponsor has conducted work to understand where the designated sites are around STN. At this stage, there is expected to be no change likely to affect biodiversity at these sites. From an air quality perspective, these sites will be overflown at altitudes above 1,000ft. As per CAP 1616 Appendix B, Para B74, because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP 1616, Appendix B, Para B80 states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. That said, STN acknowledges that any potential impact to the designated sites around STN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. GA users of STN will maintain their current level of access under extant operational arrangements.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.	No change to the existing airspace arrangements (within the baseline scenario) are expected as a consequence of this ACP. However, it is recommended that all VRPs and existing Letters of Agreement pertaining to GA access are reviewed prior to implementation to ensure their continued validity.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.	The introduction PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is not proportionate for London Stansted Airport to predict the precise economic benefit to commercial airlines using the new procedures as any increase in individual airline capacity will depend on private commercial business characteristics. It is not proportionate for London Stansted Airport to assess the economic benefit to the GA community however they are expected to benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	The existing STN procedures do not support continuous descent operations. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level flight in the approach phase. In the case of the Easterly modal track, this is 42.43km (22.91NM) long. Meanwhile, the 'Modal Modal' track is 45.01km (24.31NM) in length.	Option 1 does support continuous descent operations, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 53.15km (28.70NM) long. When compared to the baseline scenario, Option 1 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 10 does support continuous descent operations, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 53.44km (28.85NM) long. When compared to the baseline scenario, Option 10 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 19 does support continuous descent operations, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 48.78km (26.34NM) long. When compared to the baseline scenario, Option 19 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 20 does support continuous descent operations, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 50.33km (27.17NM) long. When compared to the baseline scenario, Option 20 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 21 does support continuous descent operations, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 44.03km (23.77NM) long. When compared to the baseline scenario, Option 21 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 14 does support continuous descent operations, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 44.22km (23.88NM) long. When compared to the baseline scenario, Option 14 is shorter and at this stage it assumed will require a smaller amount of fuel burn, therefore, this option is beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 16 does support continuous descent operations, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 51.48km (27.79NM) long. When compared to the baseline scenario, Option 16 is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	Option 2B does support continuous descent operations, meaning that aircraft would not be required to level off during arrival, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 56.95km (30.75NM) long. When compared to the baseline scenario, Option 2B is longer and at this stage it assumed will require a greater amount of fuel burn, therefore, this option is of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	No additional training predicted.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.	It is expected that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures. PBN is a common standard of navigation throughout the world. It is not proportionate for STN to assess on-going competency for individual commercial airlines due to the significant variables involved e.g. number of pilots, airline policies on training (simulator versus live flight training), fleet types, and variations in on-board equipment etc.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	It is not proportionate for STN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g., aircraft types, on-board system capability etc.) to consider these effectively.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for STN to assess the 'other costs' to commercial airlines of flying PBN procedures due to significant variables; some airlines may already be 'PBN ready' whereas others may not.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at STN to maintain extant conventional arrival procedures.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.	All options relate to the implementation of PBN and no additional infrastructure is required. The introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. The foundation for PBN is RNAV or RNP; aircraft arriving and departing STN using the proposed RNAV/RNP procedures will do so based on their performance-based navigation capability.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost. ICAO describe 'Improved Operational Efficiency' as a benefit delivered by the introduction of PBN. In general, STN predicts that operational efficiency will improve and that there may be potential for a net reduction in operational costs.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No Deployment costs applicable to extant procedures	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.	Air Traffic Control at STN is contracted out to a third-party organisation. This existing commercial contract between STN and their chosen ANSP is considered to be an ongoing cost.

Group	Impact	Level of Analysis	DO NOTHING BASELINE'	OPTION 1 (EAST)	OPTION 10 (EAST)
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	The baseline assumption is that current operations at STN are safe including use of the existing conventional procedures.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.
		Summary of Analysis	The 'Do Nothing' scenario in relation to this ACP is not a viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the VOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing arrival arrangements do not support continuous descent operations, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, GA Access and economic impact, the 'Do Nothing baseline' provides minimal/no change to today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. From a safety perspective, it is assumed that current STN operations are safe. Following the removal of the VORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	When compared to the baseline scenario, Option 1 performs worse in terms of tranquillity, greenhouse gas emissions and fuel burn, but better in terms of noise impact, air quality, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 1 has been rejected as part the 2,500ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 1 overflies 30,759 people. This combination overflies more people than Option 10, 19 and 20, but less than the other corresponding options within this design envelope (2,500ft EAST).	When compared to the baseline scenario, Option 10 performs worse in terms of tranquillity, greenhouse gas emissions and fuel burn, but better in terms of noise impact, air quality, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 10 has been selected as the Preferred Option within the 2,500ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 10 overflies 24,009 people. This combination overflies the least number of people when compared to the other corresponding options within this design envelope (2,500ft EAST).

Level of Analysis	OPTION 19 (EAST)	OPTION 20 (EAST)	OPTION 21 (EAST)
Initial Options Appraisal: Qualitative	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.
Summary of Analysis	When compared to the baseline scenario, Option 19 performs worse in terms of tranquillity, greenhouse gas emissions and fuel burn, but better in terms of noise impact, air quality, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 19 is deemed Favourable within the 2,500ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 19 overflies 29,637 people. This combination overflies more people than Option 10, but less than the other corresponding options within this design envelope (2,500ft EAST).	When compared to the baseline scenario, Option 20 performs worse in terms of tranquillity, greenhouse gas emissions and fuel burn, but better in terms of noise impact, air quality, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 20 is deemed Acceptable within the 2,500ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 20 overflies 29,824 people. This combination overflies more people than Option 10 and 19, but less than the other corresponding options within this design envelope (2,500ft EAST).	When compared to the baseline scenario, Option 21 performs worse in terms of tranquillity, greenhouse gas emissions and fuel burn, but better in terms of noise impact, air quality, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 21 has been rejected as part the 2,500ft EAST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 21 overflies 30,497 people. This combination overflies more people than Option 10, 19 and 20, but less than the other corresponding options within this design envelope (2,500ft EAST).

Level of Analysis	OPTION 14 (WEST)	OPTION 16 (WEST)	OPTION 2B (CENTRAL)
Initial Options Appraisal: Qualitative	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.	Possible conflict with STN proposed SIDs. Given this, there is a potential for a loss of horizontal and/or vertical separation requiring ATC tactical intervention, causing an increase in ATCO workload. The design process itself is also a mitigation in this instance as procedures could be designed with the appropriate horizontal/vertical separation standards.
Summary of Analysis	When compared to the baseline scenario, Option 14 performs better in terms of noise impact, greenhouse gas emissions, tranquillity, fuel burn, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 14 is deemed Favourable within the 2,500ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 14 overflies 50,083 people. This combination overflies more people than Option 16, but less than the other corresponding options within this design envelope (2,500ft WEST).	When compared to the baseline scenario, Option 16 performs worse in terms of greenhouse gas emissions and fuel burn, but better in terms of noise impact, air quality, tranquillity, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 16 has been selected as the Preferred Option within the 2,500ft WEST envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 16 overflies 38,069 people. This combination overflies the least number of people when compared to the other corresponding options within this design envelope (2,500ft WEST).	When compared to the baseline scenario, Option 2B performs worse in terms of tranquillity, greenhouse gas emissions and fuel burn, but better in terms of noise impact, air quality, capacity/resilience and economic impact of capacity. The remaining criteria are deemed to be of equal benefit because there is no change when compared to today's operation. Having said that, at this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified possible conflicts with other STN proposed departure options but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3/4 of the CAP 1616 process to determine this. Furthermore, this option has been assessed as a stand-alone option rather than as a set of design options as part of a wider system. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. Based on performance in the IOA, Option 2B has been selected as the Preferred Option within the 2,500ft CENTRAL envelope. When this option is assessed alongside its corresponding option for Runway 04, in total Option 2B overflies 42,161 people.

IOA Criteria Evaluation

Colour Key	Description
Preferred Option(s)	When compared to the baseline, there is a clear and obvious benefit. This option is viewed as more favourable than the other within the design envelope and as such is the preferred option within the design envelope.
Favourable	When compared to the baseline, there is a clear and obvious benefit.
Acceptable	When compared to the baseline, there is an equal benefit.
Rejected	When compared to the baseline, there is a clear and obvious dis-benefit. As such, these options are rejected.
Baseline/Previously Rejected	Option included for completeness but, in the case of previously rejected options, not subject to IOA.