





Departures





'DO NOTHING' BASELINE

Departure Envelope: SID Runway 05 North

			'DO NOTHIN	IG' BASELINE	ОРТ	ION 1	OPTI	ON 4
			For the north design envelope, the 'do nothing' scenario around the existing conventional POL SID. The 'do nothin that has been derived to provide an accurate represents track, a polygon has also been created that represents are adar vectoring and potentially may affect people on the was based on the modal track created using Noise and T with the addition of a radar vectoring area where approdata and is calculated based on the distance between the track.	ng' scenario for departures consists of a modal track etion of what occurs today, in addition to the modal in area where current operations are dispersed due to e ground. The overflight analysis conducted on this SID frack Keeping data at altitudes of 4,000ft and 7,000ft priate. All data is based on current aircraft performance	Option 1 is an RNAV1 replication of the current departure to POL and conventional POL 4S/12 departure. As a replicated route it follows a similar track over the ground as the of departure and fly straight ahead overflying Stockport where they com under-tyne and close to Oldham and they terminate at 7,000ft to the The design speed will permit a large number of aircraft to fly this rout potential benefits in terms of noise. There would be no speed restrictions applied to the procedure; there to the track-to-fix coding and simplicity of the route, dispersion is like	current published departure. The routes combine shortly after immence a left turn to the north. This takes the routes west of Ashtoneast of Rochdale. ein a clean configuration (without the use of flaps) which has fore, the maximum speed of 250 KIAS below FL100 would apply. Due	This is an RNAVI option that has a turn mid-way between options 1 and following the course of the M60 motorway which already generates a let This option has a direct routing to the north following the initial turn, wh repeatable ground tracks and a low level of dispersal. The design speed will permit a large number of aircraft to fly this route in benefits in terms of noise. The route has been designed using fly-by waypoints. **OSI: After departure this route combines with the option for OSR and fli Stockport. It continues north, broadly following the route of the M60 mc under-tyne. It passes overhead Oldham and terminates at 7,000ft just to the east of Stockport. It continues north, broadly following the route of 6 Ashton-under-tyne. It passes overhead Oldham and terminates at 7,007 There would be no speed restrictions applied to the procedure; therefor track-to-fix coding however, and simplicity of the route, dispersion is like	rel of ambient noise. ich due to the track-to-fix coding and a fly-by waypoint, would result in a clean configuration (without the use of flaps) which has potential ses straight ahead and commences a left turn just to the east of torway which takes it over Audenshaw reservoir and west of Ashtonthe east of Rochdale. es straight ahead overflying Heald Green and commences a left turn just of the M60 motorway which takes it over Audenshaw reservoir and west 00ft just to the east of Rochdale. e, the maximum speed of 250 KIAS below FL100 would apply. Due to the
Group	Impact	Level of Analysis	Runway 05L	Runway 05R	Runway 05L	Runway 05R	Runway 05L	Runway 05R
	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	analysis has identified that: - Up to 4,000ft, this 'do nothing' scenario overfiles approximately 46,700 people and approximately 22,850 residential buildings Up to 7,000ft, this 'do nothing' scenario overfiles approximately 192,900 people and approximately	For comparison purposes within the IOA, the 'do nothing' scenario was based upon the existing POL SID. In terms of potential noise impact, initial quantitative analysis has identified that: - Up to 4,000ft, this 'do nothing' scenario overfiles approximately 51,700 people and approximately 25,350 residential buildings. - Up to 7,000ft, this 'do nothing' scenario overfiles approximately 219,800 people and approximately 99,350 residential buildings.	In terms of potential noise impact, initial quantitative analysis has identified that: - Up to 4,000ft, this option overfiles approximately 79,900 people and approximately 40,300 residential buildings Up to 7,000ft, this option overfiles approximately 206,600 people and approximately 94,600 residential buildings. Assessed up to 7,000ft, this option overfiles more people and residential buildings than the 'do nothing' scenario and is therefore considered to be of dis-benefit.	In terms of potential noise impact, initial quantitative analysis has identified that: - Up to 4,000ft, this option overfiles approximately 80,700 people and approximately 40,900 residential buildings. - Up to 7,000ft, this option overfiles approximately 216,300 people and approximately 99,250 residential buildings. Assessed up to 7,000ft, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is therefore considered to be beneficial.	In terms of potential noise impact, initial quantitative analysis has identified that: - Up to 4,000ft, this option overflies approximately 55,200 people and approximately 26,650 residential buildings Up to 7,000ft, this option overflies approximately 208,100 people and approximately 91,750 residential buildings. Assessed up to 7,000ft, this option overflies more people and residential buildings than the 'do nothing' scenario and is therefore considered to be of dis-benefit.	In terms of potential noise impact, initial quantitative analysis has identified that: - Up to 4,000ft, this option overflies approximately 61,200 people and approximately 29,850 residential buildings Up to 7,000ft, this option overflies approximately 218,000 people and approximately 96,500 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and residential buildings than the 'do nothing' scenario and is therefore considered to be beneficial.
	Air Quality	Initial Options Appraisal: Qualitative	baseline conditions. The majority of the extant procedure involves overflight above 1,000ft, other than the areas in the immediate vicinity of the Departure End of Runway. In terms of AQMAs, the existing Runway 05L POL SID overflies frour AQMAs. Overflight of these AQMAs occurs when the aircraft is above 1,000ft.	overflies four AQMAs. Overflight of these AQMAs occurs when the aircraft is above 1,000ft.	due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be of dis-benefit as it overflies more AQMAs.	is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be of dis-benefit as it overflies more AQMAs.	due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be of dis-benefit as it overflies more AQMAs.	vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be of dis-benefit as it overflies more AQMAs.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	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 CAP1616 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 in Stage 2, track mileage is used, based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing 'do nothing' scenario, the track length is 22.90km	compared to proposed options. Within Stage 2 of the CAP1616 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 in Stage 2, track mileage is used, based on the theory	Option 1 L has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 1 L is 40.10km (21.65nm). When compared to the 'do nothing' scenario, Option 1 L is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More in-depth analysis will take place at Stage 3, to confirm the exact volumes of greenhouse gases released.	Option 1 R has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 1 R is 41.81km (22.57nm). When compared to the 'do nothing' scenario, Option 1 R is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More in-depth analysis will take place at Stage 3, to confirm the exact volumes of greenhouse gases released.	Option 4 L has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 4L is 39.31km (21.22nm). When compared to the 'do nothing' scenario, Option 4 L is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More in-depth analysis will take place at Stage 3, to confirm the exact volumes of greenhouse gases released.	
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	capacity; however, due to the reliance upon ground- based navigational aids, resilience could be significantly affected, following the removal of the	Maintaining extant procedures would maintain current capacity, however, due to the reliance upon ground-based navigational aids, resilience could be significantly affected, following the removal of the DVOR 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 through the introduction of PBN.	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 through the introduction of PBN.	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 through the introduction of PBN.	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 through the introduction of PBN.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP1616, 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. No additional specific areas were identified by community engagement. The 'do nothing' scenario does not overfly any AONBs or National Parks.	As per CAP1616, 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. No additional specific areas were identified by community engagement. The 'do nothing' scenario does not overfly any AONBs or National Parks.	This option overflies no statutorily identified tranquillity receptors (AONBS or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as equal/neutral.	This option overflies no statutorily identified tranquillity receptors (AONBS or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as equal/neutral.	This option overflies no statutorily identified tranquillity receptors (AONBs or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as equal/neutral.	This option overflies no statutorily identified tranquillity receptors (AONBS or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as equal/neutral.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIG Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage	of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and ARMASAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000°L. Furthermore, CAP1616, Appendix B, para B80, states	local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para 880, states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.		The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN 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. Any General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under extant operational arrangements.	No change to existing airspace arrangements. Any General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under extant operational arrangements.	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace dassification requirements will be reviewed as part of Stage 3 activities.	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace dassification requirements will be reviewed as part of Stage 3 activities.	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.
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.	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines.	The introduction of 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	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	The introduction of 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	The introduction of 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.

			'DO NOTHII	NG' BASELINE	ОРТ	ION 1	ОРТІ	ON 4
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	enable continuous climb operations. Within Stage 2 of the CAP1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn analysis. This will be covered in Stage 3. In order to make a comparison in Stage 2, track mileage is used, based on the theory that the	The existing MAN procedures for departures do not enable continuous climb operations. Within Stage 2 of the CAP1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn analysis. This will be covered in Stage 3. In order to make a comparison in Stage 2, track mileage is used, based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing 'do nothing' scenario, the track length is 27.85km (15.04nm).	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 40.10km (21.65nm) long. When compared to the 'do nothing' scenario, Option 1 L is longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore,	Option 1 R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP45cl porcess 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 41.81km (22.57mm) long. When compared to the 'do nothing' scenario, Option 1 R is longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.		amount of fuel burnt. There is no requirement within Stage 2 of the
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	Standard training would be applicable for existing procedures which would be practised by crews through existing simulator exercises.	Standard training would be applicable for existing procedures which would be practised by crews through existing simulator exercises.	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	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	associated with maintaining legacy systems to	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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at MAN to maintain extant conventional procedures; however, maintaining accessibility to current ground-based equipment (operated by NERL) may become prohibitively expensive should a CAP1781 RNAV substitution not be implemented prior to the proposed removal date.	No additional infrastructure is required at MAN to maintain extant conventional procedures; however, maintaining accessibility to current ground-based equipment (operated by NERL) may become prohibitively expensive should a CAP1781 RNAV substitution not be implemented prior to the proposed removal date.		There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	No change to operational costs is attributable to maintaining the extant procedures.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No deployment costs applicable to extant procedures.	No deployment costs applicable to extant procedures.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	conventional procedures. Following the removal of ground-based navigational aids supporting the existing	conventional procedures. Following the removal of	This is an extant hazard. In addition, it was identified that the options within this envelope may conflict with Leeds Bradford IFPs and potentially with aircraft operating on the L975 Lower ATS route, both	This is an extant hazard. In addition, it was identified that the options within this envelope may conflict with Leeds Bradford IFPs and potentially with aircraft operating on the L975 Lower ATS route, both of which can be mitigated through the design process. Furthermore, there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of separation. Again, this can be mitigated through the design process or procedurally if required. Further assessment will be conducted at	extant hazard. In addition, it was identified that the options within this envelope may conflict with Leeds Bradford IFPs and potentially with aircraft operating on the 1975 Lower ATS route, both of which can be mitigated through the design process. Furthermore, there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of separation. Again, this can be mitigated through the design process or procedurally if required.	Firstly, aircraft executing a MAP may conflict with aircraft on the SID. This is an extant hazard. In addition, it was identified that the options within this envelope may conflict with Leeds Bradford IFPs and potentially with aircraft operating on the L975 Lower ATS route, both of which can be mitigated through the design process. Furthermore, there is the potential for faster aircraft to catch up with slower aircraft
		Summary of Analys	viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the DVOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not enable continuous climb operations to 7,000ft, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Trangullity, Biodiversity, General Aviation 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 MAN operations are safe. Following the removal of the	viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the DVOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing SIDs do not enable continuous climb operations to 7,000ft, which leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, General Aviation 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	emissions and Fuel burn. - equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some routes operated by other routes/nearby airports have been identified, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this. Furthermore, this option has been assessed as in isolation rather than as a set of design options as part of a wider system/runway pair. 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 L has been deemed the Preferred option (within this design envelope), as it overflies the	When compared to the 'do nothing scenario', Option 1 R performs: - worse in terms of Air Quality, Greenhouse gas emissions and Fuel burn better in terms of Noise impact, Capacity and resilience, and Economic impact from increased effective capacity equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some routes operated by other routes/nearby airports have been identified, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this. Furthermore, this option has been assessed as in isolation rather than as a set of design options as part of a wider system/rumway pair. 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 R has been deemed the Preferred option (within this design envelope), as it overflies the fewest population when compared to other routes (originating from the same runway direction) within the same design envelope.	change when compared to today's operation.	other routes/nearby airports have been identified, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this. Furthermore, this option has been assessed as in isolation rather than as a set of design options as part of a wider system/rumay pair. 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 R has been deemed as Favourable, as it overflies the second fewest population when

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Departure Envelo		I	'DO NOTH	ING' BASELINE		NON1	This is no DMANUT	TION 4		TION 5	Of This is no DNAM and the second of	TION 6	O This is no DNAM poster what and	PTION 7	OPTII	ION 8
				o for departures in terms of today's operation is based othing' scenario for departures consists of a modal track tation of what occurs today. In addition to the modal	Option 1 is an RNAV1 replication of the current DESIG 15/12 SID and As a replicated route it follows a similar track over the ground as the a runway heading in a straight line to 7,000ft. This takes it overhead	uses my-over waypoints. current published route. After departure this takes it straight ahead o Stockport and Hyde, and to the north of Glocons and it terminates.	This is an RNAV1 option to provide an initial route identical to the en in joining point to the east. This has been done to align with current of in line with the NATS network traffic flow.	posing ubsits SID, but with an earlier turn towards the network operational practice and routes it to the southern edge of route L975	This is an RNAV1 option which provides an initial 15" track adjustment (parallel to the existing SID) before turning east north-east of Glosso, noise for communities on the extended runway centreline that are all	t from the runway heading before correcting back to the runway headin and Hadfield. This track adjustment is intended to reduce the impact of to impacted by Runway 23 arrivals.	mms is an KNAVZ option to provide an initial route identical to the expoint to the east. This has been done to align with current operation the NATS network traffic flow.	surg DESTO SID, but with an earlier turn towards the network joining all practice and routes it to the southern edge of route L975 in line with	to the east, taking account of the constraints created by the base of it has a similar profile to options 4 and 6 event aircraft make the fit.	el efficient) route to the network joining point by using the earliest turn if controlled airspace. irst right turn just north of Stockport to route to the network joining	This is an RNAV1 option created to provide a 45" track divergence from separation to align with the Design Principle Capacity. This one-minute on other options within this design envelope all of which will all require	e separation between north and eastbound departures is not possible
			rack, a polygon has also been created that represents radar vectoring and potentially may affect people on ti	an area where current operations are dispersed due to he ground. The overflight analysis conducted on this SID	south-west of Holmfirth.	fore, the maximum speed of 250 KIAS below FL100 would apply. This	The design speed will permit many aircraft to fly this route in a clea benefits in terms of noise.	n configuration (without the use of flaps) which has potential	This 15" initial track adjustment from the extended centreline is to a on Runway OSL and 8.5nm for Runway OSR.	width of 2.25nm parallel to the centreline. It extends to 9nm from the Di	ER This option has a similar profile to option 4 but the right turn takes p The design speed will permit many aircraft to fly this route in a clean	lace approximately 2.5nm earlier.	point. The position of this first turn is dictated by the dimensions of turn and a direct route from an earlier point.	f the controlled airspace to the east of Glossop which do not permit a	In line with CAP493 Manual of Air Traffic Services Pt1, the minimum de aircraft fly on tracks diverging by 45° or more immediately after take-of	leparture separation can be reduced to one minute provided that the off.
					design speed will permit many aircraft to fly this route in a clean con terms of noise.	figuration (without the use of flaps) which has potential benefits in	The route has been designed using fly-by waypoints. 05L: After departure this route combines with the option for 05R a	nd flies straight ahead overflying Stockport and the southern edge o	The rieden coped will normit a large number of aircraft to fly this must	e in a clean configuration (without the use of flaps) which has potential ick to fix coding.	terms of noise		terms of noise.	n configuration (without the use of flaps) which has potential benefits in	This right turn also has a benefit in reducing the impact of noise for cor	ommunities on the extended runway centreline that are impacted by d aligns to the CAP778 recommendation and may permit some aircraft
			performance data and is calculated based on the dista of the modal track.	nce between the Departure End of Runway and the end	Due to the track-to-fix coding and simplicity of the route, dispersion	is likely to be low even with maximum speeds.	just to the north and east of the Woodhead reservoir.	is a right turn to route north of Glossop and terminates at 7,000ft	of benefits in terms of noise, and the option has been designed using to OSL: After passing the DER this route has a 15" track adjustment to the south-west of Glossop where it combines with the option for 0	e right which routes it south of Stockport. This track continues until just SR returns to a runway heading. After overflying Glossop it makes a right	USL: After departure, this route combines with the option for USR at t Hyde. It routes to the west of Glossop at which point it makes a right	d flies straight ahead overflying Stockport and the southern edge of turn to the east to the north of Glossop and terminates at 7,000ft	The route has been designed using fly-by waypoints. 05L: After departure, this route combines with the option for 05R a	and flies straight ahead overflying Stockport. Upon reaching Bredbury the	to fly this route in a clean configuration (without the use of flaps) which	ch has potential benefits in terms of noise.
							Hyde. It routes to the north-west of Glossop at which point it make						05R: After departure, this route combines with the option for 05L a	ind flies straight ahead overflying Stockport. Upon reaching Bredbury thi	This option has a right turn no earlier than Inm from DER, which is in a The route has been designed as an RNAVI route using fly-over and fly-b DSL: After departure, this route makes a 45° turn to the right at 1 nm fr	from the DER and combines with the option for OSR. This routes it
							just to the north and east of the Woodhead reservoir. There would be no speed restrictions applied to the procedure; the	refore, the maximum speed of 250 KIAS below FL100 would apply.	to the south-west of Glossop where it combines with the option for 0 right turn to the east and terminates at 7,000ft just east of the Woo	5L and returns to a runway heading. After overflying Glossop it makes a head reservoir.	Hyde. It routes to the west of Glossop at which point it makes a righ overhead the Woodhead reservoir.	turn to the east to the north of Glossop and terminates at 7,000ft	route turns right to route south of Hyde and routes direct to the ea There would be no speed restrictions applied to the procedure; the	st to terminates at 7,000ft to the east of the Woodhead reservoir. refore, the maximum speed of 250 KIAS below FL100 would apply.	overhead Hazel Grove after which it makes a second turn to the left to a final right turn to the east and terminates at 7,000ft to the Woodhea	ad reservoir.
Ī									There would be no speed restrictions applied to the procedure; there the track-to-fix coding and simplicity of the route, dispersion is likely	fore, the maximum speed of 250 KIAS below FL100 would apply. Due to	There would be no speed restrictions applied to the procedure; then	fore, the maximum speed of 250 KIAS below FL100 would apply.		.,,	OSR After departure this route makes a 45° turn to the right at approxi This routes it overhead Hazel Grove after which it makes a second turn	simately 2.1nm from the DER and combines with the option for OSL. In to the left to route in a north-easterly direction. It overflies Glossop
															before making a final right turn to the east and terminates at 7,000ft to A speed restriction of 210 KIAS is applied to the first turn which is the C	to the Woodhead reservoir.
George	Impart	Level of Analysis	Runway OSL	Runway 05R	Barrier AV	Francis ASS	Runway 05L	Runway 05R	Runway 05L	Runway 05R	Remark 50	Roman DES	Down ISI	Roman SCB	Runway 05L	Russway 058
Communities	Noise impact on health and			For comparison purposes within the IOA, the 'do	In terms of potential noise impact, initial quantitative analysis has	In terms of potential noise impact, initial quantitative analysis has	In terms of potential noise impact, initial quantitative analysis has	In terms of potential noise impact, initial quantitative analysis	In terms of potential noise impact, initial quantitative analysis has	In terms of potential noise impact, initial quantitative analysis has					In terms of potential noise impact, initial quantitative analysis has	
	quality of life	Qualitative	nothing' scenario was based upon the existing DESIG SID. In terms of potential noise impact, initial	nothing' scenario was based upon the existing DESIG SID. In terms of potential noise impact, initial	identified that: - Up to 4,000ft, this option overflies approximately 58,200 people	identified that: - Up to 4,000ft, this option overflies approximately 65,000 people	identified that: - Up to 4,000ft, this option overflies approximately S8,200 people and approximately 27,950 residential buildings.	has identified that: - Up to 4,000ft, this option overflies approximately 65,000	identified that: - Up to 4,000ft, this option overflies approximately 34,900 people an	identified that: - Up to 4,000ft, this option overflies approximately 37,700 people	identified that: - Up to 4,000ft, this option overflies approximately 58,200 people	identified that: - Up to 4,000ft, this option overflies approximately 65,000 people	identified that: - Up to 4,000ft, this option overflies approximately 51,300 people	identified that: - Up to 4,000ft, this option overflies approximately 57,400 people	identified that: - Up to 4,000ft, this option overflies approximately 21,000 people	identified that: - Up to 4,000ft, this option overflies approximately 25,900 people
			quantitative analysis has identified that: Up to 4,000ft, this 'do nothing' scenario overflies	quantitative analysis has identified that: - Up to 4,000ft, this do nothing' scenario overflies approximately 59,900 people and approximately	and approximately 27,950 residential buildings Up to 7,000ft, this option overflies approximately 58,600 people	and approximately 31,800 residential buildings Up to 7,000ft, this option overflies approximately 65,700 people	- Up to 7,000ft, this option overflies approximately 58,200 people	people and approximately 31,800 residential buildings. - Up to 7,000ft, this option overfiles approximately 65,400 people and approximately 31,900 residential buildings.	approximately 16,200 residential buildings. - Up to 7,000ft, this option overflies approximately 49,500 people an	and approximately 16,750 residential buildings. Up to 7,000ft, this option overflies approximately 55,600 people	and approximately 28,000 residential buildings. - Up to 7,000ft, this option overflies approximately 60,900 people	and approximately 31,750 residential buildings. - Up to 7,000ft, this option overflies approximately 68,000 people	and approximately 26,650 residential buildings. - Up to 7,000ft, this option overflies approximately 63,900 people	and approximately 29,700 residential buildings Up to 7,000ft, this option overflies approximately 71,000 people	- Up to 7,000ft, this option overflies approximately 39.300 people	and approximately 11,500 residential buildings. - Up to 7,000ft, this option overflies approximately 44,100 people
				28,750 residential buildings Up to 7,000ft, this do nothing' scenario overfiles	Assessed up to 7,000ft, this option overflies fewer people and	and approximately 32,100 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and	and approximately 28,000 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and residential buildings than the 'do nothing' scenario and is therefore	Assessed up to 7,000ft, this option overflies fewer people and	approximately 22,950 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and residential buildings than the 'do nothing' scenario and is therefore	and approximately 24,850 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and	and approximately 29,500 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and residential buildings than the 'do nothing' scenario and is therefore	and approximately 33,550 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and	Assessed up to 7,000ft, this option overflies fewer people and	and approximately 36,450 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and residential buildings than the 'do nothing' scenario and is therefore	Assessed up to 7,000ft, this option overflies fewer people and	and approximately 20,300 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and residential buildings than the 'do nothing' scenario and is therefore
			approximately 104,500 people and approximately	approximately 145,600 people and approximately 71,250 residential buildings.	considered to be beneficial.	residential buildings than the 'do nothing' scenario and is therefore considered to be beneficial.	considered to be beneficial.	therefore considered to be beneficial.	considered to be beneficial.	considered to be beneficial.	considered to be beneficial.	considered to be beneficial.	considered to be beneficial.	considered to be beneficial.		considered to be beneficial.
			22,000 resourcian sortungs.	7.2.20 resources converge.												
Communities	Air Quality	Initial Options Appraisal:	No change to air quality is predicted in maintaining	No change to air quality is predicted in maintaining	Option 1 Loverflies three AQMAs; however, as per CAP1616, para	Option 1 R overflies three AQMAs; however, as per CAP1616, para	Option 4 L overflies three AQMAs; however, as per CAP1616, para	Option 4 R overflies three AQMAs; however, as per CAP1616,	Option 5 Loverflies one AQMA; however, as per CAP1616, para 874,	Option 5 R overflies one AQMA; however, as per CAP1616, para 874	4, Option 6 L overflies three AQMAs; however, as per CAP1616, para	Option 6 R overfiles three AQMAs; however, as per CAP1616, para	Option 7 L overflies three AQMAs; however, as per CAP1616, para	Option 7 R overflies three AQMAs; however, as per CAP1616, para	Option 8 Loverflies two AQMAs; however, as per CAP1616, para	Option 8 R overflies two AQMAs; however, as per CAP1616, para
			procedure involves overflight above 1,000ft, other than the areas in the immediate vicinity of the	procedure involves overflight above 1,000ft, other than the areas in the immediate vicinity of the	1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below	1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below	1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below	above 1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be	not likely to be significant. There are areas within the immediate vicin of the airport that may be overflown below 1,000ft; however, for safe	by is not likely to be significant. There are areas within the immediate by vicinity of the aircort that may be overflown below 1.000ft: however.	1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below	1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below	1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below	1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below	B74, due to mixing and dispersion, the impact on air quality above 1,000th is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1,000th; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is	1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below
			Departure End of Runway. n terms of AQMAs, the existing Runway OSL DESIG SIG	Departure End of Runway. On terms of AQMAs, the existing Runway OSR DESIG	1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is	1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is	 1,000ft; however, for safety reasons, this is unavoidable. Therefore overall, when compared to the 'do nothing' scenario, this option is 	 overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do 	reasons, this is unavoidable. Therefore, overall, when compared to the "do nothing" scenario, this option is deemed to be beneficial as it	for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be	1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is	1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is	 1,000ft; however, for safety reasons, this is unavoidable. Therefore overall, when compared to the 'do nothing' scenario, this option is 	 1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is 	1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is	1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is
			overflies three AQMAs. Overflight of these AQMAs occurs when the aircraft is above 1,000ft.	SID overflies three AQMAs. Overflight of these AQMAs occurs when the aircraft is above 1,000ft.	deemed to be equally beneficial as it overflies the same number of AOMAs.	deemed to be equally beneficial as it overflies the same number of AQMAs.	deemed to be equally beneficial as it overflies the same number of AQMAs.	nothing' scenario, this option is deemed to be equally beneficial as it overflies the same number of AQMAs.	overflies less AQMAs.	beneficial as it overflies less AQMAs.	deemed to be equally beneficial as it overflies the same number of AQMAs.	deemed to be equally beneficial as it overflies the same number of AQMAs.	deemed to be equally beneficial as it overflies the same number of AQMAs.	deemed to be equally beneficial as it overflies the same number of AQMAs.	deemed to be beneficial as it overflies less AQMAs.	deemed to be beneficial as it overflies less AQMAs.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	operations. It must be noted that the exact track	Current routes do not enable continuous climb operations. It must be noted that the exact track	Option 1 L has been designed to support continuous climb operations. An element of radar vectoring may still be required to	Option 1 R has been designed to support continuous climb operations. An element of radar vectoring may still be required to	Option 4 L has been designed to support continuous climb operations. An element of radar vectoring may still be required to	Option 4 R has been designed to support continuous climb operations. An element of radar vectoring may still be required to	Option 5 L has been designed to support continuous climb operation to An element of radar vectoring may still be required to manage aircral	Option 5 R has been designed to support continuous climb operations. An element of radar vectoring may still be required to	Option 6 L has been designed to support continuous climb operations. An element of radar vectoring may still be required to	Option 6 R has been designed to support continuous climb operations. An element of radar vectoring may still be required to	Option 7 L has been designed to support continuous climb operations. An element of radar vectoring may still be required to	Option 7 R has been designed to support continuous climb operations. An element of radar vectoring may still be required to	onerations. An element of radar vectoring may still be required to	Option 8 R has been designed to support continuous climb operations. An element of radar vectoring may still be required to
				length flown by aircraft may vary slightly due to the nature of radar vectoring. Existing procedures do not support optimal aircraft performance and therefore	manage aircraft separation distances. The track mileage of Option 1 L is 42.58km (22.99nm). When	manage aircraft separation distances. The track mileage of Option 1 R is 44.29km (23.91nm). When	manage aircraft separation distances. The track mileage of Option 4 L is 39.61km (21.39nm). When	manage aircraft separation distances. The track mileage of Option 4 R is 41.32km (22.31nm). When	separation distances. The track mileage of Option 5 L is 38.38km (20.72nm). When compared to the compared to t	manage aircraft separation distances. The track mileage of Option 5 R is 40.07km (21.63nm). When	manage aircraft separation distances. The track mileage of Option 6 L is 38.84km (20.97nm). When	manage aircraft separation distances. The track mileage of Option 6 R is 40.54km (21.89nm). When	manage aircraft separation distances. The track mileage of Option 7 L is 38.80km (20.95nm). When	manage aircraft separation distances. The track mileage of Option 7 R is 40.51km (21.87nm). When	manage aircraft separation distances. The track mileage of Option 8 L is 40.65 km (21.95 km). When compared to the 'do nothing' scenario, Option 8 L is longer and is therefore expected to emit more greenhouse passe this option is deemed to be of dis-benefit. More in-depth analysis will take place at	manage aircraft separation distances. The track mileage of Option 8 R is 42.22km (22.80nm). When
			repport optimal arcraft performance and therefore are predicted to have a greater environmental impact	support optimal aircraft performance and therefore are predicted to have a greater environmental impact compared to proposed options	compered to the 'do nothing' scenario, Option 1 L is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of Gr. honofe. Many in death and it is a second to be of Gr. honofe.	compared to the 'oo nothing' scenario, Option 1 R is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of the boards. More in death and the control of the contr	compared to the 'do nothing' scenario, Option 4 L is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of 45 books 44 cm in doors.	compared to the 'do nothing' scenario, Option 4 R is longer and therefore expected to emit more greenhouse gases this option at ideamed to be of the books Attonio and the compared to the option of the books at the compared to the compar	is or use 'do nothing' scenario, Option 5 L is longer and is therefore is expected to emit more greenhouse gases this option is deemed to be fischenefit. More in death analysis of the second of th	compared to the 'do nothing' scenario, Option S R is longer and is of therefore expected to emit more greenhouse gases this option is deemed to be of 65 books. Advantage of Advantage and Advantage of	compared to the 'do nothing' scenario, Option 6 L is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of the boosts Many in deemed to be of the boosts Many in the boosts.	computed to the do nothing scenario, Option 6 R is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of 65- honefit Mary in deamed to be of 65- honefit Mary in deamed to be of 65-	therefore expected to emit more greenhouse gases this option is deemed to be of directors.	compared to the 'do nothing' scenario, Option 7 R is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of the bood?	tempered to the 'do nothing' scenario, Option 8 L is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of dis booods. Above 1- 4-25-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2	therefore expected to emit more greenhouse gases this option is
				compared to proposed options. Within Stage 2 of the CAP1616 process, there is no requirement for a change sponsor to conduct	Stage 3, to confirm the exact volumes of greenhouse gases released.	Stage 3, to confirm the exact volumes of greenhouse gases released	at deemed to be of dis-benefit. More in-depth analysis will take place f. Stage 3, to confirm the exact volumes of greenhouse gases release	d. place at Stage 3, to confirm the exact volumes of greenhouse gases released.	the exact volumes of greenhouse gases released.	Stage 3, to confirm the exact volumes of greenhouse gases released	Stage 3, to confirm the exact volumes of greenhouse gases released	Stage 3, to confirm the exact volumes of greenhouse gases released	Stage 3, to confirm the exact volumes of greenhouse gases releases	Stage 3, to confirm the exact volumes of greenhouse gases released.	deemed to be of dis-benefit. More in-depth analysis will take place at Stage 3, to confirm the exact volumes of greenhouse gases released.	Stage 3, to confirm the exact volumes of greenhouse gases released.
			quantitative fuel burn or emissions analysis; this will be covered in Stage 3. In order to make a comparison	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 in				-								
			Stage 2, track mileage is used, based on the theory that the shorter the track mileage, the less greenhouse	covered in Stage 3. In order to make a comparison in Stage 2, track mileage is used, based on the theory that the shorter the track mileage, the less greenhouse												
			gases are emitted. In the case of the existing 'do	gases are emitted. In the case of the existing 'do nothing' scenario, the track length is 27:19km												
			(14.39nm).	(14.68nm).												
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	Maintaining extant procedures would maintain curren capacity; however, due to the reliance upon ground-	t Maintaining extant procedures would maintain current capacity; however, due to the reliance upon ground-	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits b increasing airspace capacity which subsequently leads to more	y 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 groun	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more		The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more
			based navigational aids, resilience could be	based navigational aids, resilience could be	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based		ground). The reduction of the reliance on outdated ground based		predictable flight paths and fewer delays (both in air or on the groun and the reduction of the reliance on outdated ground based navigational aids will significantly increase operational resilience through the	 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. 	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	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	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	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	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	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based projectional side will circular projectional projectional projections.
			December 2022.	TOTAL IN DECEMBER 2022.	navigational aids will significantly increase operational resilience through the introduction of PBN.	navigational aids will significantly increase operational resilience through the introduction of PBN.	navigational aids will significantly increase operational resilience through the introduction of PBN.	navigational aids will significantly increase operational resilience through the introduction of PBN.	 aids will significantly increase operational resilience through the introduction of PBN. 	navigational aids will significantly increase operational resilience through the introduction of PBN.	navigational aids will significantly increase operational resilience through the introduction of PBN.	navigational aids will significantly increase operational resilience through the introduction of PBN.	navigational aids will significantly increase operational resilience through the introduction of PBN.	navigational aids will significantly increase operational resilience through the introduction of PBN.	navigational aids will significantly increase operational resilience through the introduction of PBN.	navigational aids will significantly increase operational resilience through the introduction of PBN.
Wider Society	Tranquility	Initial Options Appraisal:	As per CAP1616, Appendix B, para 876, change	As per CAP1616, Appendix 8, para 876, change	Option 1 Loverflies no AONBs and one National Park. When compared to the 'do nothing' scenario. Option 1 L is	Option 1 R overflies no AONBs and one National Park. When compared to the 'do nothing' scenario, Option 1 R is	Option 4 L overflies no AONBs and one National Park.	Option 4 R overflies no AONBs and one National Park.	Option 5 L overflies no AONBs and one National Park. When compared to the 'do nothing' scenario, Option 5 L is considere	Option 5 R overflies no AONBs and one National Park	Option 6 L overflies no AONBs and one National Park. When compared to the 'do nothine' scenario. Option 6 L is	Option 6 R overflies no AONBs and one National Park. When compared to the 'do nothing' scenario. Option 6 R is	Option 7 L overflies no AONBs and one National Park. When compared to the 'do nothing' scenario. Option 7 L is	Option 7 R overflies no AONBs and one National Park. When compared to the 'do nothine' scenario. Option 7 R is	Option 8 Loverflies no AONBs and one National Park. When compared to the 'do nothing' scenario. Option 8 Lis	Option 8 R overflies no AONBs and one National Park. When compared to the 'do nothing' scenario, Option 8 R is
		against the	specific reference to AONBs and National Parks only, inless other areas have been identified through	sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through	When compared to the 'do nothing' scenario, Option 1 L is considered to be equal/neutral as it overflies the same number of Tranquility receptors.	When compared to the 'do nothing' scenario, Option 1 R is considered to be equal/neutral as it overflies the same number of Tranquility receptors.	When compared to the "do nothing" scenario, Option 4 L is considered to be equal/neutral as it overflies the same number of Tranquility receptors.	When compared to the 'do nothing' scenario, Option 4 R is considered to be equal/neutral as it overflies the same number of Tranquility receptors.	When compared to the 'do nothing' scenario, Option 5 L is considere of to be equal/neutral as it overflies the same number of Tranquility receptors.	When compared to the 'do nothing' scenario, Option 5 R is considered to be equal/neutral as it overfiles the same number of Tranquility receptors.	When compared to the 'do nothing' scenario, Option 6 L is considered to be equal/neutral as it overflies the same number of Tranquility receptors.	When compared to the 'do nothing' scenario, Option 6 R is considered to be equal/neutral as it overflies the same number of Tranquility receptors.	When compared to the 'do nothing' scenario, Option 7 L is considered to be equal/neutral as it overflies the same number of Tranquility receptors.	When compared to the 'do nothing' scenario, Option 7 R is considered to be equal/neutral as it overflies the same number of Tranquility receptors.	When compared to the 'do nothing' scenario, Option 8 L is considered to be equal/neutral as it overflies the same number of Tranquillity receptors.	When compared to the 'do nothing' scenario, Option 8 R is considered to be equal/neutral as it overflies the same number of Tranquillity receptors.
			community engagement. No additional specific areas	community engagement. No additional specific areas were identified by community engagement.	Tranquitty receptors.	Instituting receptors.	manquinty receptors.	tranquinty receptors.	Neuptors.	manganicy receptors.	inanquinty receptors.	manquinty receptors.	Inauquincy receptors.	Hanquisty receptors.	Tranquitty receptors.	Tranquinty receptors.
			The 'do nothing' scenario does not overfly any AONBs	The 'do nothing' scenario does not overfly any AONBs but does overfly one National Park:												
Wirler Society	Rindwersity	Initial Options Appraisal:	The change sono sor has manned the designated Sites	The change connect has manned the decignated Sites	The change connour has manned the decignated Sites of Special	The rhance connour has manned the designated Sites of Special	The rhance connour has manned the decignated Stes of Special	The change conneces has manned the decignated Sites of Special	The rhange connour has manned the decimated Stee of Special	The change connour has manned the decignated Sites of Special	The rhange connour has manned the decignated Stee of Special	The rhance connect has manned the designated Sites of Special	The rhange connect has manned the designated Sites of Special	The rhange connocr has manned the designated Sites of Special	The rhange connour has manned the decignated Sites of Special	The change connoce has manned the designated Sites of Special
,		Qualitative	of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and	of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on th	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on	ial Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Area of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA	as Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Consenuation (SACs) and RAMSAR sites, as identified on the	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the
			RAMSAR sites, as identified on the DEFRA MAGIC Map CAP1616, Appendix B, para B74, states that because	RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para 874, states that because	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact or	DEFRA MAGIC Map. CAP1616, Appendix B, para 874, states that because of dispersion and mixing, there is unlikely to be an impact of	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that on because of dispersion and mixing, there is unlikely to be an impact:	the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states on that because of dispersion and mixing, there is unlikely to be an	MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact of	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that on because of dispersion and mixing, there is unlikely to be an impact o	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact o	DEFRA MAGIC Map. CAP1616, Appendix B, para 874, states that because of dispersion and mixing, there is unlikely to be an impact of	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact or	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616,	DEFRA MAGIC Map. CAP1616, Appendix B, para 874, states that because of dispersion and mixing, there is unlikely to be an impact on
			mpact on local air quality from aircraft above 1,000ft.	of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft.	local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change	local air quality from aircraft above 1,000ft. Furthermore, CAP1616 Appendix B, para B80, states that in general, airspace change	 local air quality from aircraft above 1,000ft. Furthermore, CAP1616 Appendix B, para B80, states that in general, airspace change 	 impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in 	quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendi para 880, states that in general, airspace change proposal will not ha	r B, local air quality from aircraft above 1,000ft. Furthermore, CAP1616, we Appendix B, para B80, states that in general, airspace change	 local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para BBO, states that in general, airspace change 	local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change	local air quality from aircraft above 1,000ft. Furthermore, CAP1616 Appendix B, para B80, states that in general, airspace change	 local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para BB0, states that in general, airspace change 	local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change	local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change
				Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para 880, states that it general, aircpace change propozal will not have an impact on biodiversity as they do not involve ground-based infractructure. However, the change sponsor acknowledges that any potential impact to the designated sites	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor
			an impact on biodiversity as they do not involve ground-based infrastructure. However, the change			around MAN will be assessed in Stage 3 of the ALP process by	around MAN will be assessed in Stage 3 of the ALP process by		potential impact to the designated sites around MAN will be assessed Stage 3 of the ACP process by Subject Matter Experts.	around MAN will be assessed in Stage 3 of the ALP process by	around MAN will be assessed in Stage 5 of the ALP process by	around MAN will be assessed in Stage 3 of the ACP process by	around MAN will be assessed in Stage 3 of the ALP process by	around MAN will be assessed in Stage 5 of the ALP process by	around MAN will be assessed in Stage 3 of the ALP process by	around MAN will be assessed in Stage 3 of the ALP process by
				e sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP nances by Subject Matter Experts	Subject Matter Experts.	Subject Matter Experts.	Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts.		Subject Matter Experts.	Subject Matter Experts.	Subject Matter Experts.	Subject Matter Experts.	Subject Matter Experts.	Subject Matter Experts.	Subject Matter Experts.
			3 of the ACP process by Subject Matter Experts.	3 of the ACP process by Subject Matter Experts.												
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. Any	No change to existing airspace arrangements. Any General Aviation users of airspace in the vicinity of	No adverse impact to General Aviation access is anticipated as a consequence of this ΔCP. All Visual Reference Points and evicting	No adverse impact to General Aviation access is anticipated as a consumerce of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consumence of this ACP. All Visual Reference Points and evicting	No adverse impact to General Aviation access is anticipated as a reseasuence of this ACP All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a resonance of this ACP. All Visual Reference Points and eviating.	No adverse impact to General Aviation access is anticipated as a consequence of this ACP All Visual Reference Prints and evicting	No adverse impact to General Aviation access is anticipated as a consumere of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and evicting	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this &CP - All Visual Reference Points and evicting	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a
		Quantarive	MAN will maintain their current level of access under extant operational arrangements.	MAN will maintain their current level of access under	Letters of Agreement pertaining to General Aviation access will be	Letters of Agreement pertaining to General Aviation access will be	Letters of Agreement pertaining to General Aviation access will be no reviewed and updated (where applicable) prior to implementation	Letters of Agreement pertaining to General Aviation access will	Letters of Agreement pertaining to General Aviation access will be	Letters of Agreement pertaining to General Aviation access will be	Letters of Agreement pertaining to General Aviation access will be	Letters of Agreement pertaining to General Aviation access will be	Letters of Agreement pertaining to General Aviation access will be	Letters of Agreement pertaining to General Aviation access will be	Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to	Letters of Agreement pertaining to General Aviation access will be
					ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	ensure their continued validity. Airspace classification requirement will be reviewed as part of Stage 3 activities.	s implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3	ensure their continued validity. Airspace classification requirements be reviewed as part of Stage 3 activities.	 eiii ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities. 	ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	s ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.
								activities.								
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	No increase to effective capacity anticipated for continued use of extant procedures, therefore no			g The introduction of PBN is expected to deliver benefits by increasin airspace capacity which in turn will lead to more predictable flight	incontring piercore expectity which in turn will lead to more	nimence connects which is turn will lend to more emdictable flight on	the interests expectly which in turn will lead to more productable flight	nicrones connects which is turn will load to more prodictable flight	nicrones conneits which is turn will load to man predictable flight	nimono canacity which in turn will lead to more predictable flight	nimence conneits which is turn will lead to more prodictable flight	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight	nicenne conneits which is turn will load to more productable flight
			aconomic benefit for GA/airlines.	economic benefit for GA/airlines.	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing th	predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by	and fewer delays (both in the air or on the ground). This is expected t facilitate economic benefit by potentially increasing the frequency of	paths and fewer delays (both in the air or on the ground). This is air expected to facilitate economic benefit by potentially increasing the	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the
					frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	potentially increasing the frequency of air transport movements increasing passenger numbers and increasing cargo tonnage	 transport movements, increasing passenger numbers and increasing cargo tonnage carried. 	numbers and increasing cargo tonnage carried.	frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	numbers and increasing cargo tonnage carried.	frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.		frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.
General Aviation /	Fuel burn	Initial Options Appraisal:	The existing MAN emcedures for deposituoes do not	The existing MAN procedures for departures do not	Option 1.1 cusports continuous climb approximas anducing the	Option 1 9 currents continuous climb apportions anducing the	Outloo & Louissouth continuous climb operations conducton the	Cathers & B connects continuous climb constitues anducing the	Dation E.I. cusposity continuous climb assertions; mulusian the outer		Dation E.I. cusports continuous climb operations anduring the	Option 5.9 curporty continuous clieth apportions, adjusted the	Option 21 curporty continuous climb appretions reducing the	Option 7.9 cupports continuous climb apportions andusing the	Option 9.1 runnants continuous climb apportions, enducine the	Dation 9 9 connects continuous clash approximate reducing the
commercial airlines	T GET GETT	Qualitative	enable continuous climb operations. Althin Stage 2 of the CAP1616 noncess there is no	enable continuous climb operations. Within Stage 2 of the CAP1616 process, there is no	overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1516 nonces to quantify fuel burn, this will be conducted.	overall amount of fuel burnt. There is no requirement within Stage of the CAP1616 innerestin quantity fuel burn this will be conducted.	overall amount of fuel burnt. There is no requirement within Stage of the CAPISTS nonces to quantify fuel burn this will be conducted.	2 overall amount of fuel burnt. There is no requirement within strate 2 of the CAP1616 repress to quantify fuel burnt this will be	opening a support of fuel burnt. There is no requirement within Stage 2 of the CAP1616 innoces to quantify fuel hum this will be conducted in Stage.	overall amount of fuel burnt. There is no requirement within Stage : of the CAPISTS monest to maintifulal burn this will be conducted.	overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 noncess to quantify fuel burn this will be conducted	overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 inneces to manifold fuel burn this will be conducted.	overall amount of fuel burnt. There is no requirement within Stage of the CAP1616 innoves to quantify fuel burn this will be conducte.	2 overall amount of fuel burnt. There is no requirement within Stage 2 of the CAPISIS monoscs to quantify fuel burn this will be conducted	Option 8 L supports continuous climb operations, 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	overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 represent ourself fuel hum this will be conducted
			requirement for a change sponsor to conduct	requirement for a change sponsor to conduct quantitative fuel burn analysis. This will be covered in	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	in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With reparts	in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regard	conducted in Stage 3. Therefore, to enable a comparison, the is losic applied is that the shorter the track length, the less fuel is	 Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regards to this 	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	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	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	in Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regard	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	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	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
			Stage 3. In order to make a comparison in Stage 2, crack mileage is used, based on the theory that the	Stage 3. In order to make a comparison in Stage 2, track mileage is used, based on the theory that the											to this option, it is 40.65km (21.95nm) long. When compared to the 'do nothing' scenario, Option 8 L is longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore,	
			are emitted. In the case of the existing 'do nothing'	shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing 'do nothing'	assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More	assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. Mor	assumed that it will require a larger amount of fuel burn, therefore this option is deemed to be of dis-benefit in terms of fuel burn. Mo	and at this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit	that it will require a larger amount of fuel burn, therefore, this option to deemed to be of dis-benefit in terms of fuel burn. More in-depth	is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. Mor	assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More	assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More	this option is deemed to be of dis-benefit in terms of fuel burn. Mor	assumed that it will require a larger amount of fuel burn, therefore, re this option is deemed to be of dis-benefit in terms of fuel burn. More	assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More
			scenario the track length is 26.66km (14.39nm).	scenario, the track length is 27.19km (14.68nm).	m-oupth analysis will be carried out in Stage 3 to confirm.	m-owptn analysis will be carried out in Stage 3 to confirm.	m-depth analysis will be carried out in Stage 3 to confirm.	in terms of fuel burn. More in-depth analysis will be carried out Stage 3 to confirm.	m emolysis will be carried out in Stage 3 to confirm.	in-depth analysis will be carried out in Stage 3 to confirm.	in-depth analysis will be carried out in Stage 3 to confirm.	in-depth analysis will be carried out in Stage 3 to confirm.	in-depth analysis will be carried out in Stage 3 to confirm.	m-depth analysis will be carried out in Stage 3 to confirm.	m-ouptn analysis will be carried out in Stage 3 to confirm.	m-usptn analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	procedures which would be practised by crews	Standard training would be applicable for existing procedures which would be practised by crews	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	it is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	t is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has	or it is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	it is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a
Compressed	Other cover	Initial Ontions Assessing	through existing simulator exercises.	through existing simulator exercises. It is not proportionate for MAN to access potential	Other carte to commercial sidings may include undates to Elight	Other costs to commercial sidings may include undates to Elight	Other costs to commercial sidinar may include undates to Diebs	Other costs to commercial sidings are include undates to Clinta	Phor costs to communicat sidings may include undestar to Elight	Other costs to commercial sidings are include undates to Eligible	Other contribe commercial hidson may include and ther to Elight	Other costs to commercial siding may include undates to Eliabet	Other costs to commercial sidings may include undates to Elight	Other contributions and include undates to Elight	Other costs to commercial sidings may include undates to Elight	Other contr. to common in hidians may include undates to Elight
Commercial airlines	- Cont	Initial Options Appraisal: Qualitative		It is not proportionate for MAN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to	Management Systems (FMS), navigation databases and operating procedures, increased pilot him costs were training at a life and	Management Systems (FMS), navigation databases and operating procedures, increased plint hire note version training at a 17	Management Systems (FMS), navigation databases and operating orocedures, increased wint him costs were training at a firm	Management Systems (FMS), navigation databases and operating procedures increased whet him now to be a second as a second procedure.	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire noto were training at it is an a	Management Systems (FMS), navigation databases and operating procedures, increased nilnt him nocts were training at a 1-1-1-1	Management Systems (FMS), navigation databases and operating onocedures, increased plint hire noct versus training set. In 1	Management Systems (FMS), navigation databases and operating procedures, increased pilot him code were training at it is in-	Management Systems (FMS), navigation databases and operating procedures, increased plint him costs were training at a 1-1-1-1	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	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 MAN to assess the 'other costs' to commercial	Management Systems (FMS), navigation databases and operating procedures, increased pilot him nects secure training at the nects secu
			continue flying conventional navigation but there are too many variables (e.g. aircraft types. on-board	costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many variables (e.g. aircraft types, on-board	procedures, increased prior hire costs versus training etc. It is not proportionate for MAN to assess the other costs to commercial airlines of flying PBN procedures.	procedures, increased prot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	operating procedures, increased piot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased pilot firre costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airli of flying PBN procedures.	procedures, increased pilot fine costs versus training etc. It is not nes proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased profit fire costs versus training etc. it is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased prot fire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased prot fire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.
				system capability etc.) to consider these effectively.												
Airport / Air navigation service	Infrastructure costs	Initial Options Appraisal: Qualitative	maintain extant conventional procedures; however,	No additional infrastructure is required at MAN to maintain extant conventional procedures; however,	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure.	There are no expected additional infrastructure costs. All option relate to the implementation of PBN and no additional	ns There are no expected additional infrastructure costs. All options rel to the implementation of PBN and no additional infrastructure is	the There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructu	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN reduces the reliance on ground	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure
provider			equipment (operated by NERL) may become	maintaining accessibility to current ground-based equipment (operated by NERL) may become prohibitively expensive should a CAP1781 RNAV	is required as the introduction of PBN reduces the reliance on groun infrastructure, in particular ground-based navigation aids are no longer needed.	d is required as the introduction of PBN reduces the reliance on groun infrastructure, in particular ground-based navigation aids are no longer needed.	nd is required as the introduction of PBN reduces the reliance on grou infrastructure, in particular ground-based navigation aids are no longer needed.	and infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	 infrastructure, in particular ground-based navigation aids are no long needed 	is required as the introduction of PBN reduces the reliance on groun er infrastructure, in particular ground-based navigation aids are no longer needed.	nd is required as the introduction of PBN reduces the reliance on groun infrastructure, in particular ground-based navigation aids are no longer needed.	d is required as the introduction of PBN reduces the reliance on groun infrastructure, in particular ground-based navigation aids are no longer needed.	s is required as the introduction of PBN reduces the reliance on grou infrastructure, in particular ground-based navigation aids are no longer needed.	nd is required as the introduction of PBN reduces the reliance on groun infrastructure, in particular ground-based navigation aids are no longer needed.	is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed	infrastructure, in particular ground-based navigation aids are no
				from bit wery expensive should a CAP1781 KNAV substitution not be implemented prior to the proposed removal date.				- Janes and a second							- gr. requirem	
Airport / Air	Operational costs	Initial Options Appraisal:	No change to operational costs is attributable to	No change to operational costs is attributable to	ATC at MAN is contracted out to a third-party proposication. Thir	ATC at MAN is contracted out to a third-party organication. This	ATC at MAN is contracted out to a third-party resonication. Thir	ATC at MAN is contracted out to a third-party neganication. This	ATC at MAN is contracted out to a third-party retranscation. This main	ing ATC at MAN is contracted out to a third-party reconication. Thir	ATC at MAN is contracted out to a third-party reparkation. Thir	ATC at MAN is contracted out to a third-party overanication. Thir	ATC at MAN is contracted out to a third-party presencation. This	ATC at MAN is contracted out to a third-party neganication. Thir	ATC at MAN is contracted out to a third-party organization. Thir	ATC at MAN is contracted out to a third-party organization. This
navigation service provider		Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	maintaining the extant procedures.	existing commercial contract between MAN and their chosen ANSP i considered to be an ongoing cost. Some operational costs are	existing commercial contract between MAN and their chosen ANSP considered to be an ongoing cost. Some operational costs are	is existing commercial contract between MAN and their chosen ANSI considered to be an ongoing cost. Some operational costs are	P is existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational	commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are	existing commercial contract between MAN and their chosen ANSP considered to be an ongoing cost. Some operational costs are	is existing commercial contract between MAN and their chosen ANSP considered to be an ongoing cost. Some operational costs are	existing commercial contract between MAN and their chosen ANSP considered to be an ongoing cost. Some operational costs are	existing commercial contract between MAN and their chosen ANSP considered to be an ongoing cost. Some operational costs are	is existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are
					anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at	anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at	anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at	costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot b	anticipated with respect to the implementation of new procedures a be training of controllers; however, these cannot be identified at this sta	d anticipated with respect to the implementation of new procedures ge and training of controllers; however, these cannot be identified at	anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at	anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at	anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at	anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at	anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at
					this stage of the ALP process.	this stage of the ALP process.	this stage of the ALP process.	identined at this stage of the ALP process.	of the ALP process.	this stage of the ALP process.	this stage of the ALP process.	this stage of the ALP process.	this stage of the ACP process.	this stage of the ALP process.	this stage of the ALP process.	this stage of the ALP process.
Airport / Air navigation service	Deployment costs	Initial Options Appraisal: Qualitative	no deployment costs applicable to extant procedures.	No deployment costs applicable to extant procedures.	A IC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSI	A+C at MAN is contracted out to a third-party organisation. This P is existing commercial contract between MAN and their chosen	A IC at MAN is contracted out to a third-party organisation. This exist commercial contract between MAN and their chosen ANSP is	ing IAIC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP	ArC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP	A.I.C. at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP	A IC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is	A IC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is
provider					considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures	ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures a	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures
					and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	procedures and training of controllers; however, these cannot b identified at this stage of the ACP process.	training of controllers; however, these cannot be identified at this sta of the ACP process.	ge and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.
Safety Assessment	Safety Assessment	Initial Options Appraisal:	The 'do nothing' scenario assumes that current	The 'do nothing' scenario assumes that current	Possible hazards have been identified, some of which are extant. Firstly aircraft everyting a MAP may conflict with aircraft on the SID.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant	t. Possible hazards have been identified, some of which are extant. First	ly, Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant. Firstly aircraft everytime a MAP may conflict with aircraft on the SID.	Possible hazards have been identified, some of which are extant.
			conventional procedures. Following the removal of ground-based navigational aids supporting the	operations at MAN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing	This is an extant hazard. In addition, it was identified that the option within this envelope may conflict with on the LOTE Lawre AT	This is an extant hazard. In addition, it was identified that the option within this envelope may conflict with on the LATE LAND APP.	This is an extant hazard. In addition, it was identified that the option within this envelope may conflict with ne the 1975 I name (TT)	ons SID. This is an extant hazard. In addition, it was identified that the options within this environment was remarked with an extant hazard.	extant hazard. In addition, it was identified that the options within the envelope may conflict with on the 1975 I proof ATS counts and the conflict with on the 1975 I proof ATS counts and the conflict with on the 1975 I proof ATS counts and the conflict with on the 1975 I proof ATS counts and the conflict with on the 1975 I proof ATS counts and the conflict with on the 1975 I proof ATS counts and the conflict with on the 1975 I proof ATS counts and the conflict with the conf	This is an extant hazard. In addition, it was identified that the option within this envelope may conflict with no the 1975 I name Park	This is an extant hazard. In addition, it was identified that the option within this envelope may conflict with on the LOZE Lower ATT	This is an extant hazard. In addition, it was identified that the option within this envelope may conflict with on the 1976 I owner ATT	This is an extant hazard. In addition, it was identified that the option within this envelope may conflict with on the 1970 I came Park	This is an extant hazard. In addition, it was identified that the option within this envelope may conflict with on the LOZE Lower ATT	Firstly, aircraft executing a MAP may conflict with aircraft on the SID. This is an extant hazard. In addition, it was identified that the options within this envelope may conflict with on the 1975 Lower ATS route	This is an extant hazard. In addition, it was identified that the options within this envelope may conflict with on the 1975 I name ATC over-
			SIDs, aircraft departing MAN would continuously	SIDs, aircraft departing MAN would continuously	and there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a lock of	and there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a love of	and there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of	Lower ATS route and there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn—which	the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of constration. Both or	and there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a love of	and there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of	and there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of	and there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a love of	and there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of	within this envelope may conflict with on the L975 Lower ATS route and there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of	and there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of
			commercial agreement to maintain the existing navigational aid not be implemented), resulting in a	require radar vectoring (should CAP1781 or a commercial agreement to maintain the existing navigational aid not be implemented), resulting in a	separation. Both of which can be mitigated through the design process or procedurally if required. Furthermore, there is the	separation. Both of which can be mitigated through the design process or procedurally if required. Furthermore, there is the	separation. Both of which can be mitigated through the design process or procedurally if required. Furthermore, there is the	may lead to a loss of separation. Both of which can be mitigated through the design process or procedurally if required.	d which can be mitigated through the design process or procedurally if required. Furthermore, there is the potential for aircraft to 'drop out	separation. Both of which can be mitigated through the design of process or procedurally if required. Furthermore, there is the	separation. Both of which can be mitigated through the design process or procedurally if required. Furthermore, there is the	separation. Both of which can be mitigated through the design process or procedurally if required. Furthermore, there is the	separation. Both of which can be mitigated through the design process or procedurally if required. Furthermore, there is the	separation. Both of which can be mitigated through the design process or procedurally if required. Furthermore, there is the	separation. Both of which can be mitigated through the design process or procedurally if required. Furthermore, there is the	separation. Both of which can be mitigated through the design process or procedurally if required. Furthermore, there is the
			possible increase in ATCO workload.	possible increase in ATCO workload.	potential for aircraft to 'drop out' of CAS. The mitigation is to design the procedure to remain within CAS. Further assessment will be	potential for aircraft to 'drop out' of CAS. The mitigation is to design the procedure to remain within CAS. Further assessment will be	 potential for aircraft to 'drop out' of CAS. The mitigation is to desig the procedure to remain within CAS. Further assessment will be 	pn Furthermore, there is the potential for aircraft to 'drop out' of CAS. The mitigation is to design the procedure to remain within	CAS. The mitigation is to design the procedure to remain within CAS. Further assessment will be conducted at Stage 3 and 4 of the CAP16:	potential for aircraft to 'drop out' of CAS. The mitigation is to design 6 the procedure to remain within CAS. Further assessment will be	potential for aircraft to 'drop out' of CAS. The mitigation is to design the procedure to remain within CAS. Further assessment will be	potential for aircraft to 'drop out' of CAS. The mitigation is to design the procedure to remain within CAS. Further assessment will be	potential for aircraft to 'drop out' of CAS. The mitigation is to desig the procedure to remain within CAS. Further assessment will be	 potential for aircraft to "drop out" of CAS. The mitigation is to design the procedure to remain within CAS. Further assessment will be 	potential for aircraft to 'drop out' of CAS. The mitigation is to design the procedure to remain within CAS. Further assessment will be	potential for aircraft to 'drop out' of CAS. The mitigation is to design the procedure to remain within CAS. Further assessment will be
					conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	 CAS. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards 	process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.
								and mitigations.								
		Summary of Analysis				When compared to the 'do nothing' scenario, Option 1 R performs:				When compared to the 'do nothing' scenario, Option 5 R performs:	When compared to the 'do nothing' scenario, Option 6 L performs:			When compared to the 'do nothing' scenario, Option 7 R performs:		When compared to the 'do nothing' scenario, Option 8 R performs:
			solution in terms of airspace modernisation and is	viable option as it does not provide a sustainable solution in terms of airspace modernisation and is	worse in terms of Greenhouse gas emissions and Fuel burn. better in terms of noise impact, Capacity and resilience, and	worse in terms of Greenhouse gas emissions and Fuel burn. better in terms of noise impact, Capacity and resilience, and	worse in terms of Greenhouse gas emissions and Fuel burn. better in terms of noise impact, Capacity and resilience, and	performs: . worse in terms of Greenhouse ass emissions and Fuel hum	 worse in terms of Greenhouse gas emissions and Fuel burn. better in terms of air quality, noise impact, Capacity and resilience, 	 worse in terms of Greenhouse gas emissions and Fuel burn. better in terms of air quality, noise impact, Capacity and resilience. 		- worse in terms of Greenhouse gas emissions and Fuel burn better in terms of noise impact, Capacity and resilience, and	worse in terms of Greenhouse gas emissions and Fuel burn. better in terms of noise impact, Capacity and resilience, and	worse in terms of Greenhouse gas emissions and Fuel burn. better in terms of noise impact, Capacity and resilience, and	- worse in terms of Greenhouse gas emissions and Fuel burn. - better in terms of Air Quality, Noise impact, Capacity and resilience,	hetter in terms of Air Chality Noise impart Capacity and resilience
			anviable following the removal of the DVOR beacons in December 2022, which would have a significant impac	unviable following the removal of the DVOR beacons in t December 2022, which would have a significant impact	Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is no	Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is n	Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is n	better in terms of noise impact, Capacity and resilience, and Economic impact from increased effective capacity.	Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is no	and Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is n	Economic impact from increased effective capacity. o equal/neutral in terms of the remaining criteria because there is no	Economic impact from increased effective capacity equal/neutral in terms of the remaining criteria because there is no	Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is n	Economic impact from increased effective capacity. o equal/neutral in terms of the remaining criteria because there is no	and Economic impact from increased effective capacity equal/neutral in terms of the remaining criteria because there is no	and Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is no
			on capacity and resilience. The existing SIDs do not anable continuous climb operations to 7,000ft, which	on capacity and resilience. The existing SIDs do not enable continuous climb operations to 7,000ft, which	change when compared to today's operation. At this time, it is not possible to fully determine the safety	change when compared to today's operation. At this time, it is not possible to fully determine the safety	change when compared to today's operation. At this time, it is not possible to fully determine the safety	 equal/neutral in terms of the remaining criteria because there no change when compared to today's operation. 	is change when compared to today's operation. At this time, it is not possible to fully determine the safety implication	change when compared to today's operation.	change when compared to today's operation. At this time, it is not possible to fully determine the safety	change when compared to today's operation. At this time, it is not possible to fully determine the safety	change when compared to today's operation. At this time, it is not possible to fully determine the safety	change when compared to today's operation. At this time, it is not possible to fully determine the safety	change when compared to today's operation.	change when compared to today's operation. At this time, it is not possible to fully determine the safety
			noise at lower levels. In terms of Tranquillity, Biodiversity, General Aviation access and Scoopers	leads to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, General Aviation access and Economic			At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some routes operated by other routes/nearby airports have been	At this time, it is not possible to fully determine the safety implications of this specific option. Proceids conflicts with the	At this time, it is not possible to fully determine the safety implication of this specific option. Possible conflicts with some routes operated to other routes/nearby airports have been identified, but the exact nati	y implications of this specific option. Possible conflicts with some routes operated by other routes/nearly airnovin house house.	implications of this specific option. Possible conflicts with some routes operated by other routes (nearly airnosty from book	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some routes operated by other routes/nearby airports have been			implications of this specific option. Possible conflicts with some	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some routes operated by other routes/nearby airports have been
			moact, the 'do nothing' baseline provides minimal/no	impact, the 'do nothing' baseline provides minimal/no	identified, but the exact nature of these conflicts is unclear at this	identified, but the exact nature of these conflicts is unclear at this	identified, but the exact nature of these conflicts is unclear at this	routes operated by other routes/nearby airports have been	of these conflicts is unclear at this stage. Further analysis and	identified, but the exact nature of these conflicts is unclear at this	identified, but the exact nature of these conflicts is unclear at this	identified, but the exact nature of these conflicts is unclear at this	identified, but the exact nature of these conflicts is unclear at this	identified, but the exact nature of these conflicts is unclear at this	identified, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4	identified, but the exact nature of these conflicts is unclear at this
			DVORs, it is acknowledged that ATCO workload may	DVORs, it is acknowledged that ATCO workload may	required in Stage 3 to determine the cumulative impact of this optio	required in Stage 3 to determine the cumulative impact of this option	on required in Stage 3 to determine the cumulative impact of this opti		i, isolation rather than as a set of design options as part of a wider system/runway pair. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to a	required in Stage 3 to determine the cumulative impact of this option	on required in Stage 3 to determine the cumulative impact of this option	required in Stage 3 to determine the cumulative impact of this optio	required in Stage 3 to determine the cumulative impact of this opti	on required in Stage 3 to determine the cumulative impact of this optio	has been assessed as in isolation rather than as a set of design options as part of a wider system/runway pair. Additional analysis is required in Stage 3 to determine the cumulative impact of this option	required in Stage 3 to determine the cumulative impact of this option
			ncrease due to the enduring requirement for radar vectoring.	increase due to the enduring requirement for radar vectoring.	when compared to all the other options.	when compared to all the other options.	when compared to all the other options.	Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other	the other options.	when compared to all the other options.	when compared to all the other options.	when compared to all the other options.	when compared to all the other options.	when compared to all the other options.	when compared to all the other options.	when compared to all the other options.
					overflies a greater population when compared to other options	Based on performance in the IOA, Option 1 R has been rejected as it overflies a greater population when compared to other options	Acceptable, as it overflies the third fewest population when		Based on performance in the IOA, Option 5 L has been deemed as Favourable, as it overflies the second fewest population when compa		overflies a greater population when compared to other options	overflies a greater population when compared to other options	overflies a greater population when compared to other options		Preferred option (within this design envelope), as it overflies the	
					congeniting from the same runway direction) within the same design envelope.	(originating from the same runway direction) within the same desig envelope.	n compared to other routes (originating from the same runway direction) within the same design envelope.	as Acceptable, as it overflies the third fewest population when	to other routes (originating from the same runway direction) within t same design envelope.	the compared to other routes (originating from the same runway direction) within the same design envelope.	congritating from the same runway direction) within the same design envelope.	jungmating from the same runway direction) within the same design envelope.	jurgenating from the same runway direction) within the same desig envelope.	turnginating from the same runway direction) within the same design envelope.	fewest population when compared to other routes (originating from the same runway direction) within the same design envelope	fewest population when compared to other routes (originating from the same runway direction) within the same design envelope
								compared to other routes (originating from the same runway direction) within the same design envelope.								
					I	I .	I	1	I	1	I	I	I	I		

Departure Envelope: SID Runway 05 West

Departure Env	elope: SID Runway 0	5 West	For the west design envelope, the 'do nothing' scenario		This option is included to provide a RNAV1 replication of the existing of		This is an RNP1 that uses RF coding to provide a single initial turn to o			d on the position of the current turn to create a fuel-efficient route to		TION 7 o that of option 4B, but it uses an initial 15° track adjustment to the left
			that has been derived to provide an accurate represent track, a polygon has also been created that represents radar vectoring and potentially may affect people on the was based on the modal track created using Noise and with the addition of a radar vectoring area where approximations.	tation of what occurs today. In addition to the modal an area where current operations are dispersed due to be ground. The overflight analysis conducted on this SID Track Keeping data at altitudes of 4,000ft and 7,000ft opriate. All data is based on current aircraft performance	Cheadle at which point the routes combine. They then pass just to the a left turn just north of Irlam and route west to terminate at 7,000ft to A speed restriction of 185 KIAS is used for the first turn to replicate th	urrent route. After departure this involves a right turn to pass overhead west of Didsbury and overfly Stretford and Urmston. The routes make the north of Warrington at Earlestown. e existing 298° course to XOBRO, although this can be increased if it	design speed. Because of the turn positions used, the routes are separate for their element of dispersal. Oil: After departure this route turns left at the earliest PANS-OPS converteed Cheede and West Disblowy before completing the left turn west to route just north of Sale and terminates at 7,000ft north of W. OSS. After departure this route turns left at a point that is perpendic, takes it overhead Cheadle and West Disblowy before completing the confiness west to route just north of Sale and terminates at 7,000ft route of West Disblowy before completing the confiness west to route just north of Sale and terminates at 7,000ft route of West Disblowy before completing the confiness west to route just north of Sale and terminates at 7,000ft route.	ripliant position (Inm from DER). This is a single left turn that takes it heading in a westerly direction to the south of Choriton. It continues ringington where the two routes combine are with the turn point for the OSI, option. This is a single left turn that eff turn heading in westerly direction to the south of Choriton. It with of Warrington where the two routes combine. he smallest radius. Although PANS-OPS compliant it should be assessed of CAP1616.	the network joining point to the west. It is similar to option SA but is of use the route in a more aerodynamic configuration. The greater speed results in a wider track, which may aid vertical sepalager number of aircraft to fly this route in a clean configuration (with OSL: After departure this route makes a single left turn just after Chea urn is completed heading in a westerly direction overhead Old Traffor Stretford, Urmston and Irlam. It terminates at 7,000ft north of Warrin OSR: After departure this route makes a single left turn just after Chea turn is completed heading in a westerly direction overhead Old Traffor Stretford, Urmston and Irlam. It terminates at 7,000ft north of Warrin A speed restriction of 220 KIAS is used for the first turn which allows n	out the use of flapply which has potential benefits in terms of noise. Be which takes it east of Burnage and overhead Fallowidel. The left d where the routes combine and continue west to route north of gion to the east of Earlestown. Be which takes it east of Burnage and overhead Rusholme. The left d where the routes combine and continue west to route north of gion to the east of Earlestown.	the approach path for Runways 231/238 arrivals. After this track adjus- position to create a fuel-efficient route to the network joining point to 05±. After passing the DER aircraft make a 15* track adjustment to the position (1zm from DER). This is a single left turn that takes it to the vi- completing the left turn heading in a westerly direction to the south just north of 5al and terminates a 17* track adjustment to the 05£. After passing the DER aircraft make a 5* track adjustment to the 05£. This is a single left turn that takes it to the west dide of cheadle a westerly direction to the south of Chorthon where the two routes com 7,000ft north-west of Warrington.	e left (north) and then turn left at the earliest PANS-OPS compliant text side of Cheadin and then overhead west Diddsury before if Choriton where the two routes combine. It continues west to route left (north) and then turn left at a point that is abeam the turn point for ord the overhead Diddsury before completing the left turn heading in a bine. It continues west to route just north of Sale and terminates at the smallest radius. Although PANS-OPS compliant it should be assessed
Group	Impact Noise impact on health and	Level of Analysis	Runway 05L For comparison purposes within the IOA, the 'do	Runway 05R For comparison purposes within the IOA, the 'do	Runway 05L In terms of potential noise impact, initial quantitative analysis has	Runway 05R In terms of potential noise impact, initial quantitative analysis has	Runway 05L NOT ASSESSED	Runway 05R In terms of potential noise impact, initial quantitative analysis has	Runway 05L In terms of potential noise impact, initial quantitative analysis has	Runway 05R In terms of potential noise impact, initial quantitative analysis has	Runway 05L In terms of potential noise impact, initial quantitative analysis has	Runway 05R In terms of potential noise impact, initial quantitative analysis has
Communica	quality of life	Qualitative	nothing's scenario was based upon the existing ASMIM SID. In terms of potential noise impact, initial quantitative analysis has identified that: - upto 4,000ft, bits baseline overfiles approximately 72,000 people and approximately 33,900 residential buildings. - Up to 7,000ft, this 'do nothing' scenario overfiles approximately 421,000 people and approximately 108,900 residential buildings.	nothing' scenario was based upon the existing ASMIM SID. In terms of potential noise impact, initial quantitative analysis has identified that: - Up to 4,000ft, this baseline overfiles approximately	identified that:	Identified that: - Up to 4,000ft, this option overfiles approximately 63,000 people and approximately 29,050 residential buildings. - Up to 7,000ft, this option overfiles approximately 93,300 people and approximately 43,150 residential buildings. Assessed up to 7,000ft, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is therefore considered to be beneficial.		Identified that: - Up to 4,000°t, this option overfiles approximately 67,800 people and approximately 31,550 residential buildings. - Up to 7,000°t, this option overfiles approximately 140,200 people and approximately 64,750 residential buildings. - Assessed up to 7,000°t, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is therefore considered to be beneficial.	identified that:	identified that: - Up to 4,000ft, this option overfiles approximately 130,100 people and approximately 63,500 residential buildings Up to 7,000ft, this option overfiles approximately 187,000 people and sproximately 187,000 residential buildings Assessed up to 2,000ft, this option overfiles approximately 187,000 residential buildings Assessed up to 2,000ft, this option overfiles fewer people and recidential buildings than the 'do nothing' scenario and is therefore considered to be beneficial.	identified that:	Identified that: - Up to 4,000/t, this option overflies approximately 60,500 people and approximately 28,700 residential buildings Up to 7,000/t, this option overflies approximately 18,500 people and approximately 46,450 residential buildings Assessed up to 7,000/t, this option overflies approximately 64,500 people and approximately 64,550 residential buildings. Assessed up to 7,000/t, this option overflies fewer people and residential buildings than the "do nothing" scenario and is therefore considered to be beneficial.
Communities	Air Quality	Initial Options Appraisal: Qualitative	the areas in the immediate vicinity of the Departure End of Runway. In terms of AQMAs, the existing Runway 05L ASMIM	No change to air quality is predicted in maintaining baseline conditions. The majority of the extant procedure involves overflight above, 1,000th, other than the areas in the immediate vicinity of the Departure End of Rumswall Shanks, the existing Rumsway OSR ASMMA SID overflies five AQMAs. Overflight of these AQMAs occurs when the aircraft is above 1,000ft.	immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is	Option 1 is overflies eight AQMA(s); however, as per CAP1616, para 874, due to mixing and dispersion, the impact on air qualify above 1000th so not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1000th, however, for safety reason, this is unavoidable. Therefore, overall, when compared to the 4th on nothing is cenario, this option is deemed to be of dis-benefit as it overfles more AQMAs.		Option 48 R overflies six AQMA(s); however, as per CAP1616 , para B72, due to mixing and dispersion, the impact on air quality above 1,000th so not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1,000th; however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 4s nothing is cenario, this option is deemed to be of dis-benefit as it overflies more AQMAs.	874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1,000ft, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' searnio, this option is	B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefore,	Option 7 L overflies six AQMA(s); h however, as per CAP16.16, para B74, due to mixing and dispersion, the impact on air quality above LOORI to so tillage to be significant. There are areas within the immediate vicinity of the alsport that may be overflown below LOORI, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be of dis-benefit as it overflies more AQMAs.	Option 7 R overflies six AQMA(s); h however, as per CAP1616, para B72, due to mixing and dispersion, the impact on are quality above 1,000th so mixing and dispersion, the impact on are quality above 1,000th so mixing to be significant. There are are areas within the immediate vicinity of the airport that may be overflown below 1,000th, however, for safety reasons, this is unavoidable. Therefore, overall, when compared to the '05 outling' scenario, this option is deemed to be of dis-benefit as it overflies more AQMAs.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	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.	flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft od 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 CAP1616 process, there is no requirement for a change sponsor to conduct quantitative flow burn or emissions analysis. This will be covered in Stage 3. In order to make a comparison in Stage 2, Track integes is used, based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing flurnway spease are emitted. In the case of the existing flurnway	Option 1 L has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage alarcrat separation distances. The track mileage of Option 1 L is 39.28m (21.18m). When compared to the do nothing' scenario, Option 1 L is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More indepth analysis will keep lace at Stage 3, to confirm the exact volumes of greenhouse gases released.	Option 1 R has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage aircraft spearation distance. The track mileage of Option 1 R is 41.37km (22.34m). When compared to the do nothing' scenario, Option 1 R is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of les-benefit. More indepth analysis till kale place at Stage 3, to confirm the exact volumes of greenhouse gases released.			Option 6A L has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage aircraft separation distance. The track mileage of Option 6A L is 42.63km (23.02nm). When compared to the onthing's scenario, Option 6A L is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More indepth analysis will lake place at Stage 3, to confirm the exact volumes of greenhouse gases released.			operations. An element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 7 R is 39.57km (21.36nm). When compared to the do nothing' scenario, Option 7 R is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More in-depth analysis will take place at
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	capacity; however, due to the reliance upon ground- based navigational aids, resilience could be significantly		The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable light paths and fewer delay (both in air on the ground). The reduction of the reliance on outdated ground based managational aid will significantly increase operational resilience through the introduction of PBN.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable light paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdate ground based mayagitantial aid will significantly increase operational resilience through the introduction of PBN.		The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight parts and feerer delay; (both in air on the ground). The reduction of the relaince on outdated ground based managational air dwill significantly increase operational resilience through the introduction of PBN. Option 481 overflees no ADNBs and National Parks.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and feerer delay (both in air or on the ground). The reduction of the relance on outdated ground based managational aid will significantly increase operational relations of the introduction of PBN. Option 61. Overflies no AONIS and no National Parks.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more precitable flight paths and fewer delays, both an air or on the ground, the reduction of the relatince on outsized ground based managizonial and will significantly increase operational reallience through the introduction of PBN.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delay (both in air or on the ground). The reduction of the relaince on outdated ground based avalgational at will aignificantly increase operational realisence through the introduction of PBN. Option 7.1 conflicts on AONBs and no National Parks.	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 outstand ground based navagatorisal all will significantly, increase perational resilience through the introduction of PBN. Option 7 to everifies on AONBs and on National Parks.
Wider Society	Tranquility	Initial Options Appraisal: Qualitative	sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through	sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only, unless other areas have been identified through community engagement. No additional specific areas were identified by community engagement.	Opublis 1. Develope in Oversions and to hosabon and its. When compared to the 'do nothing' scenario, Option 1. Is considered to be equally beneficial as it overfiles no 'Tranquillity receptors.	Opublis is to even time the Annexes and reasonate reasonate. When compared to the 'do nothing scenario, Option 1 R is considered to be equally beneficial as it overfiles no Tranquillity receptors.		Oplotin an inversies to Authors and instantial and PASS. It is considered to be equally beneficial as it overfiles no Yranguillity receptors.	Opinion not coverine to Annea and no reaction a virtice. When compared to the do nothing scenario, Option 11 is considered to be equally beneficial as it overflies no Tranquillity receptors.	Updowt on it over free in Arch and the reachest per consistency of the	Opation 7 Experimes to Authors after in Australia Parks. When compared to the "do nothing" scenario, Option 11 is considered to be equally beneficial as it overflies no Tranquillity receptors.	Oplant in Revention to Audion and to Revation press. When compared to the 'Go nothing Scenario, Opland I Ris considered to the equally beneficial as it overfiles no Tranquillity receptors.
Wider Society	Blodiversity	initial Options Appraisal: Qualitative	of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SAC); and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP 1656, Appendix B, para B74, States that 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 880, states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground based infrastructure. However, the change sponsor acknowledges that any optential impact to the designated sites around MAM will be assessed in Stage	of Special Scientific Interest (SSSs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR Stee, as identified on the DEFRA MAGIC Map. (CAP1616, Appendite, Byara BY4, Steets that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000t. Furthermore, CAP1616, Appendite, Byara 880, states that in general, airspace change proposal will not have 4-a impact on biodiversity as they donot linvolve ground.	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAS sites, as identified on the DEFRA MAGIC Map. CAP1516, Appendix 8, para B74, States that because of dispersion and mining, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1516, Appendix 8, para 880, states that in general, airspace charge proposal will not have an impact on biodiversity as they do not immole ground-based infrastructure. However, the charge possor acknowledges that any potential impact to the designated sites around MAM will be assessed in Stage 3 of the ACP process by subject	DEFAN MAGIC Map. CAP ISIG, Appendix B, para B74, states that because of disportion and mining, there is unlikely to be an impact on local air quality from aircraft above 1,000f. Furthermore, CAP1516, Appendix B, para 880, states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designator to the designated sites		Scientific Interest (SSSIs), Special Protection Areas (\$PAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAPEGE, Appendix B, para B74, States that because of dispersion and mining, there is unifiely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAPEGE, Appendix B, para 880, states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground—based infrastructure. However, the change possors acknowledges that any potential impact to the designated sites aircraft MAGIC Areas of the AFC process by subject to the aircraft and the seasons of the SAC process by subject to the contract of the AFC process by subject to the contract of the AFC process by subject to the contract of the AFC process by subject to the AFC process of the AFC process by subject to the AFC process of the AFC process by subject to the AFC process of the AFC process by subject to the AFC process of the AFC process by subject to the AFC process of the AFC process by subject to the AFC process of the AFC process by subject to the AFC process of the AFC process by subject to the AFC process of the AFC process by subject to the AFC process of the AFC process by subject to the AFC process of the AFC process by subject to the AFC process of the AFC process by subject to the AFC process of the AFC process o	Scientific Interest (SSSIs), Special Protection Areas (5PAs), Special Areas of Conservation (SACs) and RAMSAS sites, as identified on the DEFBA MAGIC Map. CAP5EG, Appendix B, para B74, States that because of dispersion and mining, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP16G, Appendix B, para 880, states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground—based infrastructure. However, the change pomoro acknowleges that any potential impact to the designated sites aircraft Magic Magic Appendix B, para 69 of the ACP process by subject	DEFA MAGIC Map. CAP1616, Appendix B, para B74, states that because of disportion and milong, there is utilisely to be an impact or local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para 880, states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor acknowledge state any potential impact to the designated sites	DEFRA MAGIC Map. CAP15G, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change proposal will find there an impact on biodiversity as they do not involve ground-based infrastructure. However, the change approach acknowledges that any potential impact to the designated sites	because of dispersion and mixing, there is unlikely to be an impact on
	Access	Initial Options Appraisal: Qualitative	extant operational arrangements.	General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under extant operational arrangements.	consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Altergace classification requirements will be reviewed as part of Stage 3 activities.		consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to limplementation to ensure their continued validity. Alegace classification requirements will be reviewed as part of Stage 3 activities.	consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to limplementation to ensure their continuous validity. Alregace classification requirements will be reviewed as part of Stage 3 activities.	reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	will be reviewed as part of Stage 3 activities.
	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative Initial Options Appraisal:	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines. The existing MAN procedures for departures do not	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for GA/airlines. The existing MAN procedures for departures do not	The introduction of PBN is sepected 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonage carried. Option 11 supports continuous clamb operations, reducing the overall	frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.		and increasing cargo tonnage carried.	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 Editate economic benefit by optentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	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 by optentially increasing the frequency of air transport movements, increasing passenger number and increasing cargo tonnage carried.	paths and fewer delays (both in the air or on the ground). This is expected to facilitate conomic benefit by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will elad to more predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. Option 7 R supports continuous climb operations, reducing the overall
commercial airlines		Qualitative	enable continuous climb operations. Within Stage 2 of the CAP1616 process, there is no requirement for a change sponsor to conduct quantitative fleel burn analysis. This will be covered in Stage 3. In order to make a comparison in Stage 2, track milleage is used, based on the theory that the shorter the track milleage, the less greenhouse gases are emitted, in the case of the existing flumway OS. ASMIM SID modal track, the track length is 25.40km (13.72nm).	enable continuous climb operations. Within Stage 2 of the CAP\$6.65 process, there is no requirement for a change sponsor to conduct quantitative face burn analysis. This will be covered in Stage 3. In order to make a comparison in Stage 2, track mileage is used, based on the theory that the shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing Runnay OSR ASMIM SIO modul track, the track length is 27.19km (14.68km).	amount of fuel burnt. There is no requirement within Stage 2 of the CAP1515 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 less its burnt. With regards to this option, it is 39 23km (21.18km) long. When compared to the 'do nothing' screan's, Option 1.1 is longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of die-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	amount of fuel burnt. There is no requirement within Stage 2 of the CAP1515 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 fuelt, the less fall is burnt. With regards to this option, it is 4.1 37km (22.34km) long. When compared to the 'do nothing' scenario, Option 1 it is longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.		overall amount of fuel burnt. There is no requirement within Stage 2 or the CAP156 process to quantify the 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 due lis burnt. With regards to this option, it is 40.34km (21.78cm) long, When compared to the 'do nothing' scenario, Option 48 R is longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP156 process to quantify the 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 the is burnt. Will regards to this option, it is 42.63km (33.02mm) long. When compared to the 'do nothing' scenario, Option 6A is longer and at this stage it is assumed that it will require a larger amount of fuel burn. Horefore, this option is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	overall amount of fine burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fine burn, this will be conded Stage 3. Therefore, to enable a comparison, the logic applied is that be shorrer the track length, the less tide is burnt. With regards to tho option, it is 4.8 XFm (2.4 Zbm) long. When compared to the do nothing 'scenario, Option 6A R is longer and at this stage is less used that it will require a larger amount of fivel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More in depth analysis will be carried out in Stage 3 to confirm.	amount of fuel burnt. There is no requirement within Stage 2 of the no AP1815 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 their burnt. With regists to this option, it is 36.37km (19.6 kmm) long. When compared to the 'do option, it is 36.37km (19.6 kmm) long. When compared to the 'do option, it is 36.37km (19.6 kmm) long. When compared to the 'do option, it is 36.37km (19.6 kmm) long. When compared to the 'do option, option of the longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of die-Benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	amount of fuel burnt. There is no requirement within Stage 2 of the CPAEISE process to quantify fuel burn, his 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 39.57km (21.36mm) long. When compared to the 'do conting' scenario, Option 7 R is longer and at his stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines Commercial airlines		Initial Options Appraisal: Qualitative Initial Options Appraisal: Qualitative	other costs for commercial airlines - there may be costs	procedures which would be practised by crews through existing simulator exercises. It is not proportionate for MAN to assess potential s other costs for commercial airlines - there may be costs	common navigation standard across the world. Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating	enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world. Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating		enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world. Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating	common navigation standard across the world. Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating	enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world. Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating	enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world. Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating	enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world. 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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.		procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.

Airport / Air Infrastructure costs	Initial Options Appraisal:	No additional infrastructure is required at MAN to	No additional infrastructure is required at MAN to	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	 There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options
navigation service	Qualitative	maintain extant conventional procedures; however,			relate to the implementation of PBN and no additional infrastructure		relate to the implementation of PBN and no additional infrastructure			
provider		maintaining accessibility to current ground-based	maintaining accessibility to current ground-based		is required as the introduction of PBN reduces the reliance on ground		is required as the introduction of PBN reduces the reliance on ground			
		equipment (operated by NERL) may become	equipment (operated by NERL) may become	infrastructure, in particular ground-based navigation aids are no	infrastructure, in particular ground-based navigation aids are no	infrastructure, in particular ground-based navigation aids are no	infrastructure, in particular ground-based navigation aids are no	infrastructure, in particular ground-based navigation aids are no		infrastructure, in particular ground-based navigation aids are no
		prohibitively expensive should a CAP1781 RNAV	prohibitively expensive should a CAP1781 RNAV	longer needed.	longer needed.	longer needed.	longer needed.	longer needed.	longer needed.	longer needed.
		substitution not be implemented prior to the proposed	substitution not be implemented prior to the proposed	I						
		removal date.	removal date.	I		1				
				I						
				I		1				
Airport / Air Operational costs	Initial Options Appraisal:	No change to operational costs is attributable to	No change to operational costs is attributable to	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This		ATC at MAN is contracted out to a third-party organisation. This		ATC at MAN is contracted out to a third-party organisation. This
navigation service	Qualitative	maintaining the extant procedures.	maintaining the extant procedures.		existing commercial contract between MAN and their chosen ANSP is		existing commercial contract between MAN and their chosen ANSP is			existing commercial contract between MAN and their chosen ANSP is
provider				considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are
				anticipated with respect to the implementation of new procedures	anticipated with respect to the implementation of new procedures	anticipated with respect to the implementation of new procedures				anticipated with respect to the implementation of new procedures
				and training of controllers; however, these cannot be identified at this stage of the ACP process.	s and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	s and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.
				stage of the ACP process.	stage of the ACP process.	stage of the ACF process.	stage of the ACP process.	stage of the ACF process.	stage of the ACF process.	stage of the ACF process.
Airport / Air Deployment costs	Initial Options Appraisal:	No deployment costs applicable to extant procedures	No deployment costs applicable to extant procedures	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This
navigation service	Qualitative	and any and any appreciate to extend procedures.	procedures.		existing commercial contract between MAN and their chosen ANSP is		existing commercial contract between MAN and their chosen ANSP is			
provider				considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are
				anticipated with respect to the implementation of new procedures	anticipated with respect to the implementation of new procedures					anticipated with respect to the implementation of new procedures
				and training of controllers; however, these cannot be identified at this	and training of controllers; however, these cannot be identified at this	and training of controllers; however, these cannot be identified at this	and training of controllers; however, these cannot be identified at this	and training of controllers; however, these cannot be identified at this	and training of controllers; however, these cannot be identified at this	and training of controllers; however, these cannot be identified at this
				stage of the ACP process.	stage of the ACP process.	stage of the ACP process.	stage of the ACP process.	stage of the ACP process.	stage of the ACP process.	stage of the ACP process.
Safety Assessment Safety Assessment	Initial Options Appraisal:	The 'do nothing' scenario assumes that current	The 'do nothing' scenario assumes that current	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.
	Qualitative			Firstly, aircraft executing a MAP may conflict with aircraft on the SID.			Firstly, aircraft executing a MAP may conflict with aircraft on the SID.			
		conventional procedures. Following the removal of	conventional procedures. Following the removal of		This is an extant hazard. In addition, options within this envelope may		This is an extant hazard. In addition, options within this envelope may			
				conflict with MAN arrivals/transitions and aircraft inbound to	conflict with MAN arrivals/transitions and aircraft inbound to	conflict with MAN arrivals/transitions and aircraft inbound to	conflict with MAN arrivals/transitions and aircraft inbound to	conflict with MAN arrivals/transitions and aircraft inbound to		conflict with MAN arrivals/transitions and aircraft inbound to
			SIDs, aircraft departing MAN would continuously		Liverpool. In some cases, ATC intervention is required to mitigate this,		s, Liverpool. In some cases, ATC intervention is required to mitigate this,			
		require radar vectoring (should CAP1781 or a			but it is expected that the introduction of PBN IFPs and the application		but it is expected that the introduction of PBN IFPs and the application			
		commercial agreement to maintain the existing	commercial agreement to maintain the existing		of the design process will reduce the need for ATC intervention in the		of the design process will reduce the need for ATC intervention in the			
		navigational aid not be implemented), resulting in a possible increase in ATCO workload.	possible increase in ATCO workload.	future. Additionally, there is the potential for faster aircraft to catch	up with slower aircraft due to dispersion in the turn, which may lead		future. Additionally, there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead			
		possione merease ill ATCO Workload.			to a loss of separation, which can be mitigated through the design	to a loss of separation, which can be mitigated through the design	to a loss of separation, which can be mitigated through the design			to a loss of separation, which can be mitigated through the design
				process or procedurally if required. Further assessment will be	process or procedurally if required. Further assessment will be	process or procedurally if required. Further assessment will be	process or procedurally if required. Further assessment will be	process or procedurally if required. Further assessment will be	process or procedurally if required. Further assessment will be	process or procedurally if required. Further assessment will be
				conducted at Stage 3 and 4 of the CAP1616 process to confirm the	conducted at Stage 3 and 4 of the CAP1616 process to confirm the	conducted at Stage 3 and 4 of the CAP1616 process to confirm the	conducted at Stage 3 and 4 of the CAP1616 process to confirm the	conducted at Stage 3 and 4 of the CAP1616 process to confirm the	conducted at Stage 3 and 4 of the CAP1616 process to confirm the	conducted at Stage 3 and 4 of the CAP1616 process to confirm the
				exact nature of all hazards and mitigations.	exact nature of all hazards and mitigations.	exact nature of all hazards and mitigations.	exact nature of all hazards and mitigations.	exact nature of all hazards and mitigations.	exact nature of all hazards and mitigations.	exact nature of all hazards and mitigations.
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	Summary of Analysis						When compared to the 'do nothing' scenario, Option 6A L performs:			When compared to the 'do nothing' scenario, Option 7 R performs:
	I	viable option as it does not provide a sustainable solution in terms of airspace modernisation and is	viable option as it does not provide a sustainable solution in terms of airspace modernisation and is	- worse in terms of Air Quality, Greenhouse gas emissions and Fuel	- worse in terms of Air Quality, Greenhouse gas emissions and Fuel	- worse in terms of Air Quality, Greenhouse gas emissions and Fuel	- worse in terms of Air Quality, Greenhouse gas emissions and Fuel	- worse in terms of Air Quality, Greenhouse gas emissions and Fuel	- worse in terms of Air Quality, Greenhouse gas emissions and Fuel	- worse in terms of Air Quality, Greenhouse gas emissions and Fuel
	I		solution in terms of airspace modernisation and is unviable following the removal of the DVOR beacons in	buttor in terms of Noire impact	burn better in terms of Noise impact.	burn better in terms of Noise impact, Capacity and resilience, and	burn. - better in terms of Noise impact, Capacity and resilience, and	burn better in terms of Noise impact, Capacity and resilience, and	burn better in terms of Noise impact, Capacity and resilience, and	- better in terms of Noise impact, Capacity and resilience, and
	I		December 2022, which would have a significant impact			- better in terms of Noise impact, Capacity and resilience, and Economic impact from increased effective capacity.	better in terms of Noise impact, Capacity and resilience, and Economic impact from increased effective capacity.	Economic impact from increased effective capacity.	Economic impact from increased effective capacity.	- better in terms of Noise impact, Capacity and resilience, and Economic impact from increased effective capacity.
	I			change when compared to today's operation.	change when compared to today's operation.	- equal/neutral in terms of the remaining criteria because there is no			- equal/neutral in terms of the remaining criteria because there is no	
	I			At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.
	I				s implications of this specific option. Possible conflicts with some routes	At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety		At this time, it is not possible to fully determine the safety
	I	noise at lower levels. In terms of Tranquillity,	noise at lower levels. In terms of Tranquillity,				s implications of this specific option. Possible conflicts with some routes			
				the exact nature of these conflicts is unclear at this stage. Further	the exact nature of these conflicts is unclear at this stage. Further					operated by other routes/nearby airports have been identified, but
	I				analysis and engagement is required in Stage 3 and 4 of the CAP1616		the exact nature of these conflicts is unclear at this stage. Further			the exact nature of these conflicts is unclear at this stage. Further
	I				d process to determine this. Furthermore, this option has been assessed		analysis and engagement is required in Stage 3 and 4 of the CAP1616	analysis and engagement is required in Stage 3 and 4 of the CAP1616	analysis and engagement is required in Stage 3 and 4 of the CAP1616	
					as in isolation rather than as a set of design options as part of a wider		d process to determine this. Furthermore, this option has been assessed			
	I				system/runway pair. Additional analysis is required in Stage 3 to		as in isolation rather than as a set of design options as part of a wider			
					determine the cumulative impact of this option when compared to all	system/runway pair. Additional analysis is required in Stage 3 to	system/runway pair. Additional analysis is required in Stage 3 to	system/runway pair. Additional analysis is required in Stage 3 to	system/runway pair. Additional analysis is required in Stage 3 to	system/runway pair. Additional analysis is required in Stage 3 to
	I		DVORs, it is acknowledged that ATCO workload may	tne otner options.	the other options.	determine the cumulative impact of this option when compared to all the other options.	I determine the cumulative impact of this option when compared to all the other options.	determine the cumulative impact of this option when compared to all the other options.		determine the cumulative impact of this option when compared to all the other options.
	I	increase due to the enduring requirement for radar	increase due to the enduring requirement for radar		Country of the loss of the los	the other options.	trie other options.	the other options.	the other options.	the other options.
	I	vectoring.	vectoring.	Based on performance in the IOA, Option 1 L has been deemed the Preferred option (within this design envelope), as it overflies the	Based on performance in the IOA, Option 1 R has been deemed the Preferred option (within this design envelope), as it overflies the	Rayard on performance in the IOA Certion 48 I have have decreed as	Based on performance in the IOA, Option 6A L has been deemed as	Pared on performance in the IOA Option 6A P has been released as its	Pared on performance in the IOA Option 71 has been described	Based on performance in the IOA, Option 7 R has been deemed as
							d Acceptable, as it overflies the third fewest population when compared		Favourable, as it overflies the second fewest population when	Favourable, as it overflies the second fewest population when
	I			the same runway direction) within the same design envelope.	the same runway direction) within the same design envelope.		to other routes (originating from the same runway direction) within			compared to other routes (originating from the same runway
	I			and some roomby direction within the same design envelope.	ore some rankay direction, within the same design envelope.	the same design envelope.	the same design envelope.	envelone	direction) within the same design envelope.	direction) within the same design envelope.
	I			I		and some ocsign envelope.	one same ocagal envelope.	Circope.	on ceasing within the same design envelope.	oncessory within the sallie design envelope.
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WAN ACP -	INTIAL OF HONS	APPRAISAL - FULL /	THACISTS TAULE														
Departure Er	velope: SID Runwa	y 05 South		far track over the ground as the current route to connect to the NATS network.			IT TURN OPTIONS						LEFT TUR	N OPTIONS			
			'DO NOTHING' BASEUNE For the south design envelope, the 'do nothing' scenario for departures in terms of today's operation is	of today's operation is Option 1 is included to provide an SNAV2 replication of the existing conventional LISTO 25/22 SD. As a replicated mute it follows a the operatures consists of a similar track over the ground as the current route to connect to the NATS network.		This is an RNP1 option with RF coding to provide a tight right turn	PTION 3 then routing south-west to align with current operational practice.	This is an RNP1 option with RF coding to provide a tight right turn	TION 6A to route south-west to align with current operational practice. It is	This is an RNF1 option with RF coding that turns left after departs	PTION 2A ure to route north of Sale and then head south-west before heading	This is an RNP1 option with RF coding that turns left after departur	TION S re with the tightest radius possible to reduce track miles. This	This is an RNP1 option with RF coding that turns left after depart	OPTION 9 ture with the tightest radius possible to reduce track miles. It is similar	This is an RNP1 option with RF coding that turns left after depart	OPTION 30 rture. It routes mid-way between the other options in this envelope.
			based around the existing conventional USTO SID. The "do nothing" scenario for departures consists of a modal track that has been derived to provide an accurate representation of what occurs today. In addition to the modal track, a polygon has also been created that represents an area where current operations are	The fly-over waypoints for the right turn to the south are position	ned at the position of the existing markers. For Rumway 05L this is at	from the south. This option therefore re-creates common operation	onal practice above 4,000ft.	earlier.	um which allow aircraft to climb more quickly, and it then turns south permit some aircraft to fly this route in a clean configuration	The design speed will permit many aircraft to fly this route in a ci benefits in terms of noise.	lean configuration (without the use of flaps) which has potential	recommendation. The turn point for Europey DSE is located at a no		to option E but terminates slightly further west. In the case of GSL, the turn point is at a minimum distance of In point for Rumway GSR is located at a point roughly perpendicular	m from the DEE in accordance with DANS-CDS and CADTEE The turn	notential to aid departure flow and arbitrains one minute solits	outh, because of the large number of southbound departures it has a for southbound SDs. ay permit some aircraft to fly this route in a dean configuration (without
			dispersed due to radar vectoring and potentially may affect people on the ground. The overflight analysis conducted on this SID was based on the modal track created using Noise and Track Keeping data at	Principle Safety. After departure the routes turn right to pass overhead Cheadle Hi	fulme at which point they combine. They then pass just to the west of	point for OSR is located at a point roughly perpendicular to OSL, to OSL: After departure this route turns right shortly after Heald Gree	o create a similar ground track in the turn and subsequent leg, en in a tight radius turn that routes it inside of Poynton. This turn is	(arithout the use of flaps) which has potential benefits in terms of The track following the right turn is often used by ATC to resolve it	f noise. Interactions between flights on the USTO departure and MAN amissis.	potential to aid departure flow and achieving one minute splits for	oth, because of the large number of southbound departures it has or southbound SIDs to align to the Design Principle Capacity.	track in the turn and subsequent leg. Although this option creates more track miles to route to the sout	h, it is the shortest of the left turn options. In addition, because of	subsequent leg. Although this option creates more track miles to route to the so	uth, it is only slightly more track miles than option E which is shortest.	the use of flaps) which has potential benefits in terms of noise. In the case of OSI, the turn point is at a minimum distance of In	nm from the DER, in accordance with PANS-OPS and CAP778. The turn
			altitudes of 4,000ft and 7,000ft with the addition of a radar vectoring area where appropriate. All data is based on current aircraft performance data and is calculated based on the distance between the Departure	Woodford and Macclesfield and overfly Congleton and terminate	et 7,000ft just west of Biddulph. couth due to the fly-over coding and the variables that affect this. This	continued onto a south-west heading to take it south of Wilmslow Nolman Chanel and terminates at 7 000ft east of Middlewich	w and Alderley Edge. It makes a left turn to head south to the north	of from the south. This option therefore re-creates common operation the case of OSL, the turn point is at a minimum distance of Inmpoint for Rumway OSR is located at a point roughly perpendicular.	onal practice above 4,000ts. from the DEB in accordance with DANS-DES and CARTER The turn	the north of Choriton and Sale and overhead Stretford where it o	ombines with the option for OSR. It then heads south-west for a short	the large number of southbound departures it has potential to aid align to the Design Principle Capacity.	departure flow and achieving 1-minute splits for southbound SIDs to	Because of the large number of southbound departures it has po- southbound SIDs.	otential to aid departure flow and achieving one minute splits for on to route overhead Cheadle. West Didsbury and Sale. It then heads	point for Runway CSR is located at a point roughly perpendicular subsequent leg.	ar to Runway OSL, to create a similar ground track in the turn and
			and or nurvey and one end or the industriant.	A speed restriction of 185 KIAS is used for the first turn.						Park. SSR: After departure this route turns left shortly after Heald Gree	in to route overhead Cheadle. This turn is continued in a wide arc to	south-west for a straight segment and passes just north of Altrinch for OSR to pass east of Knutsford and terminate at 7,000ft.	sam where it turns slightly south-east and combines with the route	south-west for a straight segment and passes just north of Altrin west of Knutsford and terminates at 7,000ft.	cham where it turns south and combines with the route for OSR to par	s west for a straight segment and passes just north of Altrincham of Knutsford and terminates at 7,000ft.	where it turns south and combines with the route for 55% to pass west seen to route overhead Cheadle, Choriton and Sale. It then heads south- swhere it turns south and combines with the route for 55% to pass west
						A speed restriction of 190 KAS is applied to the first turn which all tested for flyability as part of the procedure validation process wit	llows the smallest radius. Although PANS-OPS compliant it should b thin Stage 4 of CAP1616.	 west heading to take it south of Wilmslow and Alderley Edge and and terminates at 7,000ft east of Holmes Chapel. 	west of Macdesfield. It makes a left turn to head south at Chelford	the north of Choriton and Sale and overhead Stretford where it o straight segment and passes north of Albrincham where it makes	ombines with the option for OSL. It then heads south-west for a short a left turn to head south and terminates at 7,000ft west of Tatton	OSR: After departure this route turns left shortly after Heald Green south-west for a straight segment and passes just north of Altrinch	to route overhead Cheadle, West Didsbury and Sale. It then heads sam where it turns slightly south-east and combines with the route	OSR: After departure this route turns left shortly after Heald Gre south-west for a straight segment and passes just north of Altrin	en to route overhead Cheadle, West Didsbury and Sale. It then heads cham where it turns south and combines with the route for OSL to pas	CSR: After departure this route turns left shortly after Heald Gre swest for a straight segment and passes just north of Altrincham	een to route overhead Cheadle, Chorlton and Sale. It then heads south- where it turns south and combines with the route for OSL to pass west
								west heading to take it south of Wilmslow and Alderley Edge and	een to route overhead Poynton. This turn is continued onto a south- west of Macdesfield. It makes a left turn to head south at Chelford	Park. A speed restriction of 220 KIAS has been applied to the first turn	which allows most aircraft to fly in a clean configuration.	for 054 to pass east of Knutsford and terminates at 7,000ft. A speed restriction of 250 KIAS has been applied to the first turn with the assessed for floability as part of the properties validation.	hich allows the smallest radius. Although PANS-OPS compliant it	west of Knutsford and terminates at 7,000ft. A speed restriction of 190 KIAS applied to the first turn which all assessed for flyability as part of the procedure validation proces.	ous the smallest radius. Although PANS-OPS compliant it should be a within Stage 4 of CAPISIS.	of Knutsford and terminates at 7,000ft. A speed restriction of 210 KIAS is applied to the first turn which i	is the CAP778 recommended speed.
								A speed restriction of 200 KAS is applied to the first turn which is	the CAP77E recommended speed.								
Group	Impact	Level of Analysis	Runway 05R For comparison purposes within the ICA, the 'do For comparison purposes within the ICA, the 'do	Runway OSL	Runway OSR In terms of potential noise impact, initial quantitative analysis has	Runway CSL	Runway CSR	Rumany 054		Runway 051.	Runway CSR	Rumway 051.	Runnay OSR	Runway OSL		Runway DSL	FormeryOSR
	quality of life	Qualitative	nothing's cenario was based upon the existing USTO SID. In terms of potential noise impact, initial SID. In terms of potential noise impact, initial	identified that	identified that-	identified that: - Up to 4,000ft, this option overfiles approximately 11,900 people	identified that: - Up to 4,000ft, this option overfiles approximately 16,000 people	 In terms of potential noise impact, initial quantitative analysis has identified that: - Up to 4,000h; this option overfiles approximately 20,800 people 	identified that: - Up to 4,000ft, this option overfiles approximately 22,800 people	- Up to 4,000h, this option overfiles approximately 115,300 peopl	le - Up to 4,000ft, this option overfiles approximately 105,100 people	- Up to 4,000ft, this option overflies approximately 99,500 people	- Up to 4,000ft, this option overfiles approximately 95,200 people	- Up to 4,000ft, this option overfiles approximately 99,500 peopl	as in terms of potential noise impact, initial quantitative analysis has identified that: - Up to 4,000ft, this option overfiles approximately 98,500 people	- Up to 4,000ft, this option overfiles approximately 106,400 peop	pole - Up to 4,000ft, this option overflies approximately 101,200 people
			quantitative analysis has identified that: - Up to 4,000ft, this 'do nothing' scenario overfiles - approximately 14,500 people and approximately - approximately 25,500 people and approximately						and approximately 10,300 residential buildings. - Up to 7,000ft, this option overflies approximately 26,100 people and approximately 12,150 residential buildings.	and approximately 53,200 residential buildings. - Up to 7,000ft, this option overfiles approximately 130,700 peopl and approximately 60,300 residential buildings.	and approximately 46,700 residential buildings. - Up to 7,000ft, this option overfiles approximately 121,500 people and approximately 53,900 residential buildings.	and approximately 44,650 residential buildings. e - Up to 7,000ft, this option overflies approximately 115,000 people and approximately 51,900 residential buildings.	 and approximately 44,700 residential buildings. Up to 7,000h, this option overfiles approximately 116,900 people and approximately 53,500 residential buildings. 	and approximately 44,650 residential buildings. - Up to 7,000ft, this option overfiles approximately 115,700 peop and approximately 52,600 residential buildings.	and approximately 44,750 residential buildings. - Up to 7,000ft, this option overfiles approximately 117,500 people and approximately 54,150 residential buildings.	and approximately 47,200 residential buildings. e - Up to 7,000ft, this option overfiles approximately 130,800 peop and approximately 57,350 residential buildings.	and approximately 45,100 residential buildings. belie - Up to 7,000ft, this option overfiles approximately 228,600 people and approximately 57,200 residential buildings.
			6,300 residential buildings. - Up to 7,000ft, this Vio nothing' scenario overfiles - Up to 7,000ft, t	Assessed up to 7,000ft, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is	Assessed up to 7,000ft, this option overfiles more people and residential buildings than the 'do nothing' scenario and is therefore considered to be of a dis-benefit.	Assessed up to 7,000ft, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is	Assessed up to 7,000ft, this option overflies fewer people and residential buildings than the 'do nothing' scenario and is	Assessed up to 7,000ft, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is	Assessed up to 7,000%, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is	Assessed up to 7,000ft, this option overfiles more people and residential buildings than the 'do nothing' somerio and is	Assessed up to 7,000th, this option overflies more people and residential buildings than the 'do nothing' somerio and is	Assessed up to 7,000h, this option overfiles more people and residential buildings than the 'do nothing' scenario and is	Assessed up to 7,000ft, this option overflies more people and	Assessed up to 7,000th, this option overfiles more people and residential buildings than the 'do nothing' scenario and is therefore considered to be of a dis-benefit.	Assessed up to 7,000k, this option overfiles more people and residential buildings than the 'do nothing' scenario and is therefore considered to be of a dis-benefit.	Assessed up to 7,000ft, this option overfiles more people and	Assessed up to 7,000ft, this option overflies more people and
			65,800 people and approximately 31,500 residential buildings.	therefore considered to be beneficial.	therefore considered to be of a dis-benefit.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be of a dis-benefit.	therefore considered to be of a dis-benefit.	therefore considered to be of a dis-benefit.	therefore considered to be of a dis-benefit.	therefore considered to be of a dis-benefit.	therefore considered to be of a dis-benefit.	therefore considered to be of a dis-benefit.	therefore considered to be of a dis-benefit.
Communities	Air Quality	initial Options Appraisal: Qualitative	No change to air quality is predicted in maintaining baseline conditions. The majority of the extant procedure involves overflight above 1,000ft, other procedure involves	Option 1 Lovertiles four AQMA(s); however, as per CAP1616, para 674, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the	a Option 1 R overfiles four AQMA(s); however, as per CAP1616, para e 674, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be simificant. There are areas within the	Option 3 Loverfiles two AQMA(s); however, as per CAP1626 , para 874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be simificant. There are areas within the	 Option 3 R overfiles two AQMA(s); however, as per CAP1616, pa 874, due to mixing and dispersion, the impact on air quality abo 1,000ft is not likely to be significant. There are areas within the 	rs Option 6A L overflies has ACMA(s); however, as per CAP1015, par 874, due to mixing and dispersion, the impact on air quality above 1.000ft is not likely to be significant. There are areas within the	rai Option SA R overfiles two AQMA(s); however, as per CAP3515, para 574, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within	Option 7A Loverfiles three AGMA(s); however, as per CAP1616, para 874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be simificant. There are areas within	Option 7A R overfiles two AQMA(s); however, as per CAP2516, para 874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within	Option 8 L overfiles four AQMA(s) however, as per CAP1616, para 874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the	Option Bit overfiles four AQMA(s); however, as per CAP1016, para 874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the	Option 9 Lovertiles four AQMA(s); however, as per CAP1616, pa 874, due to mixing and dispersion, the impact on air quality abo 1,000ft is not likely to be significant. There are areas within the	ra Option 9 R overfiles four AQMA(s); however, as per CAP1616 , pars we B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be similicant. There are areas within the	a Option 10 L overfiles four AQMA(s); however, as per CAP1616, e para 874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within	option 10 R overfiles four AQMA(s); however, as per CAP1016, by para 574, due to mixing and dispersion, the impact on air quality bin above 1.000h is not likely to be simificant. There are areas within
			No change to any quarty a produces on maintening baseline certifician. The negarity of the extent procedure insolven overflight above 1,0000, other than the areas in the immediate violing of the them the areas in the immediate violing of the Operature Fold of Rumsey. In term of AQMAC, the existing Rumsey GXL USTO In term of AQMAC, the existing Rumsey GXL USTO In term of AQMAC, the existing Rumsey GXL USTO In the AQMAC In the AQMAC	immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefore	immediate vicinity of the airport that may be overflown below re, 1,000ft; however, for safety reasons, this is unavoidable. Therefore	immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefore	immediate vicinity of the airport that may be overflown below v, 1,000ft; however, for safety reasons, this is unavoidable. Therefo	immediate vicinity of the airport that may be overflown below re, 1,000ft; however, for safety reasons, this is unavoidable. Therefor	the immediate vicinity of the airport that may be overflown below e, 1,000ft; however, for safety reasons, this is unavoidable. Therefore,	the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefor	w the immediate vicinity of the airport that may be overflown below re, 1,000h; however, for safety reasons, this is unavoidable. Therefore	immediate vicinity of the airport that may be overflown below e, 1,000ft; however, for safety reasons, this is unavoidable. Therefore	immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefore,	immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefo	immediate vicinity of the airport that may be overflown below re, 2,000ft; however, for safety reasons, this is unavoidable. Therefore	the immediate vicinity of the airport that may be overflown below, 1,000ft; however, for safety reasons, this is unavoidable. Therefore	by pars 1374, does not reliably to the specific or air quality alone 1,000 fit in not likely to be significant. There are areas within on the immediate vicinity of the sipport that may be overflown below fores, 1,000 fit however, for safety reasons, this is unavoidable. Therefore,
			in terms of Augewa, the existing nurway USL LISTO IN ter	deemed to be beneficial as it overfiles fewer AQMAs.	deemed to be of a dis-benefit as it overfiles more AQMAs.	deemed to be beneficial as it overflies fewer AQMAs.	deemed to be beneficial as it overfiles fewer AQMAs.	deemed to be beneficial as it overflies fewer AQMAs.	s overall, when compared to the 'do nothing' scenario, this option is deemed to be beneficial as it overfiles fewer AQMAs.	deemed to be beneficial as it overfiles fewer AQMAs.	deemed to be equally beneficial as it overfiles the same number of AQMAs.	f deemed to be beneficial as it overfiles fewer AQMAs.	deemed to be of a dis-benefit as it overfiles more AQMAs.	deemed to be beneficial as it overfiles fewer AQMAs.	is overall, when compared to the 'do nothing' scenario, this option is deemed to be of a dis-benefit as it overflies more AQMAs.	deemed to be beneficial as it overflies fewer AQMAs.	deemed to be of a dis-benefit as it overflies more AQMAs.
Wider Society	Greenhouse Gas Impact	initial Options Appraisal: Qualitative	Current routes do not enable continuous climb operations. It must be noted that the exact track length flows by aircraft may vary slightly due to the	Option 1 L has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage aircraft separation distances.	Option 1 R has been designed to support continuous dimb operations. An element of radar vectoring may still be required to manage already sensoration dishances.	Option 3 L has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage aircraft sensestion distances.	Option 3 R has been designed to support continuous dimb operations. An element of radar vectoring may still be required manage sirroift sensestion distances.	Option 6A L has been designed to support continuous climb to operation. An element of radar vectoring may still be required to manage street separation distances.	Option 6A R has been designed to support continuous climb operations. As eliament of radar vectoring may still be required to amazega sizcost in speciation distances. The track mislage of Option 6A R is 43 88/m (D.8.85mm), When compared to the 1-to contring vascus, Option 6 R is large and is therefore expected to entit. more greenhouse gases this option is determed to be of the benefit. More is depth makejos will still place of certain of the option makejos will still place.	Option 7A.1 has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage signally supporting distances.	Option 7A R has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage sizeraft senaration distances	Option II I has been designed to support continuous dimb operations. An element of radar vectoring may still be required to manage sirrorft senaration distances.	Option B R has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage signaff senaration distances.	Option 9 L has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage sizes the sense than the sense.	Option 9 R has been designed to support continuous dimb to operations. An element of radar vectoring may still be required to manage sirrush sensestion distances.	Option 10 L has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage aircraft senaration distances.	Option 10 R has been designed to support continuous climb to operations. An element of radar vectoring may still be required to manage aircseft separation distances. The track mileage of Option 10 R is 42.57km (22.99nm). When
			nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. The follow the extant procedures in a broader sense. The	The track mileage of Option 1 L is 38.38km (20.73nm). When compared to the 'do nothing' scenario, Option 1 L is longer and is	The track mileage of Option 1 R is 39.55km (21.35nm). When compared to the 'do nothing' scenario, Option 1 R is longer and is	The track mileage of Option 3 Lis 53.92km (29.12nm). When compared to the 'do nothing' scenario, Option 3 Lis longer and is	The track mileage of Option 3 R is 55.03km (29.72nm). When compared to the 'do nothing' scenario, Option 3 R is longer and	The track mileage of Option 6A L is 48.79km (26.35nm). When compared to the 'do nothing' scenario, Option 6 L is longer and is	The track mileage of Option 6A R is 49.80km (26.80km). When compared to the 'do nothing' scenario, Option 6 R is longer and is	The track mileage of Option 7A L is 44.59km (24.08nm). When compared to the 'do nothing' scenario, Option 7A L is longer and	The track mileage of Option 7A R is 44.77km (24.18nm). When is compared to the 'do nothing' scenario, Option 7A R is longer and it	The track mileage of Option B L is 38.38km (20.72nm). When is compared to the 'do nothing' scenario, Option B L is longer and is	The track mileage of Option 8 R is 39.25km (21.19nm). When compared to the 'do nothing' scenario, Option 8 R is longer and is	The track mileage of Option 9 L is 39.50km (21.33nm). When compared to the 'do nothing' scenario, Option 9 L is longer and i	The track mileage of Option 9 R is 40.41km (21.82nm). When compared to the 'do nothing' scenario, Option 9 R is longer and is	The track mileage of Option 10 L is 41.67km (22.50rm). When compared to the 'do nothing' scenario, Option 30 L is longer and	The track mileage of Option 10 R is 42.57km (22.59nm). When d is compared to the "do nothing" scenario, Option 10 R is longer and is
			existing procedures do not support optimal aircraft performance and therefore are predicted to have a preformance and therefore are predicted to have a greater environmental impact compared to proposed are the process of the pro	therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More in-depth analysis will take place at Stage 3, to confirm the exact volumes of greenhouse gases	 therefore expected to emit more greenhouse gases this option is ce deemed to be of dis-benefit. More in-depth analysis will take place at Stage 3, to confirm the exact volumes of greenhouse gases. 	therefore expected to emit more greenhouse gases this option is a deemed to be of dis-benefit. More in-depth analysis will take plac at Stage 3, to confirm the exact volumes of greenhouse gases	therefore expected to emit more greenhouse gases this option deemed to be of dis-benefit. More in-depth analysis will take pli at Stage 3, to confirm the exact volumes of greenhouse gases	is therefore expected to emit more greenhouse gases this option is see deemed to be of dis-benefit. More in-depth analysis will take place at Szew 3, to confirm the exact volumes of greenhouse gases	therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More in-depth analysis will take place at Stare 3, to confirm the exact volumes of ereenhouse sases.	therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More in-depth analysis will take plac at Stage 3, to confirm the exact volumes of greenhouse gases	therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More in-depth analysis will take place at State 1, to confirm the exact volumes of greenhouse gases	therefore expected to emit more greenhouse gases this option is e deemed to be of a dis-benefit. More in-depth analysis will take place at Stage 1. to confirm the exact volumes of greenhouse gases	therefore expected to emit more greenhouse gases this option is deemed to be of a dis-benefit. More in-depth analysis will take place at Stage 3, to confirm the exact volumes of greenhouse gases.	therefore expected to emit more greenhouse gases this option is deemed to be of a dis-benefit. More in-depth analysis will take place at Stage 3, to confirm the exact volumes of greenhouse gas	s therefore expected to emit more greenhouse gases this option is deemed to be of a dis-benefit. More in-depth analysis will take us place at State 3. to confirm the exact volumes of greenhouse gase	therefore expected to emit more greenhouse gases this option is deemed to be of a dis-benefit. More in-depth analysis will take a place at Stare 3, to confirm the exact volumes of greenhouse gas	d is compared to the 'do nothing' scenario, Option 10 R is longer and is therefore expected to emit more greenhouse gases this option is deemed to be of a dis-benefit. More in-depth analysis will take sees olso at Stare 3, to confirm the exact volumes of preechouse saves
			options. Within Stage 2 of the CAPISIS process, there is no Within Stage 2 of the CAPISIS process, there is no	released.	released.	released.	released.	released.	released.	released.	released.	released.	released.	released.	released.	released.	released.
			requirement for a change sponior to conduct quantitative emissions analysis. This will be covered quantitative emissions analysis. This will be covered in Stage 3. In order to make a companior in Stage 3. by covered in Stage 3. In order to make a companion track mileage is used, based on the theory that the														
			are entitled. In the case of the existing Runway OSI. USTO SID model track, the track length is 28.57km existing Runway OSR LSTO SID model track, the track length is 25.41km (13.77km).														
Wider Society	Capacity and resilience	Initial Options Appraisal:	Maintaining extant procedures would maintain Maintaining extant procedures would maintain	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits b	The introduction of PBN routes is expected to deliver benefits hu	The introduction of PSN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits to	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits hu	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	by The introduction of PBN routes is expected to deliver benefits by
		Qualitative	current capacity; however, due to the reliance upon ground-based navigational aids, resilience could be significantly affected, following the removal of the 1000 to Describe 2000 to Describe 20	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	Increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the
			DVCR in December 2022. Significantly affected, following the removal of the DVCR in December 2022.	ground). The reduction of the reliance on outdated ground based navigational aid will significantly increase operational resilience through the introduction of PBN.	the introduction of year routes is especied to desired calents by increasing shapes 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 mulgiplicinal aid will significantly increase operational resilience through the introduction of PEN.	grow-q. The reduction of the reliance on outdated ground based navigational aid will significantly increase operational resilience through the introduction of PBN.	growing. Ine reduction of the reliance on outdated ground base navigational aid will significantly increase operational resilience through the introduction of PSN.	 g-wno; ine reduction of the reliance on outdated ground based navigational aid will significantly increase operational resilience through the introduction of PSN. 	growid). The reduction of the reliance on outdated ground based navigational aid will significantly increase operational resilience through the introduction of PSN.	ini introduction or van rouns is expense to essere centers by increasing singuace capacity which subsequently leads to more predictable flight paths and fewer delays (both in sir or on the ground). The reduction of the reliance on outdated ground based marginational and will significantly increase operational resilience through the introduction of PSM.	 grounts). The reduction of the reliance on outdated ground based navigational aid will significantly increase operational resilience through the introduction of PSN. 	ground). The reduction of the reliance on outdated ground based navigational aid will significantly increase operational resilience through the introduction of PSN.	gravini). The reduction of the reliance on outdated ground based navigational aid will significantly increase operational resilience through the introduction of PSIN.	ground). The reduction of the reliance on outdated ground base navigational aid will significantly increase operational resilience through the introduction of PBN.	 ground). The reduction of the reliance on outdated ground based navigational aid will significantly increase operational resilience through the introduction of PSN. 	growit). The reduction of the reliance on outdated ground base navigational aid will significantly increase operational resilience through the introduction of PSN.	pywintp. Ine reduction of the reliance on outdated ground based in avigational aid will significantly increase operational resilience through the introduction of PSN.
Wider Society	Tranquility	Initial Options Appraisal:	As per CAPISIS, Appendix B, para 876, change As per CAPISIS, Appendix B, para 876, change appropriate as sensined to consider Transmillion with	This option overfiles no statutorily identified tranquility receptor.	rs This action overfiles no statutorily identified tranquility receptors	This option overflies no statutorily identified tranquility receptor	This action overfiles no statutorily identified tranquility recepts	ors This action overfiles no statutorily identified tranquility receptor	This option overflies no statutorily identified tranquility receptors	This option overflies no statutorily identified tranquility receptor	n This option overflies no statutorily identified tranquility receptors	This option overfiles no statutorily identified tranquility receptors	This option overflies no statutorily identified tranquility receptors	This option overflies no statutorily identified tranquility receptor	This potion overfiles no statutorily identified tranquillity receptor	This option overflies no statutorily identified tranquillity receptor	tors This option overflies no statutorily identified tranquility receptors
		Appendiative	sponsors are required to consider Tranquillity with specific reference to ADNBs and National Parks only, specific reference to ADNBs and National Parks only, unless other areas have been identified through community engagement. No additional specific community engagement. No additional specific community engagement. No additional specific	reason or reasonal varks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	 youwas or national varks], nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral. 	γνωνικ or national ναrks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	 y powtes or nacional varies], nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral. 	engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	prunss or national varial, nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	 provides or national varies), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral. 	provide or national varies], nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	provides or national varies), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	y yourses or national varks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	proves or national varies], nor any identified through communit engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.
			community engagement. No additional specific areas were identified by community engagement. The 'do nobing' currant does not overfly any. The 'do nobing' scenario does not overfly any.														
			AONEs or National Parks. AONEs or National Parks.														
Wider Society	Biodiversity	Initial Options Appraisal:	The change sponsor has mapped the designated The change sponsor has mapped the designated Shan of Sportal Scientific Interest (200a) Sportal Stan of Sportal Scientific Interest (200a) Sportal	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSs) Special Desturbing Asses (SDAs) Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (1990s). Special Destaction Areas (1994s). Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (555s) Special Destection Ages (554s) Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSs). Special Desturbing Asses (SSAs). Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (1959s) Sourced Embertion Areas (1954s) Sourced	The change sponsor has mapped the designated Sites of Special Scientific interest (1996) Special Desturtion Areas (1994) Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSs) Special Destaction Areas (SSSs) Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (1999). Special Emperation Ages (1994). Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSs) Special Destaction Asses (SDSs) Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (ISSN) Special Protection Assets (ISSN) Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSs) Special Englishman Areas (SSAs) Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSs). Special Protection Ages (SSSs). Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (CCSs) Special Protection Areas (CDSs) Special	The change sponsor has mapped the designated Sites of Special Scientific Internet (SSSs) Special Protection Areas (SSAs) Special
			Sten of Special Scientific Interest (SSSIA), Special Protection Areas (SPAA), Special Areas of Conservation (SAC) and RAMSAR sites, as identified Conservation (SAC) and RAMSAR sites, as identified						Scientific Interest (353k), Special Protection Areas (574k), Special Areas of Conservation (5ACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix 8, para 874, states						Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states		
			Consensation (MCC) and MAXAM alon, an identified in the TATEMANCE (MCC) CHRISTIAN (MCC) (M	that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Buthermore, CADISIS, Amendia B, para 880, states that in	that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Buthermore C401616 Appendix 8 page 880 states that in	that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Buthermore CADISIS, Amendiz B, nara 880 states that in	that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Burthermore, C401616, Annendix B. para 550, states that in	that because of dispension and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Burthermore, C401616, Annuardy S, page 880, states that in	that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Surthermore CADISTS, Amendia B, nave 880, states that in	that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Surtharmore: CADISIA: Anneady S. nare SED states that in	that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Buthermore C403516 Appendix 8 para 880 states that in	that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft.	that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Burthermore, CARSASS, Amendia B, para BBD states that in	that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Buthermore, CA21616, Anneydry B. nore 850, states that in	that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Buthermore, CAP1616, Appendix B, page 880, states that in	that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft.	the DETA AMDIC Map. CAPETAL Appendix B, para SRY, states that because of depression and enting, the su calledly to be an input on total air quality from aircraft above 1,0000. The parameters of the second second second second second second percent, aircraft caping proposal self on these air report to biodiversity as they do not involve ground based infentioetics. Foreverv, the changes genome advantage that any potential imput to the designated sites around MAW will be assured in Sazey at othe APP Capenas by Sazeley better Experts.
			Quality from sizeralt above 1,000F. Furthermore, CAP1016, Appendix B, para BB0, states that in CAP1016, Appendix B, para BB0, states that in	general, airxpace change proposal will not have an impact on blodiversity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on blodiversity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	general, airupace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	general, airxpace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.
			general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-impact on biodiversity as the proposal will be a supplication of the propo	However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	Mowever, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	Nowever, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	However, the change sponsor admowledges that any potential impact to the designated sites around MAN will be assessed in	However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	Nowever, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	Nowever, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in
			acknowledges that any potential impact to the designated sites around MAN will be assessed in designated sites around MAN will be assessed in	Judge 3 of the ACP process by Stopics Harter Experies.	sage and the PCP process of adject reacter Edge to.	Judge 2 of the ACP process by Judgest market Experts.	July 201 to N.P. process by Judges, marrier Experie.	dage a or one not produce by dauged making caperia.	august on the ACP process by august matter Experies.	augi 2 to the ACP process by adoptic marker Experts.	augi 2 to 1 in ACF process by audien states Experie.	Judge 2 to the ACP process by Judgets Harries Experts.	Judge 2 or the PCP process by adaptic matter Experts.	auge 2 or the ACP process by adoptic marker Experts.	Juge 2 or one MLP process by adoptic metter Experts.	stage 2 or the PCF process of stagest master Experts.	auge a to the Mar process by autorit matter Experts.
			Stage 3 of the ACP process by Subject Matter Experts. Stage 3 of the ACP process by Subject Matter Experts.														
General Aviation	Access	initial Options Appraisal: Qualitative	No change to existing airspace arrangements. Any General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under MAN will maintain their current level of access under	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Youal Reference Points and esisting at Letters of Agreement pertaining to General Aviation access will be neviewed and updated (where applicable) prior to implementation to assure their continued validity. Aircoare classification or to assure their continued validity. Aircoare classification	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Latters of Agreement pertaining to General Aviation access will it	No adverse impact to General Aviation access is anticipated as a g consequence of this ACP. All Visual Reference Points and existing by Letters of Agreement pertaining to General Aviation access will be	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing latters of Agreement pertaining to General Aviation access will be	No adverse impact to General Asiation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing latters of Agreement certaining to General Asiation access will be	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing latters of American pertaining to General Aviation access will be	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing latters of Agreement pertaining to General Aviation access will be	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existin Letters of Agreement pertaining to General Aviation access will be	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing letters of Agreement pertaining to General Aviation access will be	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existin Letters of American portaining to General Aviation access will be	a No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing be letters of Agreement pertaining to General Aviation access will be
			estant operational arrangements. extant operational arrangements.				E Letters of Agreement pertaining to General Aulation access will it in reviewed and updated (where applicable) prior to implementati to ensure their continued validity. Airspace classification	to ensure their continued validity. Airspace classification	Latters of Agreement pertaining to General Aviation access will be n reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification		g consequence of this ACP. All Visual Reference Points and existing e Letters of Agreement pertaining to General Aviation access will be in reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification	to ensure their continued validity. Airspace classification	to ensure their continued validity. Airspace classification	to ensure their continued validity. Airspace classification	Letters of Agreement pertaining to General Aviation access will be on reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification	to ensure their continued validity. Airspace classification	to ensure their continued validity. Airspace classification
				requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.
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 continued use of extant procedures, therefore no	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more		The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more the predictable flight paths and fewer delays (both in the air or on the	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more
			economic beneat for use arines. economic beneat for use arines.	ground). This is expected to facilitate economic benefit by	predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the frequency of air transport movements,	ground). This is expected to facilitate economic benefit by	ground). This is expected to facilitate economic benefit by	ground). This is expected to facilitate economic benefit by	ground). This is expected to facilitate economic benefit by	ground). This is expected to facilitate economic benefit by	ground). This is expected to facilitate economic benefit by	ground). This is expected to facilitate economic benefit by	ground). This is expected to facilitate economic benefit by	ground). This is expected to facilitate economic benefit by	ground). This is expected to facilitate economic benefit by	ground). This is expected to facilitate economic benefit by	ground). This is expected to facilitate economic benefit by
				increasing passenger numbers and increasing cargo tonnage carried.	increasing passenger numbers and increasing cargo tonnage carried.	increasing passenger numbers and increasing cargo tonnage carried.	increasing passenger numbers and increasing cargo tonnage carried.	increasing passenger numbers and increasing cargo tonnage carried.	increasing passenger numbers and increasing cargo tonnage carried.	increasing passenger numbers and increasing cargo tonnage carried.	increasing passenger numbers and increasing cargo tonnage carried.	increasing passenger numbers and increasing cargo tormage carried.	increasing passenger numbers and increasing cargo tonnage carried.	increasing passenger numbers and increasing cargo tonnage carried.	 potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. 	increasing passenger numbers and increasing cargo tonnage carried.	increasing passenger numbers and increasing cargo tonnage carried.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Dualitative	The existing MAN procedures for departures do not enable continuous climb operations.	Option 11 supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within State	Option 1 R supports continuous dimb operations, reducing the overall amount of fuel burst. There is no requirement within Stare	Option 3 L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stain	Option 3 R supports continuous dimb operations, reducing the er overall amount of fuel burnt. There is no requirement within Str	Option 6A L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Star	Option 6A R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage	Option 7A L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Star	Option 7A R supports continuous climb operations, reducing the ere overall amount of fuel burnt. There is no requirement within Stars	Option Bit supports continuous dimb operations, reducing the overall amount of fuel burnt. There is no requirement within State	Option B R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within State	Option 9 L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Sta	Option 9 R supports continuous climb operations, reducing the see overall amount of fuel burnt. There is no requirement within State	Option 10 L supports continuous climb operations, reducing the e overall amount of fuel burnt. There is no requirement within Sta	e Option 10 R supports continuous climb operations, reducing the
			Within Stage 2 of the CAP1616 process, there is no Within Stage 2 of the CAP1616 process, there is no	2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic	2 of the CAP1616 process to quantify fuel burn, this will be ic conducted in Stage 3. Therefore, to enable a comparison, the logic	2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic	2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the lo	2 of the CAP1626 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic	Option 6A R supports continuous climb operations, reducing the so overall amount of feed burnt. There is no requirement within Stage 2 of the CAPIGES process to quantify feel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic	2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logi	2 of the CAP1626 process to quantify fuel burn, this will be ic conducted in Stage 3. Therefore, to enable a companison, the logic	2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic	2 of the CAP2636 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic	2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the log	2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic	2 of the CAP1616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the log	Option 10 R supports continuous climb operations, reducing the lager overall amount of feed burnt. There is no requirement within Stage 2 of the CAPIGES process to quantify feel burn, this will be optic onducted in Stage 3. Therefore, to enable a companion, the logic
			quantitative feel burn analysis. This will be covered in Stage 3, in order to make a comparison in Stage 2, in order to make a comparison in Stage 2, in stage 3, in order to make a comparison in Stage 2, in stage 3, in order to make a comparison in Stage 2, track-mileage is used, based on the theory that the	applied is that the shorter the track length, the less fuel is burnt. With research to this poston, it is 35 35km (20 75cm) lone. When	applied is that the shorter the track length, the less fuel is burnt. With regards to this cotion, it is 32.55km (21.35km) long. When	applied is that the shorter the track length, the less fuel is burnt. With resents to this potion, it is \$3.92km (20.11cm) long When	applied is that the shorter the track length, the less fuel is burnt. With parards to this portion it is \$5.00km (29.71cm) long. When	 applied is that the shorter the track length, the less fuel is burnt. With research to this potion it is 48 75km (26 75km) long When 	applied is that the shorter the track length, the less fuel is burnt. With reservis to this potion it is 40 80km (35 80km) long When	applied is that the shorter the track length, the less fuel is burnt. With research to this potion, it is 44 50km (34 00cm) long When	applied is that the shorter the track length, the less fuel is burnt. With resents to this notion, it is 44 77km (74 18nm) long When	applied is that the shorter the track length, the less fuel is burnt. With parands to this poston it is 35 35m (20 72mm) long. When	applied is that the shorter the track length, the less fuel is burnt. With researds to this notion, it is 30 75km (71 19nm) long When	applied is that the shorter the track length, the less fuel is burnt. With regards to this potion, it is 39 50km (21 33cm) long When	applied is that the shorter the track length, the less fuel is burnt. With parards to this potion it is 40.41km (21.87nm) long When	applied is that the shorter the track length, the less fuel is burnt. With negards to this postion, it is 41 67km (22 50km) long When	it. applied is that the shorter the track length, the less fuel is burnt. With research to this potion, it is 42 57km (22 99mm) lengt When
			shorter the track releage, the less greenhouse gases are emitted. In the case of the oxisting Runway OSI. LISTO SID model track, the track length is 28-78m LISTO SID model track, the track length is 28-78m	and stage it is assumed that it will require a larger amount or lost	this stage it is assumed that it will require a larger amount of fuel ms burn, therefore, this option is deemed to be of dis-benefit in terms	this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in term	this stage it is assumed that it will require a larger amount of fu as burn, therefore, this option is deemed to be of dis-benefit in ter	el this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in term	at compared to the 'do nothing' scenario, Option 6A R is longer and at this stage it is assumed that it will require a larger amount of fall burn, therefore, this option is deemed to be of dis-benefit in	this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in term	at this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in	this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in term	this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms	at this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit is	this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in term	at this stage it is assumed that it will require a larger amount of its fuel burn, therefore, this option is deemed to be of dis-benefit in	nd compared to the 'do nothing' scenario, Option 10 R is longer and at f this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms
			USTO SID modal track, the track length is 28.57km (15.43km). (17.72km).	of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	of fuel burn. More in-depth analysis will be carried out in Stage: to confirm.	3 of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Communical statement	Tradeles essis	tribial Continue Assessinals	Reduction with substitute from the substitute of the substitute from the substitute of the substitute	No continuous district an entry of the forms desired and the constraint	No entirested that an enter effect one territors off he asserted	No contributed that we make after force to be consisted the constraint	No antidented that are not a state from territor will be one from	A Not anticipated that we not a solution to be consisted to an extending	No extrine tel that we not a stationary to be seen all the second	No antidested that are not a state from territors all the assessed	No entire and that we note what from twice and he construd	No contributed that we make after force to be consisted to	No estimated that we note all of form technique will be seen and	No estimated that are not a solid from to below all be an extended	The author and that are only after from testing will be appointed	No antidented that an extendible form to be and the constraint	
Commercial arrives	maning was	Qualitative	Standard training would be applicable for existing procedures which would be practised by crews through existing simulate exercises. Though existing simulates exercises.	to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	e to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	to enable pilots to fly the new PSN procedures as PSN has become a common nevigation standard across the world.	to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	to enable pilots to fly the new PBN procedures as PBN has becom a common nevigation standard across the world.	to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	e to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	to enable pilots to fly the new PBN procedures as PBN has become common navigation standard across the world.	ne to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	e to enable pilots to fly the new PBN procedures as PBN has become common navigation standard across the world.	t is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.
Commercial airlines	Other costs	initial Options Appraisal: Qualitative	It is not proportionate for MAN to assess potential It is not proportionate for MAN to assess potential Although the costs for assessed delicate the costs for assessed delicated the costs for assessed deli	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight	Other costs to commercial sirlines may include updates to Flight	Other costs to commercial sirlines may include updates to Flight Management Systems (FMS), navigation databases and operating	Other costs to commercial airlines may include updates to Flight				Other costs to commercial airlines may include updates to Flight		
			other costs for commercial artifices - there may be costs associated with maintaining fegacy systems to continue flying conventional analgation but there are continue flying conventional analgation but there are	procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial	procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is no	t procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is no	procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is no	ot procedures, increased pilot hire costs versus training etc. It is not
			too many variables (e.g. aircraft types, on-board system capability etc.) to consider these effectively.	airlines of flying PBN procedures.	airlines of flying PBN procedures.	airlines of flying PBN procedures.	airlines of flying PBN procedures.	airlines of flying PBN procedures.	airlines of flying PBN procedures.	airlines of flying PBN procedures.	airlines of flying PBN procedures.	airlines of flying PSN procedures.	airlines of flying PBN procedures.	airlines of flying PBN procedures.	airlines of flying PBN procedures.	airlines of flying PBN procedures.	airlines of flying PBN procedures.
Airport / Air navigation service provider	Infrastructure costs	initial Options Appraisal: Qualitative	no nominorial infrastructure is required at MAN to maintain extant conventional procedures; however, maintain extant conventional procedures; however, maintaining accessibility to current ground-based	inere are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN redures the	s inere are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN redures the	inere are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN redures the	Intere are no expected additional infrastructure costs. All option relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN reforms the	inere are no expected additional infrastructure costs. All options relate to the implementation of PSN and no additional infrastructure is required as the introduction of PSN reduces the	innere are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN reduces the	inere are no expected additional infrastructure costs. All option relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN red-res the	s inere are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN redures the	inere are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN redures the	inners are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN reduces the	inere are no expected additional infrastructure costs. All option relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN red-res than	inere are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN reduces the	inere are no expected additional infrastructure costs. All option relate to the implementation of PSN and no additional infrastructure is required as the introduction of PSN reduces the	ons There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN reduces the
			equipment (operated by NERL) may become prohibitively expensive should a CADITE RMAY substitution not be implemented prior to the proposed removal date. equipment (operated by NERL) may become prohibitively expensive should a CADITE RMAY substitution not be implemented prior to the proposed removal date.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation sids are no longer needed.	relance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.
			proposed removal date. substitution not be implemented prior to the proposed removal date.														
Airport / Air	Operational costs	initial Options Appraisal:	No change to operational costs is attributable to No change to operational costs is attributable to	ATC at MAN is contracted out to a third, water association	ATC at MAN is contracted out to a third,	ATC at MAN is contracted out to a third, with a second out	ATC at MAN is contrasted out to a third evaluation.	ATC at MAN is contrarted and to a third	ATC at MAN is contracted out to a third-root	ATC at MAN is contrarted out to a third and contract.	ATC at MAN is contracted out to a third,	ATC at MAN is contracted out to a third,	ATC at MAN is contracted out to a third-protection of	ATC at MAN is contracted out to a shirel	ATC at MAN is contracted out to a third contracted.	ATC at MAN is contracted and to a third	ATC at MAN is contracted and has a third-markyinterest Thir
navigation service provider	Uperational costs	Qualitative	No change to operational costs is attributable to maintaining the extant procedures. No change to operational costs is attributable to maintaining the extant procedures.	is considered to be an onegine cost. Some operational costs are	is considered to be an onepine cost. Some operational costs are	is considered to be an oneoine cost. Some operational costs are	is considered to be an oneoing cost. Some operational costs are	is considered to be an oneoine cost. Some operational costs are	is considered to be an oneoing cost. Some operational costs are	is considered to be an oneoing cost. Some operational costs are	is considered to be an onepine cost. Some operational costs are	is considered to be an oneping cost. Some operational costs are	is considered to be an onepine cost. Some operational costs are	is considered to be an oneping cost. Some operational costs are	is considered to be an oneoing cost. Some operational costs are	is considered to be an oneoing cost. Some operational costs are	a ATC at MAN is contracted out to a third-party organisation. This MSP existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are
				anticipated with respect to the implementation of new procedure and training of controllers; however, these cannot be identified at this stage of the ACP process.	es anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	 anticipated with respect to the implementation of new procedure and training of controllers; however, these cannot be identified at this stage of the ACP process. 	is anticipated with respect to the implementation of new procedu t and training of controllers; however, these cannot be identified this stage of the 4CP process.	anticipated with respect to the implementation of new procedure and training of controllers; however, these cannot be identified at this stage of the ACP process.	t and training of controllers: however, these cannot be identified at	anticipated with respect to the implementation of new proordur and training of controllers; however, these cannot be identified a this stage of the ACP process.	t and training of controllers: however, these cannot be identified at	s anticipated with respect to the implementation of new procedurer and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at		at and training of controllers; however, these cannot be identified at		ares anticipated with respect to the implementation of new proordures if at and training of controllers; however, these cannot be identified at this shaes of the 4CP process.
Airport / Air	Deployment costs	Initial Options Appraisal:	No deployment costs applicable to extant No deployment costs applicable to extant	l						ATC at MAN is contracted out to a third-party organisation. This							a ATC at MAN is contracted out to a third-party organisation. This
navigation service provider		Qualitative	procedures. procedures.	existing remmercial contract between MAN and their chosen ANS	(2) existing communial contract between MAN and their chosen ANSI	minting commercial contract between MAN and their chosen ANS	2 existing commercial contract between MAN and their chosen AS	52 existing communial contract between MAN and their chosen ANS	2 politica rememental contract between MAN and their chosen ANO	asisting rememerial metract between MAN and their chosen AN	22 existing remmarrial metrart between MAN and their chosen ANS	subting remmercial metract between MAN and their chosen ANG	existing represental contract between MAN and their chosen ANSP	existing remmercial contract between MAN and their chosen AN	SD existing resonancial contract between MAN and their chosen ANS	2 existing removerial contract between MAN and their chosen AN	NSD evisting commercial contract between MAN and their chosen ANSD
				anticipated with respect to the implementation of new procedure and training of controllers; however, these cannot be identified at this stage of the ACP process.	es anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	 anticipated with respect to the implementation of new procedure and training of controllers; however, these cannot be identified at this stage of the ACP process. 	anticipated with respect to the implementation of new procedu and training of controllers; however, these cannot be identified this stage of the ACP process.	res anticipated with respect to the implementation of new procedure and training of controllers; however, these cannot be identified at this stage of the ACP process.	ss anticipated with respect to the implementation of new procedures t and training of controllers; however, these cannot be identified at this stage of the ACP process.	anticipated with respect to the implementation of new procedure and training of controllers; however, these cannot be identified a this stage of the ACP process.	es anticipated with respect to the implementation of new procedure and training of controllers; however, these cannot be identified at this stage of the ACP process.	s anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	 anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process. 	anticipated with respect to the implementation of new procedurand training of controllers; however, these cannot be identified this stage of the ACP process.	anticipated with respect to the implementation of new procedure and training of controllers; however, these cannot be identified at this stage of the ACP process.	s anticipated with respect to the implementation of new procedur and training of controllers; however, these cannot be identified this stage of the ACP process.	is considered to be an ongoing cost. Some deployment costs are ares anticipated with respect to the implementation of new procedures at and training of controllers; however, these cannot be identified at this stage of the ACP process.
Safety Assessment					Possible hazards have been identified, some of which are extant.												
Safety Assessment	Safety Assessment	initial Options Appraisal: Qualitative	The 'do nothing' scenario assumes that current operations at MAN are safe including use of the state consentional properties. Pollipade the state consentional properties the state of the												Possible hazards have been identified, some of which are extant. Firstly, aircraft executing a MAP may conflict with aircraft on the SD. This is an extent hazard to addition, positions within this		
			operations at MAN are safe including use of the estant conventional procedures. Following the estant conventional procedures. Following the extent conventional procedures.	faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of separation. Furthermore,	 faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of separation. Furthermore, 	faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of separation. Furthermore,	faster aircraft to catch up with slower aircraft due to dispersion the turn, which may lead to a loss of separation. Furthermore,	in faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of separation. Furthermore,	faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of separation. Furthermore,	envelope may conflict with MAN annuals/transitions and aircraft inbound to Liverpool. In some cases, ATC intervention is required	envelope may conflict with MAN arrivals/transitions and aircraft inbound to Liverpool. In some cases, ATC intervention is required	envelope may conflict with MAN arrivals/transitions and aircraft inbound to Liverpool. In some cases, ATC intervention is required	envelope may conflict with MAN arrivals/transitions and aircraft inbound to Diverpool. In some cases, ATC intervention is required	envelope may conflict with MAN arrivals/transitions and aircraft inbound to Liverpool. In some cases, ATC intervention is require	envelope may conflict with MAN arrivals/transitions and aircraft d inbound to Liverpool. In some cases, ATC intervention is required	envelope may conflict with MAN arrivals/transitions and aircraft inbound to Liverpool. In some cases, ATC intervention is require	Rinchy, aircraft exouring a MAP may continct with aircraft on the 3D. This is an exclusion point on this develope may conflict with MAPA arrivals/fivantitions and aircraft with MAPA arrivals/fivantitions in expired with MAPA arrivals/fivantition and aircraft arrivals/fivantitions/fivanti
			would continuously require radar vectoring (should CAPITSI or a commercial agreement to maintain the existing avaigational aid not be implemented), existing avaigational aid not be implemented by	arrivals/transitions. Both of which can be mitigated through the	options within this envelope may conflict with MAN arrivals/transitions. Both of which can be mitigated through the design process. Further assessment will be conducted at Stage 3	options within this envelope may conflict with MAN arrivals/transitions. Both of which can be mitigated through the design process. Further assessment will be conducted at Stage 3	options within this envelope may conflict with MAN arrivals/transitions. Soth of which can be mitigated through the design process. Further assessment will be conducted at Stage 3	options within this envelope may conflict with MANI arrivals/transitions. Both of which can be mitigated through the dealen process. Further assessment will be conducted at Stage 3	options within this envelope may conflict with MAN aptions. Both of which can be mitigated through the design process. Further assessment will be conducted at Stage 3	to mitigate this, but it is expected that the introduction of PBN If and the application of the design process (reducing the need for ATC intervention in the fature) or procedurally if required. Further	Ps to mitigate this, but it is expected that the introduction of PBN IFF and the application of the design process (reducing the need for er ATC intervention in the future) or procedurally if required. Further	Is to mitigate this, but it is expected that the introduction of PBN IFP and the application of the design process (reducing the need for ATC intervention in the future) or procedurally if required. Further	s to mitigate this, but it is expected that the introduction of PBN IFPs and the application of the design process (reducing the need for ATC intervention in the future) or procedurally if required. Further	to mitigate this, but it is expected that the introduction of PSN I and the application of the design process (reducing the need for ATC intervention in the future) or procedurally if required. Furth	FPs to mitigate this, but it is expected that the introduction of PBN IF and the application of the design process (reducing the need for er: ATC intervention in the future) or procedurally if required. Further	Is to mitigate this, but it is expected that the introduction of PSN I and the application of the design process (reducing the need for ATC intervention in the future) or procedurally if required. Furth	IFPs to mitigate this, but it is expected that the introduction of PBN IFPs and the application of the design process (reducing the need for her ATC intervention in the future) or procedurally if required. Further
			resulting in a possible increase in ATCO workload.	and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	and 4 of the CAPISIS process to confirm the exact nature of all hazards and mitigations.	assessment will be conducted at Stage 3 and 4 of the CAP1616	assessment will be conducted at Stage 3 and 4 of the CAP2626	assessment will be conducted at Stage 3 and 4 of the CAP1616	assessment will be conducted at Stage 3 and 4 of the CAP2626	assessment will be conducted at Stage 3 and 4 of the CAP1616	assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	assessment will be conducted at Stage 3 and 4 of the CAP1616	assessment will be conducted at Stage 3 and 4 of the CAP1616
]				<u></u>			
		Summary of Analysis	The 'do nothing' scenario in relation to this ACP is not a viable option as it does not provide a not a viable option as it does not provide a	When compared to the 'do nothing' scenario, Option 1 L performs - worse in terms of Greenhouse gas emissions and Fuel burn.	s: When compared to the 'do nothing' scenario, Option 1 R performs -worse in terms of Noise impact, Air Quality, Greenhouse gas	When compared to the 'do nothing' scenario, Option 3 L performs - worse in terms of Greenhouse gas emissions and Fuel burn.	When compared to the 'do nothing' scenario, Option 3 R performance of Greenhouse gas emissions and Ruel burn.	ms: When compared to the 'do nothing' scenario, Option 6A L performs:	When compared to the 'do nothing' scenario, Option 6A R performs:	performs:	performs:	When compared to the 'do nothing' scenario, Option & L performs: - worse in terms of Noise impact, Greenhouse Gas emissions and	When compared to the 'do nothing' scenario, Option B R performs: - worse in terms of Noise impact, Air Quality, Greenhouse Gas	When compared to the 'do nothing' scenario, Option 9 L perform - worse in terms of Noise impact, Greenhouse Gas emissions and	with the compared to the 'do nothing' scenario, Option 9 R performsworse in terms of Noise impact, Air Quality, Greenhouse Gas emissions and Fuel burn.	When compared to the 'do nothing' scenario, Option 10 L performs:	When compared to the 'do nothing' scenario, Option 20 R performs:
			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 DVGR beacons in December 2022, which would of the DVGR beacons in December 2022, which would	- neutral / equal in terms of the remaining criteria because there i	- worse in terms of Noise impact, Air Quality, Greenhouse gas emissions and Fuel burn. - better in terms of Capacity and resilience, and Economic impact is from increased effective capacity.	better in terms of Noise impact, Air Quality, Capacity and resilience, and Economic impact from increased effective capacity. neutral / equal in terms of the remaining criteria because there is	- better in terms of Noise impact, Air Quality, Capacity and neullience, and Economic impact from increased effective capacit is - neutral / equal in terms of the remaining orders have	is resilience, and Economic impact from increased effective capacity.	-worse in terms of Greenhouse gas emissions and Fuel burnbetter in terms of Noise impact, Air Quality, Capacity and resilience, and Economic impact from increased effective capacity.		-worse in terms of Noise impact, Greenhouse Gas emissions and Ruel burn. -better in terms of Capacity and resilience, and Economic impact		- better in terms of Capacity and resilience, and Economic impact	Fuel burn better in terms of Air Quality, Capacity and resilience, and Economic impact from increased effective capacity.	emissions and Fuel burn. - better in terms of Capacity and resilience, and Economic impact from increased effective capacity.	Fuel burn.	- worse in terms of Noise impact, Air Quality, Greenhouse Gas emissions and Fuel burn better in terms of Capacity and resilience, and Economic impact
			have a significant impact on capacity and resilience. The existing SIDs do not enable continuous dimb The existing SIDs do not enable continuous dimb	no change when compared to today's operation.	- neutral / equal in terms of the remaining criteria because there is	no change when compared to today's operation.	no change when compared to today's operation.	 is resilience, and Economic impact from increased effective capacity. neutral / equal in terms of the remaining criteria because there in ordinary when compared to today's operation. 	in esilience, and Economic impact from increased effective capacity. Is - neutral / equal in terms of the remaining criteria because there is no change when compared to today's operation.	Economic impact from increased effective capacity. - equal/neutral in terms of the remaining other a because there is	Faul burn better in terms of Capacity and resilience, and Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is	Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation.	 equal/neutral in terms of the remaining criteria because there is 	Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there no change when compared to today's operation.	from increased effective capacity. is - equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation.	Economic impact from increased effective capacity equal/neutral in terms of the remaining criteria because there	from increased effective capacity. is - equal/neutral in terms of the remaining criteria because there is
			operations to 7,000th, which leads to a greater operations to 7,000th, which leads to a greater volume of fixel burn, emissions and noise at lower levels. In terms of Tranquiller, Biodiversity, General levels. In terms of Tranquiller, General levels.	At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some motes operated by other restaufneeds almost have been	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some motes operated by other posts (page 1).			no change when compared to today's operation.	no change when compared to today's operation.	At this time it is not ensuite to fully determine the selety	at this time it is not possible to fully determine the safety	At this time it is not nossible to fully determine the safety	At this time it is not possible to fully determine the safety	no change when compared to today's operation.	no change when compared to today's operation.
			Aviation access and Economic impact, the 'do nothing' baseline provides minimal/no change to nothing' baseline provides minimal/no change to							implications of this specific option. Possible conflicts with some routes operated by other routes/nearby airports have been	implications of this specific option. Possible conflicts with some routes operated by other routes/nearby airports have been	noutes operated by other routes/nearby airports have been identified, but the exact nature of these conflicts is unclear at this	routes operated by other routes/nearby airports have been identified, but the exact nature of these conflicts is unclear at this	routes operated by other routes/nearby airports have been identified, but the exact nature of these conflicts is unclear at the	implications of this specific option. Possible conflicts with some requires operated by other routes/leastry airports have been is identified, but the exact nature of these conflicts is unclear at this distance. Further analysis and engagement is required in Stage 3 and	implications of this specific option. Possible conflicts with some routes operated by other routes/nearby airports have been	implications of this specific option. Possible conflicts with some routes operated by other routes/nearby airports have been
			today's operations. Furthermore, there are very limited costs incurred as a result of this scenario. Itembed costs incurred as a result of this scenario. Itembed costs incurred as a result of this scenario.	4 of the CAP1616 process to determine this. Purthermore, this option has been assessed as in isolation rather than as a set of design politics as part of a middle more than as a set of	stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP2616 process to determine this. Furthermore, this portion has been assessed as in tradation.	4 of the CAPIGIS process to determine this. Purthermore, this option has been assessed as in isolation rather than as a set of design options as need of a mindre partners.	4 of the CAP1616 process to determine this. Furthermore, this option has been assessed as in isolation rather than as a set of design policing as part of a set of design policing as part of	stage. Further analysis and engagement is required in Stage 3 and 4 of the CAPISSS process to determine this. Furthermore, this potion has been assected to be included.	identified, but the exact nature of these conflicts is under at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAPIGIS process to determine this. Furthermore, this option has been assessed as in isolation rather than as a set of	Identified, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 8 of the CASSESS received in determine.	is identified, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CADISIA recovery	stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1635 process to determine this. Furthermore, this portion has been assessed as to include	stage. Further analysis and engagement is required in Stage 3 and 4 of the CAPSSIS process to determine this. Furthermore, this profiles has been assessed as in condition.	stage. Further analysis and engagement is required in Stage 3 and 4 of the CAPIGIS process to determine this. Furthermore, this postion has been assessed as in including	d stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1016 process to determine this. Furthermore, this position has been assessed as in tentation.	identified, but the exact nature of these conflicts is unclear at the stage. Further analysis and engagement is required in Stage 3 and 4 of the CADONIA property of the stage 3.	his identified, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1626 process to determine this. Furthermore, this
			From a safety perspective, it is assumed that current. MAN operations are safe. Following the removal of the DVDRs, it is acknowledged that ATCO workload the DVDRs, it is acknowledged that ATCO workload.	design options as part of a wider system/runway pair. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options.	t design options as part of a wider system/runway pair. Additional analysis is required in Stage 3 to determine the cumulative impact		design options as part of a wider system/runway pair. Additions t analysis is required in Stage 3 to determine the cumulative impa of this option when compared to all the other options.	d option has been assessed as in isolation rather than as a set of ct design options as part of a wider system/runway pair. Additional analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options.			option has been assessed as in isolation rather than as a set of	design options as part of a wider system/runway pair. Additional	design options as part of a wider system/runway pair. Additional	design options as part of a wider system/runway pair. Additional	design options as part of a wider system/runway pair. Additional	option has been assessed as in isolation rather than as a set of design options as part of a wider system/runway pair. Additional	option has been assessed as in isolation rather than as a set of all design options as part of a wider system/runway pair. Additional
			may increase due to the enduring requirement for radar vectoring.	Sesard on performance in the IDA Critish 1 I has been deemed as	of this option when compared to all the other options.	Based on performance in the IOA Cotton St has been deemed the	Based on performance in the IDS. Critical 18 has been deemed t	fue .			design options as part of a wider system/runway pair. Additional than alysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options.	of this option when compared to all the other options.	of this option when compared to all the other options.			analysis is required in Stage 3 to determine the cumulative impa of this option when compared to all the other options.	act analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options.
				compared to other routes (originating from the same runway direction) within the same design envelope.	Acceptable, as it overfiles the third fewest population when compared to other routes (originating from the same runway	fewest population when compared to other routes (originating from the same runway direction) within the same design envelope	fewest population when compared to other routes (originating from the same runway direction) within the same design envelop	Revourable, as it overfiles the second fewest population when compared to other routes (originating from the same runway)	as Based on performance in the IOA, Option 6A R has been deemed as Pavourable, as it overfiles the second fewest population when compared to other routes (originating from the same runway)	Based on performance in the KDA, Option 7A L has been deemed Acceptable, as it overflies the third fewest population when	as Based on performance in the IDA, Option 7A R has been deemed as Acceptable, as it overfiles the third fewest population when	Preferred option (within this design envelope), as it overflies the fewest population when compared to other routes (originating	Preferred option (within this design envelope), as it overfiles the fewest population when compared to other routes (originating	Payourable, as it overfiles the second fewest population when compared to other routes (originating from the same runway	Is Based on performance in the IDA, Option 9 R has been deemed as Favourable, as it overfiles the second fewest population when compared to other routes (originating from the same runway)	Based on performance in the IDA, Option 10 L has been rejected to overflies a greater population when compared to other option	d as Based on performance in the IDA, Option 20 R has been rejected as it overflies a greater population when compared to other options
					direction) within the same design envelope.			direction) within the same design envelope.	direction) within the same design envelope.	compared to other routes (originating from the same runway direction) within the same design envelope.	compared to other routes (originating from the same runway direction) within the same design envelope.	from the same runway direction) within the same design envelope	from the same runway direction) within the same design envelope	direction) within the same design envelope.	direction) within the same design envelope.	(originating from the same runway direction) within the same design envelope.	(originating from the same runway direction) within the same design envelope.
				-	-	-	-	-	-								

Departure Envelope: SID Runway 05 South West			T				
'DO NOTHING' BASELINE	OPTION 1	OPTION 2A	OPTION 28	OPTION 3A	OPTION 38	OPTION 46	OPTIONS
For the south-west design envelope, the 'do nothing' scenario for departures in terms of today's operation is based around the existing conventional ASMM SD. The 'do nothing' scenario for departures consists of	This is an RNAVI option that provides two left turns and then a track to join the NATS network to the south-west. The initial course is similar to the current ASMIM 13/12 3D, but it turns off this to the north of MAN.	This is an RNPI option that uses RF coding to provide a single left turn starting at the position of the current turn to create a fuel- efficient route. The design speed results in a tiefst radius turn to create a short track length to join the NATS network to the south-	This is an ENP1 that uses EF coding to provide a single initial turn to create a fuel-efficient route to the network joining point to the west It differs from option 2A in that the turn is at the earliest PANS-OPS compliant position from Runway OSI, to create the shortest route	This is an RNPI that uses RF coding to provide a single initial turn starting at the position of the current turn to create a fuel-efficient route to the south-west. It is similar to cotion 2A but is desired with a higher desire speed of 230kts.	This is an RNPI option that uses RF coding to provide a single initial turn to create a fuel-efficient route to the network joining point: the west. It differs from option 3A in that the turn is at the earliest PANS-CPS compliant position from DSI to create a shorter route for	to This is an RNP1 option that uses RF coding to provide a single initial turn at the earliest PANS-OP5 compliant position to create a route or to the south-west, it differs from option 44 in that the turn is at the earliest PANS-OP5 compliant position from Russeav DS, to create a	This is an RNAVI option that provides two turns to the left to route south-west similar option 1 but uses an initial 15" track adjustment to the left from the DER for Rumway CSL and a 5" adjustment for Rumway CSR. This is to provide noise relief for the Cheadle area, which
is based around the existing conventional ASMEM SIG. The 'do nothing' scenario for departures consists of modal track that has been derived to provide an accurate representation of what occurs today. In addition to the modal track, apolygon has also been created that represents an area where current operations are						or to the south-west. It differs from option 4A in that the turn is at the earliest PAMS-OPS compliant position from Runway 0SL to create a shorter route for this design speed. all it is similar to options 2B and 2B but is designed with a higher speed of 220kts. The design speed results in a wider track, which may aid	
dispersed due to radar vectoring and potentially may affect people on the ground. The overflight analysis	benefits in terms of noise. The procedure uses fly-by waypoints.	combines with the option for GSR. The left turn is completed heading in a south-westerly direction in the vicinity of Choriton and it	overhead Cheadle and West Didsbury before completing the left turn heading in a south-westerly direction to the south of Sale where it	OSL: After departure this route makes a single left turn just after Cheadle which takes it overhead Sumage and Fallowfield where it	separation from MAN arriving traffic from the north. It may also permit some aircraft to be in a clean configuration (without the use	of vertical separation from MAN arriving traffic from the north. It will also permit a larger number of aircraft to fly this route in a clean	the use of flaps) which has potential benefits in terms of noise.
altitudes of 4,000ft and 7,000ft with the addition of a radar vectoring area where appropriate. All data is	and West Didsbury where it combines with the option for CSR. There is then a short straight segment before a second turn is made or	er CSR: After departure this route makes a single left turn just after Cheadle which takes it overhead Burnage and Withington where it	Warrington.	It continues in this direction to terminate at 7,000th south of the Lymm interchange between the MSS and the MS.	CSL: After departure this route turns left at the earliest PANS-OPS compliant position (Inm from CCR). This is a single left turn that tai	or in third to Spotial as all as that is single with a right of pold of 220th. We stopp the off state in a beath rank, with they as manipulation (which we will read the state of 150) with the state of 150 miles o	s OSL: After passing the DER aircraft make a 15° track adjustment to the left (north) followed by a left turn that routes aircraft to the west
based on current aircraft performance data and is calculated based on the distance between the Departure End of Runway and the end of the modal track.	Stretford and it heads in a south-westerly direction over spansely populated areas to terminate at 7,000ft south of the Lymm interchange between the MSS and the MS.	combines with the option for GSL. The left turn is completed heading in a south-westerly direction in the vicinity of Sale and it continues in this direction to terminate at 7,000ft south of the lymm interchange between the MSG and the MG.	OSR: After departure this route turns left at a point that is perpendicular with the turn point for the OSL option. This is a single left turn that takes it overhead Cheadle and West Didsbury before completing the left turn heading in a south-westerly direction to the south of	OSR: After departure this route makes a single left turn just after Cheadle which takes it overhead Burnage and Fallowfield where it combines with the option for OSL. The left turn is completed heading in a south-westerly direction between Choriton and Stretford an	It overhead Cheadle and Withington before completing the left turn heading in a south-westerly direction to the south of Stretford d where it combines with the option for OSR. It continues south-west to route to avoid Altrincham and terminates at 7,000ft west of the	It overhead Cheadle, Burnage and Fallowfield before completing the left turn heading in a south-westerly direction at Stretford where it combines with the option for GSR. It continues in this direction to terminate at 7,000ft west of the Lymm interchange between the MSG	t of Cheadle. There is then a short straight segment where the routes combine before a second turn is made over Stretford and it heads in a south-westerly direction over sparsely populated areas to terminate at 7,000ft to the south-west of the junction between the MS6
	GSE. After departure this route turns left at a point that is perpendicular with the turn point for the GSL option. This takes it overhead. Cheadle and West Didsbury where it combines with the option for GSL. There is then a short straight segment before a second turn is raide over Threford and it heads in a south westerly direction over sparsely opopulated areas to terminate at 7,000 to such of the Lym	A speed restriction of 190 KIAS is used for the first turn which allows the smallest radius. Although PANS-OPS compliant it should be assessed for flyability as part of the procedure validation process within Stage 4 of CAP2S16.		It continues in this direction to terminate at 7,000t south of the Lymm intenchange between the MSS and the MS. A speed restriction of 220 KIAS is applied to the first turn which is the CAP77E recommended speed.	Lymm interchange between the MSS and the MS. CSR: After departure this route turns left at a point that is perpendicular with the turn point for the CSL option. This is a single left tu	and the MG. OSR: After departure this route turns left at a point that is perpendicular with the turn point for the OSL option. This single left turn	and MG. OSR: After passing the DER aircraft make a 5" track adjustment to the left (north) followed by a left turn that routes aircraft to the west
	made over Stretford and it heads in a south westerly direction over sparsely populated areas to terminate at 7,000ft south of the Lym Interchange between the MSG and the MG. A speed restriction of 210 WAS is used for the first turn and second turn, which is the CAP778 recommended speed.	n Option 2A for Runway 05L was rejected at the DPE stage and has therefore not been assessed.	A speed restriction of 200 KIAS is used for the first turn which allows the smallest radius. Although PANS-OPS compilant it should be assessed for flyability as part of the procedure validation process within Stage 4 of CAP2026.	Option 3A for Runway 051 was rejected at the CPE stage and has therefore not been assessed.	that takes it overhead Cheadle and Withington before completing the left turn heading in a south-westerly direction to the south of Strefford where it combines with the option for OSL it continues south-west to route to avoid Altrincham and terminates at 7,000h.	and the ME. SSE After departure this must be time list at a point that is perpendicular with the turn point for the SSE option. This single left burn last is combated Cheeding, Surrage and This left before completing the left turn handing in a south-waterly direction at Executive when it combines with the uption for SSE. It continues in this direction to terminate at 7,0000 west of the lyens interchange between the MSE and the MSE and This MSE. It continues in this direction to terminate at 7,0000 west of the lyens interchange between the MSE and the MSE.	of Cheadle. There is then a short straight segment where the routes combine before a second turn is made over Stretford and it heads in a south-westerly direction over sparsely populated areas to terminate at 7,000ft to the south-west of the junction between the MS6
			Option 25 for Runway 051 was rejected at the DPE stage and has therefore not been assessed.		west of the Lymm intendrange between the MSG and the MG. A speed restriction of 210 KIAS is applied to the first turn which is the CAP77E recommended speed.	the MS6 and the M6. A speed restriction of 220 KIAS is used for the first turn which allows most aircraft to fly in a clean configuration.	and M6. A speed restriction of 220 KIAS is used for the first turn which is the CAP778 recommended speed.
	Option 1 for Runway OSL was rejected at the DPE stage and has therefore not been assessed.				Option 38 for Runway OSI, was rejected at the DPE stage and has therefore not been assessed.		
Group Impact Level of Analysis Runway OSL Runway OSR	Runway GSL (NOT ASSESSED) Runway GSR	Runway OSE (NOT ASSESSED) Runway OSE	Runway 952 (NOT ASSESSED) Runway 95R	Runway DSL (NOT ASSESSED) Runway DSR	Runway CSL (NOT ASSESSED) Runway CSR	Planterary CSL Statementy CSR	Detects 50
Communities Noise impact on health and quality of Appraisal: Appraisal: nothing iscensirio was based upon the existing nothing nothing iscensirio was based upon the existing nothing nothi	In terms of potential noise impact, initial quantitative analysis ha	In terms of potential native impact, initial quantitative analysis has identified that:	In terms of potential noise impact, initial quantitative analysis ha	In terms of potential noise impact, initial quantitative analysis in	In terms of potential noise impact, initial quantitative analysis in	as In terms of potential noise impact, initial quantitative analysis has identified that:	In terms of potential noise impact, initial quantitative analysis has
health and quality of Appraisal: nothing scenario was based upon the existing Infe Qualitative ASMIM SIQ. In terms of potential noise impact, initial ASMIM SIQ. In terms of potential noise impact, initial	identified that: - Up to 4,000ft, this potion overfiles approximately 90,100 people		identified that: - Up to 4,000ft, this option overfiles approximately 101,400 people	identified that: - Up to 4,000h, this option overfiles approximately 135,500 peop			
quantitative analysis has identified that: quantitative analysis has identified that:	and apprenimently 42,500 medantial building. - Up to 7,000, this option overfless approximately 98,100 people and approximately 42,500 medantial building. Assessed up to 7,000, this option overfless freez people and	people and approximately 50,200 residential buildings Up to 7,000ft, this option overfiles approximately 345,600			and approximately 49,200 residential buildings.	• Oil S. CALLE, This Spation desertal, appointmanty J. And propose of 1-10 to 1-10	and approximately 35,600 residential buildings. In the 7,0000 bits and approximately 41,200 residential buildings.
72,000 people and approximately 33,900 residential 63,000 people and approximately 30,250 residential	and approximately 45,550 residential buildings.	people and approximately 61,900 residential buildings.	with appreximately explore resolution a country. - Top to 2000th, this option own/files appreximately 200,200 people and appreximately 48,000 residential shulfding. Assessed up to 7,000th, this option overfiles fewer people and	e - Up to 7,000th, this option overfiles approximately 172,200 peop and approximately 78,230 residential buildings.	and approximately 55,850 residential buildings.	and approximately 57,150 residential buildings. and approximately 57,150 residential buildings.	and approximately 37,900 residential buildings. and approximately 43,600 residential buildings.
building. - Up to 7,000ft, this option overfiles approximately - Up to 7,000ft, this option overfiles approximately			residential buildings than the 'do nothing' scenario and is	residential buildings than the 'do nothing' scenario and is	Assessed up to 7,000ft, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is	Assessed up to 7,000ft, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is residential buildings than the 'do nothing' scenario and is	Assessed up to 7,000ft, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is residential buildings than the 'do nothing' scenario and is
241,200 people and approximately 108,900 316,500 people and approximately 142,250 residential buildings.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial. therefore considered to be beneficial.	therefore considered to be beneficial. therefore considered to be beneficial.
Communities Air Quality Initial Options No change to air quality is predicted in maintaining. No change to air quality is predicted in maintaining.	Option 1 R overflies three AQMA(s); however, as per CAP1626 ,	Option 2A R overfiles four AQMA(s); however, as per CAP2616,	Option 28 R overfiles four AQMA(s); however, as per CAP1616 ,	Option 3A R overflies four AQMA(s); however, as per CAP1616,	Option 38 R overfiles four AQMA(s); however, as per CAP2616,	Option 48 Loverflies four AQMA(s); however, as per CAP1616, Option 48 R overflies four AQMA(s); however, as per CAP1616,	Option 5 Loverfiles three AQMA(s); however, as per CAP1616 , Option 5 R overfiles three AQMA(s); however, as per CAP1616 ,
Communication And Counting Agrantial Approach Agrantial Approach Agrantial Approach Agrantial Approach Agrantial Agr	para 874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within	para 574, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are	para \$74, due to mixing and dispension, the impact on air quality above 1,000ft is not likely to be significant. There are areas within	para 874, due to mixing and dispension, the impact on air quality above 1,000ft is not likely to be significant. There are areas with	para 874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be simificant. There are areas with	y para \$74, due to mixing and dispension, the impact on air quality para \$74, due to mixing and dispension, the impact on air quality above 1,000ft is not likely to be significant. There are areas within	para 874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be simificant. There are areas within above 1,000ft is not likely to be simificant. There are areas within
than the areas in the immediate vicinity of the than the areas in the immediate vicinity of the Department and of Surveyor.	the immediate vicinity of the airport that may be overflown belo 2,000ft; however, for safety reasons, this is unavoidable. Therefo	areas within the immediate vidnity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is	the immediate vicinity of the airport that may be overflown belon 1,000ft; however, for safety reasons, this is unavoidable. Therefor	the immediate vicinity of the airport that may be overflown belo 1,000ft; however, for safety reasons, this is unavoidable. Therefo			
In terms of AQMAs, the existing Runway OSL ASMIM In terms of AQMAs, the existing Runway OSL ASM	overall, when compared to the 'do nothing' scenario, this option deemed to be beneficial as it overfiles fewer AQMAs.	s unavoidable. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be beneficial as it	overall, when compared to the 'do nothing' scenario, this option deemed to be beneficial as it overfiles fewer AQMAs.	overall, when compared to the 'do nothing' scenario, this option deemed to be beneficial as it overfiles fewer AQMAs.	is overall, when compared to the 'do nothing' scenario, this option deemed to be beneficial as it overfiles fewer AQMAs.	ers, 1,000th; however, for safety reasons, this is unavoidable. Therefore, 1,000th; however, for safety reasons, this is unavoidable. Therefore, is overall, when compared to the 'do nothing' scenario, this option is deemed to be beneficial as it overalls foreward (DAM).	overall, when compared to the 'do nothing' scenario, this option is deemed to be beneficial as it overfiles fewer AQMAs. deemed to be beneficial as it overfiles fewer AQMAs.
occurs when the aircraft is above 1,000ft. occurs when the aircraft is above 1,000ft.	Greened to be determined in the determined related Augusta.	overfiles fower AGMAs.	Detries to de deliminar as is desiran report.	potential to the continues at a continues regard.	Definition to the determinant as it describes retain Augustus.	Determed to the desirences as it over their indigences.	Determine to the destruction as it determines remain Augusta.
Wide Facility Completing Co. Initial College County and a state of a set and the set and a s	Online 18 has been designed to content and to see district.	Output 18 8 has been declared to consent analysis of the	Carlos Will has been designed to consent analysis and designed	Califor 10 files have desired to consent analysis and also	Paties 18 Sharkers declared to connect another one disk	College MI I have been declared to consent analysis and slight. College MI I have been declared to consent analysis and last	Color El bas have desired to consent antitropy after
Wider Society Greenhouse Gas Approarial Approarial Counter toware 6 and exhibit continuous climb Superations. It must be noted that the search toware Countertown climb Superations. It must be noted that the search toware Countertown climb Superations. It must be noted that the search toware Superations. It must be noted that the search toware Superations. It must be noted that the search toware Superations. Superations. Superations of the search toware Superations. Superations. Superations of the search toware Superations. Super	Option I R has been designed to support continuous demis operations. An element of rader worting may still be required to manage aircraft supportation distances. The track milesgen of Option I R in 42.56(m (23.05mm). When	Option 2.8 it has been designed to support continuous climb; operations. An idented in fader sectioning any still be required to manage structly supportation distances. The totack integring of Option 2.8 it a 2.72 km (22.65 km). When	Option 28 R has been designed to support continuous climb of operations, released or final recording may still be required to manage attracts superation distances. The total released of Option 28 E is 40.75min (21.85min), When	Option 3.4 It has been designed to support continuous climb or operations. As element of relater votoring may self to required to making selected relater continuous climb or making selected superation distances. The total relatinger of Option 3.4 It is 6.5 (dee [24.3 htm]. When	o perations. An element of radar vectoring may still be required	Option 48.1 has been designed to support continuous climb to persection. An informed or dark verticating may still be required to enaming stricted support continuous climb to manage stricted support	operations. An element of radar vectoring may still be required to
Qualitative langth flown by aircraft may vary slightly due to the langth flown by aircraft may vary slightly due to the nature of radar vectoring, although aircraft do all nature of radar vectoring although aircraft do all follow the extant procedures in a broader sense. The follow the extant procedures in a broader sense. The	manage aircraft separation distances. The track mileage of Option 1 R is 42.65km (23.03nm). When	to manage aircraft separation distances. The track mileage of Option 2A R is 42.71km (23.63nm). When	manage aircraft separation distances. The track mileage of Option 28 R is 40.72km (21.98nm). When	manage aircraft separation distances. The track mileage of Option 3A R is 45.24km (24.37nm). When	manage aircraft separation distances. The track mileage of Option 38 R is 43.12km (23.28nm). When	manage aircraft separation distances. The track mileage of Option 45 L is 42.44km (22.92nm). When The track mileage of Option 45 R is 44.77km (24.17nm). When	manage aircraft separation distances. The track mileage of Option 5 L is 39.47km (21.31nm). When The track mileage of Option 5 R is 42.06km (22.71nm). When
follow the extant procedures in a broader sense. The follow the extant procedures in a broader sense. The existing procedures do not support optimal aircraft existing procedures do not support optimal aircraft.	compared to the do nothing scenario, upsion 1 k is longer and if therefore expected to emit more greenhouse gases this option is	compared to the do nothing scenario, upoon 2A k is longer and is therefore expected to emit more greenhouse gases this	compared to the do nothing scinario, upcon za x is longer and therefore expected to emit more greenhouse gases this option is:	therefore expected to emit more greenhouse gases this option is	therefore expected to emit more greenhouse gases this option	therefore expected to emit more greenhouse gases this option is therefore expected to emit more greenhouse gases this option is	therefore expected to emit more greenhouse gases this option is. I therefore expected to emit more greenhouse gases this option is.
existing procedures do not support optimal arranit performance and therefore are predicted to have a greater environmental impact commental impact commental or proceed greater environmental impact commental or proceed greater environmental impact commental or proceed greater environmental impact commental impact compared to propose	deemed to be of dis-benefit. More in-depth analysis will take pla at Stage 3, to confirm the exact volumes of greenhouse gases	e option is deemed to be of dis-benefit. More in-depth analysis will take place at Stage 1, to confirm the exact volumes of	deemed to be of dis-benefit. More in-depth analysis will take plas at Stage 3, to confirm the exact volumes of greenhouse gases	deemed to be of dis-benefit. More in-depth analysis will take pla at Stage 3, to confirm the exact volumes of greenhouse gases.	deemed to be of dis-benefit. More in-depth analysis will take plu at Stage 3, to confirm the exact volumes of greenhouse gases	deemed to be of dis-benefit. More in-depth analysis will take place at Stage 3, to confirm the exact volumes of greenhouse gases at Stage 3, to confirm the exact volumes of greenhouse gases	e deemed to be of dis-benefit. More in-depth analysis will take place at Stage 3, to confirm the exact volumes of greenhouse gases at Stage 3, to confirm the exact volumes of greenhouse gases
options. options.	released.	greenhouse gases released.	released.	released.	released.	released. released.	released.
requirement for a change sponsor to conduct requirement for a change sponsor to conduct							
quantitative emissions analysis. This will be covered in Stage 3. In order to make a comparison in Stage 2, in order to make a comparison in Stage 3.							
track mileage is used, based on the theory that the shorter the track mileage, the less greenhouse gases shorter the track mileage, the less greenhouse gases							
grants environmental trapical companied in proposal. Minimo Stage 2 of the OFFISE (procurs, but							
(13.72nm). (16.68nm).							
Wider Society Capacity and Initial Options Maintaining extant procedures would maintain resilience Appraisal: current capacity; however, due to the reliance upon current capacity; however, due to the reliance upon	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PEN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to	The introduction of PBN routes is expected to deliver benefits by increasing simpace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing simpace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more increasing airspace capacity which subsequently leads to more
resilience Appraisal: current capacity; however, due to the reliance upon Qualitative ground-based awagetional add, resilience could be ground-based reagetional add, resilience could be ground-based fracted, following the removal of the significantly affected, following the removal of the	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground bases	more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated	analysis to the sandy and former designs than the sandy	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground base	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the relance on outdeted errored have	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based ground). The reduction of the reliance on outdated ground based	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based
DVOR in December 2022. DVOR in December 2022.	proudulant sign years also when unseps could in an extra the ground. The reduction of the relations on outlied ground has a sign of the reduction of the relations on outlied ground has a sign of the reduction of the relations of the reduction o	note a procurative frequency pasts and in fewer ways process fast of on the groundy. The relation of the relation on outdisted ground based marketional aids will agentificately increase operational resilience through the introduction of PSIX.	production graph plants all to reside contents or and to an ground). The reduction of the relations on outlided ground beard narigational aids will lightfloathly increase operational resilience through the introduction of PEX.	navigational aids will significantly increase operational resilience through the introduction of PBN.	navigational aids will significantly increase operational resilience through the introduction of PBN.	The biological or PER requires have present to deliver benefits by the international register of the international register o	navigational aids will significantly increase operational resilience through the introduction of PBN. through the introduction of PBN.
Wind Parish Transillar Indian Parish Cales	analysis and a final state of the state of t	Parente unage un museum d' PER.	A STANDARD OF POL	A STANDARD W PRIL	AND	The sales and the sales and the sales are sa	The ratio and the state of the
Water Society Temperature Apple CARESEA, APPLE CARE	This option overflies no statutorily identified tranquility recepto (ACNUS or National Parks), nor any identified through community	This option overfiles no statutorily identified tranquility receptors (ACNRs or National Parks), nor any identified	This option overfiles no statutorily identified tranquility receptor (ACMBs or National Parks), nor any identified through community	This option overfiles no statutorily identified tranquility receptor (ACNOS or National Parks), nor any identified through communit	This option overflies no statutority identified tranquility receptor (ACNRIs or National Parks), nor any identified through community	rs This option overfiles no statutorily identified tranquility receptors y (AONEs or National Parks), nor any identified through community (AONEs or National Parks), nor any identified through community	This option overflies no statutorily identified tranquility receptors [ADNEs or National Parks], nor any identified through community [ADNEs or National Parks], nor any identified through community
Qualitative specific reference to AGNEs and National Parks only, specific reference to AGNEs and National Parks only unless other areas have been identified through unless other areas have been identified through	engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral / equal.	through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral / equal.	engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral / equal.	engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral / equal.	engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral / equal.	engagement and is therefore comparable to the 'do nothing' engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral / equal.	engagement and is therefore comparable to the 'do nothing' engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral / equal.
community engagement. No additional specific areas were identified by community engagement. No additional specific areas were identified by community engagement.							
The 'do nothing' scenario does not overfly any ACNIEs or National Parks. ACNIEs or National Parks.							
Wider Society Biodiversity Initial Options The change sponsor has mapped the designated The change sponsor has mapped the designated Appealance (State of Sparial Scientific Internal (SSSS), Sparial	The change sponor has mapped the designated Sites of Special Scientific Interest (SSSs), Special Protection Areas (SPAs), Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSN), Special Protection Areas	The change sponsor has mapped the designated Sites of Special Scientific Interest (SISIs), Special Protection Areas (SPAs), Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Scientific Interest (SSSIs), Special Scientific Interest (The change sponsor has mapped the designated Sites of Special Scientific Integral (VSSh) Special Emphatism Assas (SSh) Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (355k), Special Protection Areas (SPAs), Special Scientific Interest (355k), Special Protection Areas (SPAs), Special	The change sponsor has mapped the designated Sites of Special The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSs) Special Special Destartion Areas (SSAs) Special
Appraisal: Sites of Special Scientific Interest (355ts), Special Scientific Interest (355ts), Special Countrative Protection Areas (SPAs), Special Areas of Protection Areas (SPAs), Special Areas of	Areas of Conservation (SACs) and RAMSAR sites, as identified on	(SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DETRA MAGIC Map. CAP1616. Accordix B.	Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MACK Map. CAP2626, According 8, para 674, states	Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP2626 Appendix 8, para 874, states	Areas of Conservation (SACs) and RAMSAR sites, as identified on	Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on	Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and RAMSAR sites, as identified on Areas of Conservation (SACs) and Conservation
Conversation (EACs) and AMARAS stee, as identified on the ETRAM MIGNE May, 19214, Appaired May, 1921, Appa	the LIEFAN SOULD, Major, LAVYSLID, Appetitor a, part a lav, scient that because of elispension and mining, there is unlikely to be an impact on local air quality from aircraft shows 2,000ft. Furthermore, CAP 2023, Appetitor, B. para 800, scients that in	as common on the USE WA MANUAL MADE. UNE YEAR APPENDING THE PRESENT AND THE MANUAL MADE AND THE MADE	the LUTIAN MANUE. Nature. LAVID 2012, Appendix is, para 314, 1200s is that because of dispersion and mining, there is likely to be an impact on local air quality from aircraft above 1,000ft.	the CETAN MANUL. Map. CATADO, Application as, parts and, states that because of dispersion and militing them is unlikely to be an impact on local air quality from aircraft abows 2,000ft.	the DEFRA MADE, MAD, CAVIDID, Appendix B, para S/4, states that because of dispersion and mixing, there is unlikely to be an	Asset of Commontion DCCs and MADDER of the , in inheritor on the Management of Commontion DCCs and MADDER of the , in inheritor on the Management of the Management of Long Asset (1992). The surgests in the discrete of the Special Part of the Management of Long Asset (1992). The surgests is the discrete of Long Asset (1992) and the Management of Long Asset (1992) and the Long Asset (1992) and the Management of Long Asset (1992) and the Managem	that because of dispersion and mixing, there is unlikely to be an
para 874, states that because of dispersion and para 874, states that because of dispersion and mixing, there is unlikely to be an impact on local air mixing, there is unlikely to be an impact on local air.	impact on local air quality from aircraft above 1,000H. Purthermore, CAP1616, Appendix II, para 880, states that in	1,000H. Furthermore, CAF1616, Appendix B, para BBO, states	Furthermore, CAP1616, Appendix B, para BBD, states that in	Furthermore, CAF1616, Appendix B, para BBD, states that in	Impact on local air quality from aircraft above 1,000ts. Furthermore, CAP1016, Appendix B, para BBD, states that in	Impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix 8, para 880, states that in Furthermore, CAP1616, Appendix 8, para 880, states that in	Impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para BBD, states that in Furthermore, CAP1616, Appendix B, para BBD, states that in
quality from an extend about \$1,000 ft. forthermore. CPSISIA, \$900.000, \$1,00	general, airspace change proposal will not have an impact on blodiversity as they do not involve ground-based infrastructure.	that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based	general, aimpace change proposal will not have an impact on blodiversity as they do not involve ground-based infrastructure.	general, ainspace change proposal will not have an impact on biodivenity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on blodiversity as they do not involve ground-based infrastructure.	general, sinspace change proposal will not have an impact on biodivenity as they do not involve ground-based infrastructure.	general, airspace change proposal will not have an impact on general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.
general, airspace change proposal will not have an general, airspace change proposal will not have an amount on hisotography as they do not involve around.	Mowever, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN	Nowever, the change sponsor admoveledges that any potential impact to the designated sites around MAN will be assessed in	However, the change sponsor admowledges that any potential impact to the designated sites around MAN will be assessed in	However, the change sponsor adknowledges that any potential impact to the designated sites around MAN will be expensed in	However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in impact to the designated sites around MAN will be assessed in	However, the change sponsor acknowledges that any potential However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in impact to the designated sites around MAN will be assessed in
based infrastructure. However, the change sponsor based infrastructure. However, the change sponsor	Stage 3 of the ACP process by Subject Matter Experts.	will be assessed in Stage 3 of the ACP process by Subject	Stage 3 of the ACP process by Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts. Stage 3 of the ACP process by Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts. Stage 3 of the ACP process by Subject Matter Experts.
acknowledges that any potential impact to the designated sites around MAN will be assessed in designated sites around MAN will be assessed in		Matter Experts.					
Stage 3 of the ACP process by Subject Matter Experts. Stage 3 of the ACP process by Subject Matter Expert							
General Avistion Access initial Options No change to existing airspace arrangements. Any Appraisal: General Avistion Access arrangements and Avistion users of airspace in the velocity of General Avistion users of airspace in the velocity of General Avistion users of airspace in the velocity of General Avistion users of airspace in the velocity of General Avistion users of airspace in the velocity of General Avistion users of airspace in the velocity of General Avistion users of airspace in the velocity of General Avistion users of airspace in the velocity of General Avistion are set of access users of the velocity of General Avistic users of airspace in the velocity of General Avistion are set of the velocity of General Avistic users of airspace in the velocity o	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existin	g consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing	consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing
Qualitative MAN will maintain their current level of access under MAN will maintain their current level of access under extant operational arrangements.	Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation	existing Letters of Agreement pertaining to General Asiation access will be reviewed and updated (where applicable) prior	Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation	n reviewed and updated (where applicable) prior to implementation	e Letters of Agreement pertaining to General Aviation access will to reviewed and updated (where applicable) prior to implementati	Letters of Agreement pertaining to General Aviation access will be Letters of Agreement pertaining to General Aviation access will be Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation	reviewed and updated (where applicable) prior to implementation reviewed and updated (where applicable) prior to implementation
	to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	to implementation to ensure their continued validity. Airupace dassification requirements will be reviewed as part of Stage 3	to ensure their continued validity. Ainpace classification requirements will be reviewed as part of Stage 3 activities.	to ensure their continued validity. Ainpace classification requirements will be reviewed as part of Stage 3 activities.	to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.		to ensure their continued validity. Airspace classification to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.
		activities.					
General Aukstion / Connomic impact from hitsial Options An increase to effective capacity anticipated for commercial aidines located effective Appaisable Conscitude size of estate procedures, therefore no continued use of estate procedures, therefore no common common for common for extending common benefit for Collaboration.	The introduction of PSN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will fead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing alreaded gapacity which in turn will lead to more	The introduction of PSN is expected to deliver benefits by increasing airpage capacity which in turn will lead to more	The introduction of PEN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and lewer design (both in the air or on the predictable flight paths and lewer (his legis) (both in the air or on the predictable flight paths and lewer (his legis) (both in the air or on the predictable flight paths and lewer (his legis) (both in the air or on the predictable flight paths and lewer (his legis) (both in the air or on the predictable flight paths and lewer (his legis) (both in the air or on the predictable flight paths and lewer (his legis) (both in the air or on the predictable flight paths and lewer (his legis) (both in the air or on the predictable flight) (bo	The introduction of PBN is expected to deliver benefits by The introduction of PBN is expected to deliver benefits by Increasing airpage capacity which in turn will lead to more Increasing airpage capacity which in turn will lead to more
capacity Qualitative economic benefit for GA/airlines. economic benefit for GA/airlines.	predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by	predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by	predictable flight paths and fewer delays (both in the air or on th	e predictable flight paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by	predictable flight paths and fewer delays (both in the air or on t ground). This is expected to facilitate economic benefit by	he predictable flight paths and fewer delays (both in the air or on the enough). This is expected to facilitate enough; herefit by	predictable flight paths and fewer delays (both in the air or on the
	potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage	potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing	ground; Ins. a expected to secretar economic perior to potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage	potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage	potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage	ground). This is expected to facilitate economic benefit by potentially increasing the frequency of a transport movements, increasing passenger numbers and increasing carpot tomage increasing passenger numbers and increasing cargo tomage increasing passenger numbers and increasing cargo tomage increasing passenger numbers and increasing cargo tomage increasing car	potentially increasing the frequency of air transport movements, potentially increasing the frequency of air transport movements,
	carried.	cargo tonnage carried.	carried.	carried.	carried.	carried.	carried.
General Antains / Part burn Assid Cristians The existing ASM Symenthems for department on our commercial aidines Commercial aidines Coultrative experience for commercial aidines (Coultrative experience for a charge sport to conduct (Willin Stage 7 of the CAPISES proces, been a no (Willin Stage 7 of the	Option 1.R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Sta	Option 2A R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement	Option 28 R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stag	Option 3A R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within 52s	Option 38 R supports continuous dimb operations, reducing the	Option 48 It supports continuous climb operations, reducing the	Option 5 L supports continuous climb operations, reducing the Option 5 R supports continuous climb operations, reducing the
Qualitative Within Stage 2 of the CAPISIS process, there is no Within Stage 2 of the CAPISIS process, there is no requirement for a change someoner to conduct	2 of the CAPISSS process to quantify fuel burn, this will be	within Stage 2 of the CA71616 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a	2 of the CAP3636 process to quantify fuel burn, this will be conducted in Stare 3. Therefore, to enable a comparison, the lost	2 of the CAP1616 process to quantify fuel burn, this will be conducted in State 1. Therefore, to enable a comparison, the los	2 of the CAP1636 noncess to resentify final burn, this will be	ge overall amount of fuel burnt. There is no requirement within Stage 2 of the CAPISIS process to quantify fuel burn, this will be 2 of the CAPISIS process to quantify fuel burn, this will be 2 of the CAPISIS process to quantify fuel burn, this will be 2 of the CAPISIS process to quantify fuel burn, this will be 2 openfurted in Saves 1 Therefore, to enable a removation, the last- conducted in Saves 1 Therefore, to enable a removation the last-	2 of the CAP1616 process to quantify fuel burn, this will be 2 of the CAP1616 process to quantify fuel burn, this will be conducted in State 3. Therefore, to enable a comparison the load:
requirement for a change openior to conduct quantitative field born enables. This will be convered in Stage 3. In order to make a companior in Stage 2, I not set on the accompanior in Stage 2.	applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 42.68km (23.03km) long. When	comparison, the logic applies it that the shorter the track length, the less fuel is burnt. With regards to this option, it is	applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 40.72km (21.98km) long. When	applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 45.14km (24.37km) long. When	applied is that the shorter the track length, the less fuel is burnt	go conducted in 32age 3. Therefore, to estable a comparison, the logic spapied in that the shorters the total legic, the less fast in 1 sourced in 32age 3. Therefore, to enable a comparison, the logic spapied in the three shorters the total legic, the less fast in 1 seed, spapied in the three shorters the total engit, the less fast in 1 seed, spapied in the three shorters the total engit, the less fast in 1 seed, spapied in the three shorters three storing, the less fast in 1 seed, spapied in the three shorters three storings, the less fast in 1 seed, spapied in the three shorters three storings, the less fast in 1 seed, spapied in the three shorters three storings, the less fast in 1 seed, spanied to the shorter three storings, the less fast in 1 seed, spanied to the shorter three storings, the less fast in 1 seed, spanied to the shorter three storings, the less fast in 1 seed, spanied to the shorter three storings, the less fast in 1 seed, spanied to the shorter three shorters, the storings that is spanied as the spanied of the spanied storings and the shorter three shorters, the storings that is spanied as the spanied of the spanied storings and the spanied storing three shorters that some shorters that the spanied storing three shorters that some shorters that the spanied storing three shorters that the shorter three shorters that some shorters that the spanied storing three shorters that the shorter three shorters that the shorters tha	applied is that the shorter the track length, the less fuel is burnt. Applied is that the shorter the track length, the less fuel is burnt. With applied is that the shorter the track length, the less fuel is burnt.
	compared to the 'do nothing' scenario, Option 1 R is longer and a this stage it is assumed that it will require a larger amount of fue	42.71km (23.06nm) long. When compared to the 'do nothing'	compared to the 'do nothing' scenario, Option 28 R is longer and at this stage it is assumed that it will require a larger amount of	compared to the 'do nothing' scenario, Option 3A R is longer and at this stage it is assumed that it will enquire a larger amount of	compared to the 'do nothing' scenario, Option 38 R is longer and	compared to the 'do nothing' scenario, Option 48 L is longer and at this stage it is assumed that it will require a larger amount of fuel at this stage it is assumed that it will require a larger amount of fuel	compared to the 'do nothing' scenario, Option 5 L is longer and at
shorter the track mileage, the less greenhouse gases are emitted, in the case of the entiting Running SE. ARMINISTOR could track, the track leeping a 22-dam. ARMINISTOR could track, the track leeping a 22-dam. ARMINISTOR	this stage it is assumed that it will require a larger amount or too burn, therefore, this op-displan is deemed to be of dis-benefit in ter- of fael burn. More in-depth analysis will be carried out in Stage 3	scenario, Uppoint AA is singler and act this tagge it is assumed that the first and the second that the second	fuel burn, therefore, this option is deemed to be of dis-benefit in	at this larger in assumed that it will require a larger amount or fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in	fuel burn, therefore, this option is deemed to be of dis-benefit is	this stage it is assumed that it will require a larger amount or rule in burn, therefore, this option is deemed to be of dis-benefit in terms foul burn, therefore, this option is deemed to be of dis-benefit in offset burn. More in-depth analysis will be carried out in Stage 3 terms of fuel burn. More in-depth analysis will be carried out in	burn, therefore, this option is deemed to be of dis-benefit in terms burn, therefore, this option is deemed to be of dis-benefit in terms
ASMIM SID model track, the track length is 25.40km ASMIM SID model track, the track length is 27.19km [13.72nm].	of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	option is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.		of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm. of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
		confirm.					
Commercial affines Training costs Initial Options Apparatal: Apparatal: Confidence which would be practised by created by	It is anticipated that no extra plict/crew training will be required to enable plicts to fly the new PBN procedures as PBN has become	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become	to enable pilots to fly the new PEN procedures as PEN has become	it is anticipated that no extra pilot/crew training will be required in to enable pilots to fly the new PBN procedures as PBN has become to enable pilots to fly the new PBN procedures as PBN has become	to enable pilots to fly the new PBN procedures as PBN has become to enable pilots to fly the new PBN procedures as PBN has become
Qualitative through existing simulator exercises. through existing simulator exercises.	a common navigation standard across the world.	has become a common navigation standard across the world.	a common manigation standard across the world.	a common navigation standard across the world.	a common navigation standard across the world.	a common navigation standard across the world. a common navigation standard across the world.	a common navigation standard across the world. a common navigation standard across the world.
Commercial airlines Other costs Initial Options It is not proportionate for MAN to assess potential It is not proportionate for MAN to assess potential	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight Other costs to commercial airlines may include updates to Flight
Commercial airlines Other costs Statiol Options Approxiatic Approxiatic Station Commercial airlines are supportionated for MAN to assess potential without costs for commercial airlines—there may be consistent of c	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training	Management Systems (PMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (PMS), navigation databases and operating procedures, increased pilot hire costs venus training etc. It is not	Management Systems (FMS), navigation databases and operatin procedures, increased pilot hire costs versus training etc. It is no	Own count of unknown (PMS), may be a subject of the state	procedures, increased pilot hire costs venus training etc. It is not procedures, increased pilot hire costs venus training etc. It is not
continue flying conventional navigation but there are continue flying conventional navigation but there at too many variables (e.g. aircraft types, on-board too many variables (e.g. aircraft types, on-board	proportionate for MAN to assess the other costs' to commercial arilines of flying PEN procedures.	etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of fiying PSN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the "other costs" to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures. airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.
system capability etc.) to consider these effectively. vystem capability etc.) to consider these effectively.							
Airport / Air Infrastructure costs Initial Options No additional infrastructure is required at MAN to No add	There are no expected additional infrastructure costs. All option relate to the implementation of PBN and no additional	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional	There are no expected additional infrastructure costs. All option relate to the implementation of PSN and no additional	There are no expected additional infrastructure costs. All option relate to the implementation of PBN and no additional	There are no expected additional infrastructure costs. All option relate to the implementation of PBN and no additional	There are no expected additional infrastructure costs. All options relate to the implementation of PSN and no additional infrastructure respects to the implementation of PSN and no additional infrastructure in required as the introduction of PSN reduces the infrastructure is required as the introduction of PSN reduces the infrastructure is required as the introduction of PSN reduces the infrastructure is required as the introduction of PSN reduces the infrastructure is required as the introduction of PSN reduces the infrastructure is required as the introduction of PSN reduces the infrastructure costs. All options relate to the implementation of PSN reduces the infrastructure costs. All options relate to the implementation of PSN reduces the infrastructure costs. All options relate to the implementation of PSN reduces the infrastructure costs. All options relate to the implementation of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure costs. All options relate to the implementation of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the increase of PSN reduces the infrastructure in required as the infrastructure in regular as the infrastructure	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional relate to the implementation of PBN and no additional
provider Qualitative maintaining accessibility to current ground-based maintaining accessibility to current ground-based	Infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based	infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-	infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based	Infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based			
equipment (persisted by NERL) may become prohibitively expensive should a CADTER RNAV substitution not be implemented prior to the substitution on the implemented prior to the	navigation aids are no longer needed.	based navigation aids are no longer needed.	navigation aids are no longer needed.	navigation aids are no longer needed.	navigation aids are no longer needed.		navigation aids are no longer needed. navigation aids are no longer needed.
proposed removal date. proposed removal date.							
Airport / Air navigation service Appraisal: Airport pair navigation service Appraisal: No change to operational costs is attributable to maintaining the extant procedures. No change to operational costs is attributable to maintaining the extant procedures.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANS	ATC at MAN is contracted out to a third-party organisation. This soluting commercial contract between MAN and their	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANC	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen AN	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This ATC at MAN is contracted out to a third-party organisation. This providing commercial contract between MAN and their chosen ANSP exhibits commercial contract between MAN and their chosen ANSP.	ATC at MAN is contracted out to a third-party organisation. This ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP existing commercial contract between MAN and their chosen ANSP
provider Qualitative	existing commercial contract decement makes and explicit considered to be an ongoing cost. Some deployment costs are anticipated with respect to the irrollementation of new procedure.	this existing commercial contract between MANA with their dhouse ANSP is considered to be an ongoing cost. Some deployment costs are anticlosed with respect to the	existing commercial contract perween MANs and other crossen And is considered to be an ongoing cost. Some deployment costs and	existing commercial contract between slow and their choises we is considered to be an ongoing cost. Some deployment costs are	Is considered to be an ongoing cost. Some deployment costs are	SP existing commercial contract between MAN and their chosen AKEP existing commercial contract between MAN and their chosen AKEP is considered to be an ongoing cost. Some deployment costs are a stritioasted with respect to the implementation of new procedures anticipated with respect to the implementation of new procedures.	is considered to be an ongoing cost. Some deployment costs are
	and training of controllers: however, these cannot be identified a	implementation of new procedures and training of controllers;	anticipated with respect to the implementation of new procedure and training of controllers; however, these cannot be identified a	articipated with respect to the implementation of new procedur and training of controllers; however, these cannot be identified in the state of the Controllers.	antiopased with respect to the implementation of new procedu and training of controllers; however, these cannot be identified.	res articipated with respect to the implementation of new procedures at and training occurred controllers, however, these cannot be identified at this stage of the ACP process.	I anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this steep of the ACO assessment of the A
	this stage of the ACP process.	however, these cannot be identified at this stage of the ACP process.	this stage of the ACP process.	this stage of the ACP process.	this stage of the ACP process.	this stage of the ACP process. ATC at MAN is contracted out to a third-party organisation. This ATC at MAN is contracted out to a third-party organisation. This	this stage of the ACP process. this stage of the ACP process.
Airport / Air Deployment costs Initial Options No deployment costs applicable to estant procedures. No deployment costs applicable to estant procedures.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen AN	oncours ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen AND	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen AN			
provider Qualitative	is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedur.	chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the	is considered to be an ongoing cost. Some deployment costs are	is considered to be an ongoing cost. Some deployment costs are		Se existing commercial contract between MAN and their chosen AKSP existing commercial contract between MAN and their chosen AKSP is considered to be an ongoing cost. Some deployment costs are as articipated with respect to the implementation of new procedures articipated with respect to the implementation of new procedures.	
	and training of controllers; however, these cannot be identified a this stage of the ACP process.	t implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP	antidipated with respect to the implementation of new procedure and braining of controllers; however, these cannot be identified a this stage of the ACP process.	and training of controllers; however, these cannot be identified this stage of the ACP process.	and training of controllers; however, these cannot be identified this stage of the ACP process.	at and training of controllers; however, these cannot be identified at this stage of the ACP process. this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.
Safety Assessment Safety Assessment Initial Options The 'do nothing' scenario assumes that owner. The 'do nothing' scenario assumes that owner.		Possible hazards have been identified some of which are		Prosable hazprils have been identified some of Airh test			
Authy Assemblent Addry Assemblent Assemble Assem	Visually integrated was deep integrated and the second of the second of the second of the State	Prosicion mazardo nave colon identificacio, come or wanto are estante. Pisto, aircrafe reaculting a MAP may conflict with aircraft on the SIO. This is an extant hazard. In addition,	Possible hazards have been identified, some of which are extant. Firstly, acrost executing a NAV may conflict with aircraft on the \$50. This is an extant hazard in additing, options within the	Proside in lazaran nave open identifies, one or wind not extract. Finally, alorant executing a MAP may conflict with aircraft on the SIO. This is an extant hazard, in addition, options within this	Firstly, aircraft executing a MAP may conflict with aircraft on the	Possible hazerfs have been identified, some of which are estant. Firstly, sizeral facility and profile with sizeral end. Tiestly, sizeral facility and profile with sizeral end. Tiestly, with an extent hazerf, in addition, options within this envelope may conflict with history annithry mentifiers and extent hazerf. The distinct, options within the envelope may conflict with hAMA envelopes have good resident with AMA envelopes.	Firstly, aircraft executing a MAP may conflict with aircraft on the SID. This is an extant hazard, in addition, options within this
removal of ground-based navigational aids removal of ground-based navigational aids	SUL ITER IS AN EXERT FRANCE OF THE MEAN	options within this envelope may conflict with MAN arrivals/francitions and storage inhoused in Journal in some	SUL Into II an expant nazore, in aborticon, opcionis wenten trisi emvelope may conflict with MANA aminisis/princitions and aircraft inbound to Userpool, in some cases, ATC intervention is required	envelope may conflict with MAN amivals/transitions and aircraft			
supporting time easting MAN supporting the existing 3Dis, already departing MAN supporting the existing 3Dis, already departing MAN would continuously require radar vectoring (should sould continuously require radar vectoring (should sould continuously require radar vectoring (should	inbound to Uverpool. In some cases, ATC intervention is required to mitigate this, but it is expected that the introduction of PBN IF	armani/transitions and aircraft inbound to Uverpool. In some cases, ATC intervention is required to mitigate this, but it is	to account the first to account that the beautiful account of the first the production of the first to account the	The address of the first the first the address of the address of the first the address of the address of the first the address of the first the address of the address			
CAPITEI or a commercial agreement to maintain the existing navigational aid not be implemented).		on cases, ATC intervention is required to mitigate this, but it is expected that the introduction of PRIL I'PS and the application of the deep process will reduce the need for ATC intervention to the deep process will reduce the need for ATC intervention.	and the application of the design process will reduce the need for ATC intervention in the future. Additionally, there is the potential	and the application of the design process will reduce the need in ATC intervention in the future. Additionally, there is the potential for faster assistant to which we will be a second to the control of the control of the design of the de	and the application of the design process will reduce the need for ATC intervention in the future. Additionally, there is the potenti	The complete this, but it is expected that the introduction of PRAITH or and the applications of the design process will reduce the ends of the complete that the introduction of PRAITH or all ATT intervention in the future. Additionally, there is the potential. ATT intervention in the future. Additionally, there is the potential. ATT intervention in the future. Additionally, there is the potential. One feather advants to cath up with thought earliers due to the feather advants of cath up with thought earliers due to the feather advants of cath up with thought earliers due to the complete the complete that the com	and the application of the design process will reduce the need for ATC intervention in the future. Additionally, there is the potential
resulting in a possible increase in ATCO workload. resulting in a possible increase in ATCO workload.	for faster aircraft to catch up with slower aircraft due to dispension in the turn, which may lead to a loss of separation, which can be	in the suture. Additionally, there is the posential for faster aircraft to catch up with slower aircraft due to dispersion in the	e for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of separation, which can be		for faster aircraft to catch up with slower aircraft due to dispersi in the turn, which may lead to a line of senaration, which may lead to a line of senaration, which	on for faster aircraft to catch up with slower aircraft due to dispension in the turn, which may lead to a loss of separation, which can be	for faster aircraft to catch up with slower aircraft due to dispersion for faster aircraft to catch up with slower aircraft due to dispersion in the turn, which may lead to a loss of separation, which can be
	mitigated through the design process or procedurally if required.	arroant to catch up with solver aircraft due to departure in the turn, which may lead to a loss of separation which can be mitigated through the design process or procedurally if	mitigated through the design process or procedurally if required.	mitigated through the design process or procedurally if required.	mitigated through the design process or procedurally if required	in the turn, which may lead to a loss of separation, which can be entireparted moving the design prosons or procedurally if regions. The turn, which have lead to a loss of separation, which can be entitled that turn, which may lead to a loss of separation, which can be entitled to the turn, which may lead to a loss of separation, which can be entitled to a loss of separation.	mitigated through the design process or procedurally if required. Earther assessment will be conducted at Sage 3 and 4 of the
	Further assessment will be conducted at Stage 3 and 4 of the CAPEGS process to confirm the exact nature of all hazards and	mitigated through the design process or procedurally if required. Further assessment will be conducted at Stage 3 and and Annual Conducted are seen to confirm the conducted at Stage 3 and and annual conducted are seen to confirm the conducted at Stage 3 and annual conducted are seen to confirm the conducted at Stage 3 and annual conducted at Stage 3 and annual conducted at S	Further assessment will be conducted at Stage 3 and 4 of the CAPSSS process to confirm the exact nature of all hazards and	Purther assessment will be conducted at Stage 3 and 4 of the CAPSSE process to confirm the exact nature of all hazards and	Further assessment will be conducted at Stage 3 and 4 of the CAP2616 process to confirm the exact nature of all hazards and	CAP2626 process to confirm the exact nature of all hazards and CAP2616 process to confirm the exact nature of all hazards and CAP2616 process to confirm the exact nature of all hazards and	CAPIBIB process to confirm the exact nature of all hazards and CAPIBIB process to confirm the exact nature of all hazards and CAPIBIB process to confirm the exact nature of all hazards and
	mitigations.	4 of the CAP2626 process to confirm the exact nature of all hazards and retigations.	mitigations.	mbgdons.	mitigations.	mitigations.	mitigations.
Samuel Control							
Tummary of Analysis The 100 nothing scenario in relation to this ACP is. The 100 nothing scenario in relation to this ACP is. The 100 nothing scenario in relation to this ACP is not a value uptoon as it to too not provide a sustainable solution to term of angues assumed to the provide a sustainable solution to term of angues assumed to the provide a sustainable solution is term of angues assumed to the provide a sustainable solution is term of angues.	When compared to the 'do nothing' scenario, Option 1 R perform - worse in terms of Greenhouse Gas emissions and Ruel burn.	When compared to the 'do nothing' scenario, Option 2A R performs:	When compared to the 'do nothing' scenario, Option 26 R performs:	When compared to the 'do nothing' scenario, Option 3A R performs:	When compared to the 'do nothing' somario, Option 38 R performs:	When compared to the 'do nothing' scenario, Option 48 L performs: When compared to the 'do nothing' scenario, Option 48 R performs:	When compared to the 'do nothing' scenario, Option St. performs: - worse in terms of Greenhouse Gas emissions and Fuel burn worse in terms of Greenhouse Gas emissions and Fuel burn.
sustainable solution in terms of airspace sustainable solution in terms of airspace modernisation and is unviable following the removal modernisation and is unviable following the removal	- better in terms of Noise impact, Air Quality, Capacity and resilience, and Economic impact from increased effective capacity	- worse in terms of Greenhouse Gas emissions and Fuel burnbetter in terms of Noise impact, Air Quality, Capacity and	- worse in terms of Greenhouse Gas emissions and Ruel burnbetter in terms of Noise impact, Air Quality, Capacity and	worse in terms of Greenhouse Gas emissions and Fuel burn. -better in terms of Noise impact, Air Quality, Capacity and	- worse in terms of Greenhouse Gas emissions and Fuel burnbetter in terms of Noise impact, Air Quality, Capacity and	- worse in terms of Greenhouse Gas emissions and Fuel burn. - worse in terms of Greenhouse Gas emissions and Fuel burn. -better in terms of Noise impact, Air Quality, Capacity and -better in terms of Noise impact, Air Quality, Capacity and	-better in terms of Noise impact, Air Quality, Capacity and resilience, and Economic impact from increased effective capacity. resilience, and Economic impact from increased effective capacity.
modernisation and is unvisible following the removal of the DVOR beacons in December 2022, Which would have a similar instant on practice and realized the property of the DVOR beacons in December 2022, which would have a similar instant on practice and realized.	resserios, and contents impact mon increased emecuve capacity - equal/meutral in terms of the remaining priteria because there is no change when compared to today's operation.	- detter in terms or noise impact, Air Cypainty, Lapacity and resilience, and Economic impact from increased effective research.	-perser in terms or house impact, Ar cipaming, capaciny and resilience, and Economic impact from increased effective capacity - equal/heatral in terms of the remaining criteria because there is	-dectar in terms of woods impact, Art cyclairly, Capacity and new illenon, and Economic impact from increased effective capacity in terms of the remaining criteria because there is	resilience and Empore's impact from increased effective canacit		
here a significant impact on capacity and revisiones. The excelling DDD, do not excellent continuous climb operations to 2,000, which leads to a greater values of 4 fail biox, received, and note as follower: Value of 4 fail biox, received and note as follower: Value of 4 fail biox, received and note as follower:	no change when compared to today's operation. At this time, it is not possible to fully determine the safety	capacity equal/neutral in terms of the remaining criteria because there	equal/ineutral in terms of the remaining orders because there is no change when compared to today's operation.	equal/neutral in term of the remaining orbeta because there in ochange when compared to today's operation.	no change when compared to today's operation.		At this time, it is not possible to fully determine the safety At this time, it is not possible to fully determine the safety
operations to 7,000ft, which leads to a greater volume of fixel burn, emissions and noise at lower volume of fixel burn, emissions and noise at lower.	implications of this specific option. Possible conflicts with some	Is no change when compared to today's operation.	At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some	Implications of this specific option. Possible conflicts with some implications of this specific option. Possible conflicts with some	routes operated by other routes/nearby airports have been implications of this specific option. Possible conflicts with some routes operated by other routes/nearby airports have been
levels. In terms of Tranquillity, Biodiversity, General Aviation access and Economic impact, the 'do Aviation access and Economic impact, the 'do	noutes operated by other routes/nearby airports have been identified, but the exact nature of these conflicts is undear at thi	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some	implications of this specific option. Possible conflicts with some routes operated by other routes/nearby airports have been	implications of this specific option. Possible conflicts with some routes operated by other routes/nearby airports have been	routes operated by other routes/nearby airports have been identified but the exact nature of these conflicts is unclear at the	routes operated by other routes/nearby airports have been routes operated by other routes/nearby airports have been in identified, but the awart nature of these conflicts is unclear at this identified, but the awart nature of these conflicts is unclear at this	identified, but the exact nature of these conflicts is unclear at this lidentified, but the exact nature of these conflicts is unclear at this state. Further analysis and engagement is required in State 3 and
leads to term of Processing, disclerancy, careed America season and Generative speech, for selection of the season of the control speech of the control of	store Positive contains and economical in consisted in Page 7 con	routes operated by other routes/nearby airports have been	identified, but the exact nature of these conflicts is unclear at this	identified, but the exact nature of these conflicts is unclear at th	s stage. Further analysis and engagement is required in Stage 3 and	Statistic Custom analysis and emogramment is required to Stage 3 and 4 of the CVD20 process to determine this. Furthermore, this option has been assessed as in obtaining rather than as a set of 6 of the CVD20 process to determine this. Furthermore, this option has been assessed as in obtaining rather than as a set of 6 of the CVD20 process to determine this. Furthermore, this option has been assessed as in indisting rather than as a set of 6 of the CVD20 process to determine this. Furthermore, this option has been assessed as in indisting rather than as a set of 6 of the CVD20 process to determine this. Furthermore, this option has been assessed as in indisting rather than as a set of 6 of the CVD20 process to determine this. Furthermore, this option has been assessed as in indisting rather than as a set of 6 of the CVD20 process to determine this. Furthermore, this option has been assessed as in indisting rather than as a set of 6 of the CVD20 process to determine this. Furthermore, this option has been assessed as in indisting rather than as a set of 6 of the CVD20 process to determine this. Furthermore, this option has been assessed as in indisting rather than as a set of 6 of the CVD20 process to determine this. Furthermore, this	4 of the CAP1616 process to determine this. Furthermore, this
Imited costs incurred as a result of this scenario. Iimited costs incurred as a result of this scenario.	4 of the CAPIGE process to determine this. Furthermore, this option has been assessed as in isolation rather than as a set of	Identified, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in	stage. Purther analysis and engagement is required in Stage 3 and 4 of the CAP2636 process to determine this. Furthermore, this	stage. Further analysis and engagement is required in Stage 3 an 4 of the CAP1626 process to determine this. Furthermore, this	option has been assessed as in isolation rather than as a set of	option has been assessed as in isolation rather than as a set of option has been assessed as in isolation rather than as a set of	design options as part of a wider system/runway pair. Additional design options as part of a wider system/runway pair. Additional
From a safety perspective, it is assumed that current From a safety perspective, it is assumed that current MAN operations are safe. Following the removal of MAN operations are safe. Following the removal of	design options as part of a wider system/runway pair. Additional analysis is required in Stage 3 to determine the cumulative impac	Stage 3 and 4 of the CAP3536 process to determine this. Furthermore, this option has been assessed as in isolation	option has been assessed as in isolation rather than as a set of design options as part of a wider system/runway pair. Additional	option has been assessed as in isolation rather than as a set of design options as part of a wider system/runway pair. Additional		I design options as part of a wider system/nowey pair. Additional design options are pair. Additional design o	
the DVDRs, it is advowledged that ATCO workload may increase due to the enduring requirement for may increase due to the enduring requirement for	of this option when compared to all the other options.	rather than as a set of design options as part of a wider watern/navery pair. Additional analysis is required in Stare 3	analysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options.	t analysis is required in Stage 3 to determine the cumulative impa of this option when compared to all the other options.	of this option when compared to all the other options.	of this option when compared to all the other options.	Secret on conference in the PAL College F. has been deemed the Secret on conference in the PAL College F.S. has been deemed to
radar vectoring.	Based on performance in the KDA, Option 1 R has been deemed a Pavourable, as it overflies the second fewest population when	to determine the currently into into of this option when compared to all the other options.	Sased on performance in the IDA, Option 28 R has been deemed	Based on performance in the ICA, Option 1A R has been rejected	Based on performance in the IDA, Option 38 R has been rejected as it overflags a master provide in a state of the IDA.	Based on performance in the IOA, Option 48 I has been deemed as I sourcealle, as I overfiles the second fewest population when compared to other rootes (originating from the same runway strong the same runway strength or th	Preferred option (within this design envelope), as it overfiles the fewest population when compared to other routes (originating fewest population when compared to other routes (originating
	payorasies, as it oversias the second nevers population when compared to other routes (originating from the same nurway) direction) within the same design envelope.	Eased on performance in the ICIA, Option 2A R has been	assection percomance in the LUA, upon 2 as has been beened as Acceptable, as it overfles the third fewest population when compared to other routes (originating from the same number	asset on performance in the KJA, Uppon JA K has been rejected as it ownflies a greater population when compared to other options (originating from the same runsay direction) within the	as it overties a greater population when compared to other options (originating from the same runway direction) within the same design envelope.	reacuration, as it overmiss the second rewest population which compared to other routes (originating from the same runway direction) within the same design envelope. Same design envelope.	from the same runway direction) within the same design envelope from the same runway direction) within the same design
	Mineral waith the same design envelope.	rejected as it overfiles a greater population when compared to	compared to other routes (originating from the same runway direction) within the same design envelope.	options (originating from the same runway direction) within the same design envelope.	anne wenge ffryttopt.	anne senge e/VEOpE.	Trimings.
		other options (originating from the same nurway direction) within the same design envelope.					

Departure Envelope: SID Runway 2	23 North		_																	
,		"DO NO HIRMS" BASILINE For the north design envision, the 'do nothing' specario for desartures in terms of today's coordina is	Oction 1A is an RNAV 1 regislation of the current departure to	PPTION 1A POX and uses the over wavegints with CF path terminator coding to	OPTION Option 18 is an RNNV1 option, similar to option 1A usine fiv-over y	N SB wavagints with GF path terminator coding. However, sincraft	OP! This is an RNP Location with RF coding that is similar to option 18 b	ON 28 If the use of M coding results in a track slightly further west initially	Of This provides an RMP1 action with AF coding using the by wayspi	rtion 3	This is an RMP1 parties with RF coding included to replicate the	OPTION 6A -existing conventional POLSIO but using an RF turn. This results in a	OP This is an RNP1 option with NF coding included to register the ex-	PRON 48	This is an RMP1 option with RF coding that maximises fael effic	PTION 6A ency by removing the northbound leg between the first and second	d This is an RNPSpotion with 65 coding that is similar to option	OPTION 68 28 but the use of a higher speed results in a track slightly further we	OPTS This is an RNP1 outlon that uses RF coding and an initial 15' track a	IN 7 Sustment to the right from the DSR for Runway 23L and a 5"
		based around the existing conventional PCLSD. The 'do nothing' scenario for departures consists of a modal track that has been derived to provide an accurate representation of what cocurs today, in addition to the modal track, a opinion has also been created that recoverant an arraw where current coercitions are	create an approximate replication of the existing conventional a turns due to the fly-over waypoint and CF coding. The fly-over waypoints are positioned at the existing markets.	PCL SR 1Y SID. An element of dispersion would be apparent in the	make a second right turn earlier to provide a more direct and fuel-e The fly-over waypoints are positioned at the existing markers: -For Runway 23R this first turn is at MCT 03.	efficient route.	before heading north-east initially following the course of the M62. The option has been created to use the more modern technology of head on a north-east trainctory where it terminates south of the e	to provide a more direct and fluel-efficient route. If maximize fluel efficiency by making a second right turn earlier to intim POL SD.	It has been created using By-by waypoints with a tighter radius fi aims to improve fuel efficiency by making a second right turn ear. The design speed aliens to the CMP78I recommendation and ma-	int turn than option 28 to reduce noise impact for Knutsford. It all fier than the current POL SO. I describ some alroads to fiv this route in a dean configuration.	 slightly wider initial turn than the conventional route and the in it has been created with the slightly righter radius first turn sin have the second turn at the earlier point of that cotion because 	RNAV's replication options. Inlar to option it to reduce noise impact for Knutsfard but does not se't replicates the current SID.	slightly tighter turn radius as option 6A to reduce noise impact to to provide a more direct and fuel-efficient routs. The design aims to have aircraft make the first right turn no door	for Knutsford but makes a second right turn earlier to head north-ear ser than I ran from DSR.	t turns and replacing it with a single turn to the north-east. This. The design aims to have aircraft make the first right turn no cluttle, option forming the westerly edge of the envelope in the in-	provides the most direct route to PCL. ser than Inm from DSR, and the speed applied to this option result tial turn along with option GE. This speed will also permit a larger	before making the second turn to the north. Its in The design aims to have aircraft make the first right turn no clots in this oution forming the westerly edge of the envelope in the in	loser than I nm from DER, and the speed applied to this option results nidal turn alone with option EA. This speed will also permit a larger	adjustment for Runway 23R. This track adjustment is aimed to redu nouse to that of option 6B. An RNP-RF turn follows the initial track adjustment, and this comm	e noise impact on Knutsford. Thereafter this option has a similar note at Inm from DER for Runway 22L.
		dispersed due to rader vectoring and potentially may affect people on the ground. The overflight analysis conducted on this SD was based on the modal track created using Noise and Track Keeping data at	+For Runway 23R this first turn is at MCT 03. +For Runway 23L, this is at 08.2 which is less than 1 nm from 0	SR but replicates the current procedure.	For Runway 231, this is at D3.2 which is less than 5nm from DSR, b therefore aligns to the Design Principle Safety.	but this regilicates the turn of the current procedure and	The design speed aligns to the CAPT79 recommendation and may the use of flaps) which has potential benefits in terms of noise.	ermit some sircraft to fly this route in a clean configuration (without	(without the use of flags) which has potential benefits in terms of 221. This route commences the RF turn to the north of Knutchro	frake. I The radius of this turn takes it further north of Knutdord than	The design aims to have aircraft make the first right turn no co direction and converge just north of Cadishead.	over than 5 nm from DSR after which both routes head in a northerly	231: This route commences the RF turn to the north of Knutsford option 28 to route between High Legh and Rucklow Hill. The rout	d. The radius of this turn takes it further north of Knutsford than the heads north until just west of Partington where it combines with	number of aircraft to fly this route in a clean configuration (wit 231: This route commences the single RF turn to the north of 8	hout the use of flags) which has potential benefits in terms of noise nutsford. The turn continues north via Over Tabley before heading i	e. number of aircraft to fly this route in a clean configuration (will in a 23L: This route commences the RF turn to the north of Knutsh	ithout the use of flaps) which has potential benefits in terms of noise lord. The radius of this turn takes it on the same track as option &a vi	The design speed aligns to the CAP778 recommendation and may p (without the use of flaps) which has potential benefits in terms of n	emit some aircraft to fly this route in a clean configuration ide.
		ustacles or guote and youth with the addation of a case vectoring area where appropriate. At data is based on current alrows performance data and is calculated based on the distance between the Departury End of Runway and the end of the modal track.	Knutsford at which point the tracks of the SIDs converge. The n in a north-east direction and terminates at 7,000ft just east of	as the current published route. This takes both routes to the north or oute heads north until turning right to the north-west of Irlam to head Farnworth.	option for 23R and continues north until west of Partington at which M62 initially and terminates at 7,000ft north of Prestwich.	this turn continues unto Mere where it commons with the chipoint the route heads north-east following the line of the	2.4: this route commerces the se turn to the north of studitions. Lymm until west of Partington at which point the route heads nort 7,000ft north of Prestwich.	his turn continues via over ladely and routes north to the east of east. It initially follows the route of the MG2 and terminates at	option Jil to route between right lagh and Buccow will, the rout west of Partington. At this point the route turns right to follow to 7,000ft west of Prestwich.	a hasot north and compute hear eroomage and continue until ju- te course of the MG2 in a north-easterly direction and terminates.	z 24. This touse commences the 40 fluin to the north of Muscot option 28 to route between High leigh and Bucklow Hill. The ro Cadishead) to head in a north-east direction and terminates ju-	ard, the radius of this fair takes it faither north of Knapolog than aute heads north until turning right via a fly-by turn at XUMAT (north id eact of Farnworth.	the option for 23K. At this point the route furnit right to brow th 7,000th west of Prestwich. 23K. This route commences the RF turn earlier than 23L, prior to	the course of the Maz in a north-eactiony direction and terminates at a Parligate Industrial Area to route further to the north of Knutsford.	terminating at 7,000ft in the vicinity of access. The issue terminating at 7,000ft in the vicinity of Scoles. 23R: This route commences the single RF turn earlier than 23s,	rines continues to the west of the sale and crimitan before prior to route further to the north of Knutsford. The turn continues	initially follow the route of the M 62 and terminate at 7,000t is to 23k. This route commences the RF turn earlier than 23L, to so	is point it complines with the option for 2.94 and heads north-east. In north of Prestwich. Iute further to the north of Knutsford. The radius of this turn takes it	then commenced to the north of Knutsford. This is continued until in the commenced to the north of Knutsford. This is continued until in the ads north until just west of Partington. It then turns right to folio	orth which continues unto 1 nm York Clark. An MVP-40-turn is eading north in the vicinity of High Legh at which point the route withe course of the M62 in a north-easterly direction and
			A speed restriction of 200 KIAS is used for the first turn.		28k: This route commences the 6F turn to the north of Knutdord. 1 option for 28L and continues north until west of Partington at which M62 initially and terminates at 7,000ft north of Prestwich.	This turn continues until Mere where it combines with the chipoint the route heads north-east following the line of the	23if: This route commences the 8F turn to the north of Knutsford. Lymm until west of Partington at which point the route heads nort 7,000ft north of Prestwich.	his turn continues via Over Tabley and routes north to the east of east. It initially follows the route of the MG2 and terminates at	28k. This route commences the RF turn earlier than 28k, to routs and Bucklow Hill and it converges with the option for 29k in the Partington. At this point the route turns right to follow the cours	rfurther to the north of Knundord. This routes it between High Leg sicinity of Broomedge. The route heads north until just west of a of the MGZ in a north-easterly direction and terminates at 7,000	 23f: This route commences the RF turn earlier than 23i, to rou and Bucklow Hill and it converges with the option for 23i, in th t north-east direction and terminates just east of Farmworth. 	ute further to the north of Knutsford. This routes it between High Leg e-visinity of Cadishead. At this point the route turns right to head in	This routes between High Legh and Bucklow Hill and it converges the route turns right to follow the course of the MG2 in a north-e A speed restriction of 190 KHAS is used for the first turn which all	s with the option for 231 in the vicinity of Partington. At this point easterly direction and terminates at 7,000ft west of Prestwich. llows the smallest radius. Although PAAS-OPS compliant it should be	route east of Over Tabley before converging with the option to west of the Sale and Urmstan before terminating at 7,000ft in A speed restriction of 220 KIAS is used for the first turn.	23c. in the vicinity of Broomedge. The route then continues to the the vicinity of Eccles.	the same track as option 6a via Over Tabley and east of Lymm, 23L and heads north-east. They initially follow the route of the A speed restriction of 220 KBAS is used for the first turn which	n, until west of Partington. At this point it combines with the option 5 e MG2 and terminate at 7,000ft north of Prestwich. allows most aincraft to fly in a dean configuration; however, this	ir terminates at 7,000ft north of Prestwich. 23R: After passing DER this route has a 5° track adjustment to the r Knutsford. This is continued until the vicinity of High Legh where th	orth. An RNP-WF turn is then commenced to the north of route converges with the option for 23L. After this point the
					An element of dispersion would be apparent in the turn due to the existing procedure, a speed restriction of 200 KIAS is used for the fir	By-over waypoint and G coding. To create replication with the int turn.	A speed restriction of 210 KIAS is applied to the first turn which is:	he CAPT7E recommended speed.	west of Prestwich. A speed restriction of 210 KWG is applied to the first turn which i	the CNP7% recommended speed.	A speed restriction of 190 KIAS is used for the first turn which to be assessed for flyability as part of the procedure validation	allows the smallest radius. Although PANG-OPS compilant it may nee process within Stage-4 of CAPSGS.	ed assessed for flyability as part of the procedure validation process	x within Stage 6 of CAPSESE.			results in a wider turn radius than the replicated route.		route heads north until just west of Cadishead where it turns right terminates at 7,000th north of Prestwich. A speed restriction of 210 KIAS is applied to the first turn which is t	o follow the course of the M62 in a north-easterly direction and e CAP778 recommended speed.
Group Impact	Level of Analysis	Runway 231 Runway 238	Runway 23L	Rumany 22R	Option 19 for Runway 23L was rejected at the OPE stage and has th Runway 23L (NOT ASSESSED)	erefore not been assessed. Rumway 21R	Runway 201.	Rumway 22R	Ramany 201	Rutway 239	Name of St.	Ramany 218	Rumoy 221	Rutway 208	Fartway 2 II.	Runway 21k	Ramony 221	Rutway 22R	Partway 275	Rumuny 22R
Communities Noise impact on health and quality of life	d Initial Options Appraisal: Qualitative	For comparison purposes within the IGA, the 'Go nothing' scenario was based upon the existing PCL nothing' scenario was based upon the existing PCL.	In terms of potential noise impact, initial quantitative analysis identified that:	has in terms of potential noise impact, initial quantitative analysis has identified that:		in terms of potential noise impact, initial quantitative analysis has identified that:	in terms of potential noise impact, initial quantitative analysis has identified that:	In terms of potential noise impact, initial quantitative analysis ha identified that:	in terms of potential noise impact, initial quantitative analysis ha identified that:	in terms of potential noise impact, initial quantitative analysis identified that:	as in terms of potential noise impact, initial quantitative analysis identified that:	has in terms of potential noise impact, initial quantitative analysis identified that:	tas in terms of potential noise impact, initial quantitative analysis ha identified that:	as in terms of potential noise impact, initial quantitative analysis ha identified that:	in terms of potential noise impact, initial quantitative analysis identified that:	has in terms of potential noise impact, initial quantitative analysis identified that:	s has in terms of potential noise impact, initial quantitative analysis identified that:	s has in terms of potential noise impact, initial quantitative analysis identified that:	nas in terms of potential noise impact, initial quantitative analysis has identified that:	n terms of potential noise impact, initial quantitative analysis has dendfied that:
		SID. In terms of potential noise impact, initial quantitative analysis has identified that: - Up to 4,000th, this baseline overfiles - Up to 4,000th, this baseline overfiles	 - Up to 4,000ft, this option overflies approximately 10,800 peo and approximately 4,550 residential buildings. - Up to 7,000ft, this option overflies approximately 89,200 peo 	has in serms of potential noise impact, initial quantitative analysis has identified that: glie - Up to 4,000th, this option overfiles approximately 11,200 people and approximately 4,600 residential buildings. - Up to 7,000th, this option overfiles approximately 90,100 people - Up to 7,00th, this option overfiles approximately 90,100 people		- Up to 7,000ft, this option overflies approximately 119,200	identified that:Up to 4,000th, this option overfiles approximately 11,200 people and approximately 4,600 residential buildingsUp to 7,000th, this option overfiles approximately 92,000 people	 - Up to 4,000ft, this option ownflies approximately 9,700 people and approximately 4,150 residential buildings. - Up to 7,000ft, this option ownflies approximately 91,700 people and approximately 42,150 residential buildings. 	 - Up to 4,000ft, this option overfiles approximately 10,900 peopl and approximately 4,750 residential buildings. - Up to 7,000ft, this option overfiles approximately 99,000 peopl 	 Up to 4,000ft, this option overfiles approximately 11,100 people and approximately 4,750 recidential buildings. Up to 7,000ft, this option overfiles approximately 98,800 people. 	 Up to 4,000ff, this option overfiles approximately 9,300 peop and approximately 3,500 residential buildings. Up to 7,000ff, this option overfiles approximately 96,500 people. 	 - Up to 4,000ff, this option overfiles approximately 10,100 people and approximately 4,200 residential buildings. - Up to 7,000ff, this option overfiles approximately 88,400 people. 	tos. In terms of patential noise impact, visital quantizative analysis to spin - Up to 4,000t, this option overflies approximately \$11,000 people and approximately 4,660 insidential buildings. - Up to 7,000t, this option overflies approximately 97,900 people and approximately 45,300 insidential buildings.	 Up to 4,000ft, this option overfiles approximately 11,500 people and approximately 5,000 residential buildings. Up to 7,000ft, this option overfiles approximately 99,000 people 	 Up to 4,000ft, this option overfiles approximately 5,000 peop and approximately 2,800 residential buildings. Up to 7,000ft, this option overfiles approximately 129,800 	 Up to 4,000h; this option overflies approximately 4,500 peop and approximately 1,800 residential buildings. Up to 7,000h; this option overflies approximately 129,500 	 - Up to 4,000ft, this option overfiles approximately 9,700 peop and approximately 4,800 residential buildings. - Up to 7,000ft, this option overfiles approximately 93,900 people. 	 pie - Up to 4,000ft, this option overflies approximately 8,300 peop and approximately 3,550 residential buildings. opie - Up to 7,000ft, this option overflies approximately 93,500 people. 	 Up to 4,000ft, this option overfiles approximately 50,800 people and approximately 4,700 residential buildings. Up to 7,000ft, this option overfiles approximately 110,100 	- Up to 4,000ft, this option overfiles approximately 11,400 people and approximately 4,900 residential buildings. - Up to 7,000ft, this option overfiles approximately 112,000
		approximately 6,600 people and approximately 2,550 residential buildings. 1,600 residential buildings. 1,600 residential buildings. 1,600 residential buildings.	are approximately 4,540 recovered to counting. - Up to 7,000ft, this option overfiles approximately 89,200 peo and approximately 42,400 recidential buildings. Assessed up to 7,000ft, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is therefore considered to be beneficial.	and approximately 42,800 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and residential buildings than the "do nothing" operationed is		people and approximately \$4,750 residential buildings. Assessed up to 7,000ft, this option overfiles fewer people and mislestial buildings than the 'An nothing' oversion and is	and approximately 42,050 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and residential buildings than the 'do nothing' creation and is therefore.	and approximately 42,150 residential buildings. Assessed up to 7,000th, this option overfiles fewer people and residential buildings than the "do nothing" scenario and is	and approximately 45,900 residential buildings. Assessed up to 7,000th, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is	and approximately 45,850 residential buildings. Assessed up to 7,000ft, this option overfiles fewer people and residential buildings than the 'do nothing' scenario and is therefore, residential to he houseful.	and approximately 41,250 residential buildings. Assessed up to 7,000th, this option overflies fewer people and residential buildings than the Vernathing created and is	and approximately 42,100 residential buildings. Assessed up to 7,000th, this option overflies fewer people and residential buildings than the 4th antibod speaking and is	and approximately 45, 300 recidential buildings. Assessed up to 7,000th, this option overfiles fewer people and residential buildings than the do nothing' scenario and is therefore considered to be beneficial.	and approximately 45,550 residential buildings. Assessed up to 7,000ft, this option overfiles fewer people and excitatrial buildings than the 'Vo certifier' overance and is	people and approximately 61,750 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and packettial buildings than the "to nothing source" and is	people and approximately 61,600 recidential buildings. Assessed up to 7,000ft, this option overflies fewer people and recidential buildings than the 'do nothing' oversion and is	and approximately 43,350 residential buildings. Assessed up to 7,000ft, this option overfiles fewer people and positional buildings than the 'to nothing' overgoin and in	and approximately 43,000 residential buildings. Assessed up to 7,000ft, this option overflies fewer people and residential buildings than the '60 portrior' premain and in	people and approximately \$1,100 recidential buildings. Assessed up to 7,000ft, this option overflies fewer people and residential buildings than the 'fin nothing' preseries and is	people and approximately \$1,950 residential buildings. Issuessed up to 7,000ft, this option overflies fewer people and widential buildings than the 'to position' argustic and is
		approximately 109,000 people and approximately approximately 917,000 people and approximately 96,550 residential buildings.	therefore considered to be beneficial.	therefore considered to be beneficial.		therefore considered to be beneficial.	considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be of dis-benefit.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be beneficial.	therefore considered to be of dis-benefit.	therefore considered to be beneficial.
Communities Air Quality	Initial Options Appraisal: Qualitative	No change to air quality is predicted in maintaining baselies conditions. The majority of the extent procedure involves overlight above 1,000t, other than the areas in the immediate vicinity of the	Option 1A L overflier five AQMAr; however, as per CAP1616, pars 874, due to mixing and dispersion, the impact on air quali above 1,000ft is not likely to be significant. There are areas wit	Option 1A R overflies five AQMAs; however, as per CAP1616, ity pars 974, due to mixing and dispersion, the impact on air quality thin above 1,000ft is not likely to be significant. There are areas within		Option 19 R overflies two AQMAs; however, as per CAP1616, para 874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are	Option 281 overfliet three AQMAs; however, as per CAP1616, par 876, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the	 Option 28 R overflies two AQBEAs; however, as per CAP1616, pars 876, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within 	Option 3 Loverfliet two AQMAx; however, as per CAPSSSS, part 874, due to mixing and dispension, the impact on air quality above 1,000th is not likely to be significant. There are areas within	Option 1 R overfiles two AQMAs; however, as per CAPSS16, pu 874, due to mixing and dispension, the impact on air quality above 1,000ft is not likely to be significant. There are areas with	cs Option 6A Loverfliet five ACMAr; however, as per CAPSSSS, para 974, due to mixing and dispension, the impact on air qual in above 1,000ft is not likely to be significant. There are areas wit	Option 6A R overflex flue AQMAx; however, as per CAP1616, by para 874, due to mixing and dispension, the impact on air quali- tion above 1,000th is not likely to be significant. There are areas with	Option 681, ownflies two AQMAs; however, as per CAP1616; by para 874, due to mixing and dispension, the impact on air quality him above 1,000ft is not likely to be significant. There are areas within	Option 68 Roverflet two AQMAr; however, as per CAPSESS, y para 876, due to mixing and dispension, the impact on air quality in above 1,000th is not likely to be significant. There are arrass with	Option GA Loverflier three AQMAx; however, as per CAP1616 pars 974, due to mixing and dispersion, the impact on air qual above 1,000ft is not likely to be significant. There are areas with	Option 6A R overfliet three AQMAs; however, as per CAP1616 by para 874, due to mixing and dispersion, the impact on air qual- tion above 1,000th is not likely to be significant. There are areas with	 Option GB L overflies three AQMAx; however, as per CAP1616 fiby para B74, due to mixing and dispersion, the impact on air qual titio above 1,000th is not likely to be significant. There are areas with 	Option 68 R overflex three AQMAs; however, as per CAP1616, fity para 878, due to mixing and dispension, the impact on air quali thin above 1,000ft is not likely to be significant. There are areas with	Option 7 Loveffler two AQMAs; however, as per CAP1616, para by 874, due to mixing and dispersion, the impact on air quality air above 1,000ft is not likely to be significant. There are areas within	Option 7 R overflies two ACM/Ax; however, as per CAP1616 , para 874, due to mixing and dispension, the impact on air quality shave 1,000ft is not likely to be significant. There are areas within
		than the areas in the immediate vicinity of the Departure End of Runway. Departure End of Runway.	the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable	the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable.		areas within the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is	immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable. Therefore	the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable.	the immediate vicinity of the sirgort that may be overflown below 1,000h; however, for cafety rescars, this is unavoidable.	the immediate vicinity of the airport that may be overflown below 1,000th, however, for safety reasons, this is unavoidable	the immediate vicinity of the airport that may be overflown below 1,000ft; however, for callety reasons, this is unavoidable	the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable.	the immediate vicinity of the singort that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable.	the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable.	the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable	the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable	the immediate vicinity of the airport that may be overflown in below 1,000ft; however, for safety reasons, this is unavoidable	the immediate vicinity of the airport that may be overflown in below 1,000ft; however, for safety reasons, this is unavoidable	the immediate vicinity of the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable.	the immediate vicinity of the airport that may be overflown selow 1,000ft; however, for safety reasons, this is unavoidable.
		SD overfiles four AGMA. Overflight of these AGMAs occurs when the aircraft is above 1,000ft. AGMAs occurs when the aircraft is above 1,000ft.	this option is deemed to be of dis-benefit as it overflies more AQMAs.	this option is deemed to be of dis-benefit as it overflies more AQMAs.		nothing' scenario, this option is deemed to be beneficial as it overflies fewer AQMAs.	deemed to be beneficial as it overflies fewer AQMAs.	this option is deemed to be beneficial as it overflies fewer AQMAL.	this option is deemed to be beneficial as it overfiles fewer ACMAs.	this option is deemed to be beneficial as it overfiles fewer AQMAs.	this option is deemed to be of dis-benefit as it overfiles more AQMAs.	this option is deemed to be of do-benefit as it overfiles more AQMAs.	this option is deemed to be beneficial as it overflies fewer AQMAs.	this option is deemed to be beneficial as it overflies fewer AQMAs.	this option is deemed to be beneficial as it overflies fewer AQMAs.	this option is deemed to be beneficial as it overflies fewer AQMAs.	this option is deemed to be beneficial as it overflies fewer AQMAs.	this option is deemed to be beneficial as it overflies fewer AQMAs.	this option is deemed to be beneficial as it overfiles fewer ACMAs.	this option is deemed to be beneficial as it overflies fewer IQMAs.
				Option 1A R has been designed to support continuous climb									Option 491 has been designed to support continuous climb							
Wider Society Greenhouse Gas Impact	Qualitative	current routes do not enable continuous aims operations. It must be noted that the exact track length flown by siccraft may vary slightly due to the length flown by siccraft may vary slightly due to the length flown by siccraft may vary slightly due to the		popular is in the company of the com		operations. An element of radar vectoring may still be required to manage aircraft separation distances.	Option 241, has been designed to support continuous circle operations. An element of radar vectoring may still be required to manage aircraft separation distances.	Uppon Jis Kata Caebo disegree to support communications control operations. An element of nature-vectoring may still be required to manage aircraft separation distances. The track mileger of Option Jis Ris et Jákim (DZ Jánm), When compared to the 'So nothing' scenario, Option 28 R is longer and	operations. An element of radar vectoring may still be required to manage alternit separation distances.			the counties: As alament of rafer variation may off be required	to operation. An element of radar vectoring may still be required to manage alread sparation distance. The track mileage of Option 68 L is 40.05km (21.63nm). When	opcon our has been designed to support continuous climb to operations. An element of radar vectoring may still be required to manage aircraft separation distances. That trade milesses of ferrion, 68 9 is 40 20km (21 9 tens). When	operations. A character designed to support continuous como operations. An element of radar vectoring may still be required manage aircraft separation distances. The track milesse of ferring 644 is 48 50km (21 92 cm). When	to operations. An element of radar vectoring may still be required manage signals personally designated as a second control of the control of	of to converting Analysis of rater particles may still be required	d to operations. An element of radar vectoring may still be required	option / Linux been designed to support continuous climb to operations. An element of radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 7 L is 28.95km (21.02nm). When	option / it has been designed to support continuous climb operations. An element of radar vectoring may still be required to manage aircraft separation distances.
		nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. The existing procedures in a broader sense. The existing procedures do not support optimal aircraft existing procedures do not support optimal aircraft.								therefore espected to emit more greenhouse gases and this	is therefore expected to emit more greenhouse gases and this	is therefore expected to emit more greenhouse gases and this	nd compared to the 'do nothing' szenario, Option 48 L is longer and is therefore-expected to emit more greenhouse gases and this.	The track mileage of Option 68 R is 40.29km (21.81nm). When compared to the 'do nothing' scenario, Option 68 R is longer and is therefore expected to emit more greenhouse gases and this.	The track mileage of Option 6A L is 40 50km (21.87nm). When compared to the 'do nothing' scenario, Option 6A L is longer as is therefore expected to emit more greenhouse gases and this.	The track mileage of Option 6A R is 40.70km (21.98mm). When d compared to the 'do nothing' scenario, Option 6A R is longer a is therefore expected to emit more greenhouse gases and this	n The track mileage of Option 68 L is 41 80km (22.57nm). When and compared to the 'do nothing' spenario, Option 68 L is longer a is therefore expected to emit more greenhouse gases and this.	The track mileage of Option 68 k is 42.07km (22.72km). When and compared to the 'do nothing' scenario, Option 68 k is longer as is therefore expected to emit more greenhouse gases and this.	The track mileage of Option 7 L is 28.95km (21.02nm). When d compared to the 'do nothing' scenario, Option 7 L is longer and is therefore expected to emit more greenhouse gases and this	the track mileage of Option 7 R is 40.60km (21.92nm), When compared to the 'do nothing' scenario, Option 7 R is longer and is therefore expected to emit more greenhouse gases and this
		performance and therefore are predicted to have a greater environmental impact compared to greater environmental impact compared to proceed information of the process of t		will option is deemed to be of dio-benefit. More in-depth analysis at use Stage 3 is required to confirm the exact volumes of greenhouse ensure released.				option is deemed to be of dis-benefit. More in-depth analysis at 5. Stage 3 is required to confirm the exact volumes of greenhouse arrange relevant.		option is deemed to be of dis benefit. More in-depth analysis a Stage 3 is required to confirm the exact volumes of greenhouse areas relevant.	option is deemed to be of do benefit. More in-depth analysis a Stage 3 is required to confirm the exact volumes of greenhouse areas relevant.	at option is deemed to be of dis-benefit. More in-depth analysis at a Stage 3 is required to confirm the each volumes of greenhouse process released.	c option is deemed to be of dis-benefit. More in-depth analysis at Stage 2 is required to confirm the exact volumes of greenhouse process released.	option is deemed to be of dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse more relevant.	option is deemed to be of dis-benefit. More in-depth analysis a Stage 3 is required to confirm the exact volumes of greenhouse most released.	coption is deemed to be of dis-benefit. More in-depth analysis a Stage 3 is required to confirm the exact volumes of greenhouss areas released.	at option is deemed to be of dis-benefit. More in-depth analysis is se Stage 2 is required to confirm the exact volumes of greenhous areas relevant.	at option is deemed to be of dis-benefit. More in-depth analysis a see Stage 2 is required to confirm the exact volumes of greenhouse mass released.	option is deemed to be of dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact valumes of greenhouse more released.	option is deemed to be of dis-benefit. More in-depth analysis at itage 2 is required to confirm the exact volumes of greenhouse rever released.
		Within Stage 2 of the CAP1616 process, there is no requirement for a change sporsor to conduct requirement for a change sporsor to conduct																		
		quantizative emissions analysis. This will be covered quantizative emissions analysis. This will be covered in Stage 2 in order to make a companison in Stage 1 in steep 2 in order to make a companison in Stage 2, track mileage is used, based on the theory that																		
		the shorter the track mileage, the less greenhouse if gases are emitted in the case of the existing gases are emitted in the case of the existing Runway 232 POL 5D modal track, the track length is Runway 232 POL 5D modal track, the track length is																		
		22.16km [11.96mm]. 22.26km [12.56mm].	1																	
Wider Society Capacity and recilience	Initial Options Appraisal:	Maintaining extant procedures would maintain Maintaining extant procedures would maintain	The introduction of PBN routes is expected to deliver benefits to	by The introduction of PBN routes is expected to deliver benefits by		The introduction of PBN routes is expected to deliver benefits	The introduction of PAN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits to	The introduction of PBN routes is expected to deliver benefits. The introduction of PBN routes is expected to deliver benefits.	by The introduction of MIN routes is expected to deliver benefits by	by The introduction of PSN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits.	y The introduction of PSN routes is expected to deliver benefits in	by The introduction of PBN routes is expected to deliver benefits	by The introduction of PBN routes is expected to deliver benefits b	y The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by
	Qualitative	current capacity, however, due to the reliance upon ground-based navigational aids; resilience could be ground-based navigational aids; resilience could be significantly affected, following the removal of the unavidance affected following the property of the control of the property of the property of property of property property of property of property of property property of property of property of property of property of property of property of property of property of property of property property of property of property of prop	increasing aimpace capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and or the ground). The reduction of the reliance on outdown enumer	increasing simpare capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and on the ground). The reduction of the reliance on outdated ground based rangational aids will significantly increase operational reclience through the introduction of PBN.		by increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and on the ground). The reduction of the reliance on mannership.	increasing simpace capacity which subsequently leads to more predictable flight paths and flewer delays (both in the air and on th ground). The reduction of the reliance on outstand ground has all	increasing aimpase capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and on the ground). The reduction of the reliance on outdated exceed	increasing airquor capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and on the ground). The reduction of the relation on outsized exceed	increasing airquor capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and or the ground). The reduction of the reliance on outdated extends	increasing airquare capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and or the ground). The reduction of the reliance on outdated ensured	increasing simpace capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and or the ground). The reduction of the relance on outdated exceed	increasing airquare capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and on the ground). The reduction of the reliance on outdated exceeds	increasing airspace capacity which subsequently leads to more predictable flight paths and flewer delays (both in the air and on the ground). The reduction of the reliance on outside # ***********************************	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and or the ground). The reduction of the reliance on outdated are and	increasing simpace capacity which subsequently leads to more predictable flight paths and fewer delays (both in the six and or the ground). The reduction of the reliance on outday where we will	e increasing airspace capacity which subsequently leads to more on predictable flight paths and fewer delays (both in the air and of the ground). The reduction of the reliance on outdown second	e increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and or the ground). The reduction of the reliance on outdown exceed	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and on the ground). The reduction of the reliance on outdated ground	ncreasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in the air and on the ground). The reduction of the reliance on outdated around
		DVOR in December 2022. OVOR in December 2022.	based navigational sids will significantly increase operational resilience through the introduction of PAN.	based ravigational aids will significantly increase operational resilience through the introduction of P&N.		ground based ravigational sids will significantly increase operational resilience through the introduction of PRN.	navigational sids will significantly increase operational resilience through the introduction of PBN.	based ravigational sids will significantly increase operational reclience through the introduction of PRN.	based ravigational sids will significantly increase operational resilience through the introduction of PRN.	based navigational sids will significantly increase operational resilience through the introduction of PBN.	based ravigational sids will significantly increase operational recilience through the introduction of PSN.	based navigational sids will significantly increase operational resilience through the introduction of PBN.	based ravigational sids will significantly increase operational resilience through the introduction of PRN.	based ravigational aids will significantly increase operational resilience through the introduction of PBN.	based navigational sids will significantly increase operational resilience through the introduction of PRN.	based navigational sids will significantly increase operational recilience through the introduction of PBN.	based ravigational sids will significantly increase operational resilience through the introduction of PRN.	based ravigational aids will significantly increase operational resilience through the introduction of PRN.	based ravigational sids will significantly increase operational resilience through the introduction of PSN.	to sed navigational sids will significantly increase operational recilience through the introduction of PSN.
Wider Society Tranquility	Initial Options Appraisal: Qualitative	As per CAP1616, Appendix 8, pars 876, change sponsors are required to consider Tranquillity with reaching recommendate the consider Tranquillity with reaching recommendate the consider Tranquillity with reaching recomme	This option overflies no statutorily identified tranquillity neoptors (ACNNs or National Parks), nor any identified through, community engagement and is therefore comparable to the 'di orthing' icenario and assessed as neutral.	This continue constitue are state stocks belong that the state of the		This option overflies no statutorily identified tranquility receptors (ACMEs or National Parks), nor any identified through community assessment	This option overflies no statutorily identified tranquillity receptors (ACNIS or National Parks), nor any identified through community community and is therefore over	This option overfiles no statutorily identified tranquility receptors (ACMEs or National Parks), nor any identified through community assessment social in the community of the community assessment social in the community of t	This option overflex no statutorily identified tranquility receptors (ACNS) or National Parks), nor any identified through receptors appearant softs.	This option overflies no statutorily identified tranquility receptors (ACNSs or National Parks), nor any identified through representative approach appropriate and in	This option overflies no statutorily identified tranquility receptors (ACNIE or National Parks), nor any identified throug research and a second or second o	This option overflies no statutorily identified tranquility receptors (ACNIs or National Parks), nor any identified through a research and	This option overflex no statutorily identified tranquility receptors (ACMEs or National Parks), nor any identified through a recoverable as the No.	This option overflies no statutorily identified tranquility mosptors (AONEs or National Parks), nor any identified through monopolis appearant softi	This option overflies no statutorily identified tranquility receptors (ACNRs or National Parks), nor any identified throug receptors to a season and the season of the sea	This option overfiles no statutorily identified tranquillity receptors (AONis or National Parks), nor any identified throug receptors and appropriate and account account account and account	This option overflies no statutorily identified tranquility gh receptors (ACNIk or National Parks), nor any identified throug	This option overflies no statutorily identified tranquility gh neceptors (ADNES or National Parks), nor any identified through	This option overflies no statutorily identified tranquility receptors (ACNRs or National Parks), nor any identified through receptors in apparent and is	this option overflies no statutorily identified tranquility receptors (ACNNs or National Farks), nor any identified through community appraisance and is thereif
		unless other areas have been identified through community engagement. No additional specific community engagement. No additional specific	nothing' scenario and assessed as neutral.	nothing' contain and assessed as neutral.		to the 'do nothing' scenario and assessed as neutral.	contain and assessed as neutral.	nothing spenario and assessed at neutral.	nothing scenario and assessed as neutral.	nothing' scenario and assessed as neutral.	nothing' scenario and assessed as neutral.	nothing' scenario and assessed as neutral.	nothing' scenario and assessed as neutral.	nothing scenario and assessed as neutral.	nothing' scenario and assessed as neutral.	nothing' scenario and assessed as neutral.	nothing' scenario and assessed as neutral.	nothing' contain and assessed as neutral.	nothing' scenario and assessed as neutral.	nothing' scenario and assessed as neutral.
		areas were identified by community engagement. areas were identified by community engagement. The 'do nothing' scenario does not overfly any ACNNs or National Parks. ACNNs or National Parks.																		
Wider Society Biodiversity	Initial Options Appraisal: Qualitative	The change sponsor has mapped the designated The change sponsor has mapped the designated Sites of Special Scientific intervest (SSSIs), Special Sites of Special Scientific intervest (SSSIs), Special Protection Areas (SPAs), Special Areas of Protection Areas (SPAs), Special Areas of Special Scientific intervest (SSSIs), Special Areas of Special Scientific intervest (SSIs), Special Areas of Special Scientific intervest (SSIs), Special Areas of Special Scientific intervest (SSIs), Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites, as identified or Areas of Conservation (SACI) and RAMSAR sites (SACI) and Areas (SACI) and Areas (SACI) and Areas	II The change sponsor has mapped the designated Sines of Special last scientific interest (SSSI), Special Protection Areas (SPAS, Special last of Conservation (SACL) and RAMFAR other, as identified on the DEFRA MAGIC Map. CAP1616, Appendix 9, para 974, states		The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas ISPAsI, Special Areas of Consensation (SACs) and RAMSAR	The change sponsor has mapped the designated Sites of Special Scientific interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACI) and RAMSAR sites, as identified on the	The change sponsor has mapped the designated Sites of Special Scientific interest (SSSs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on	The change uponor has mapped the designated Sites of Special Scientific interest (SSSs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAM/SAR sites, as identified on	The change sponsor has mapped the designated Sites of Special Scientific interest (SSSs), Special Protection Areas (SPAs), Special Areas of Consensation (SACs) and RAMSAR sites, as identified or	The change uponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Consensation (SACs) and RAMSAR sites, as identified or Areas of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites, as identified or the change of Consensation (SACs) and RAMSAR sites (SACs	If the change uponsor has mapped the designated Sites of Special Scientific interest (SSSIs), Special Protection Areas (SPAs), Special on Areas of Conservation (SACs) and RAM/SAR sites, as identified on	The change uponsor has mapped the designated Sites of Special all Scientific Interest (SSSs), Special Protection Areas (SPAs), Special on Areas of Consensation (SACs) and RAMSAR sites, as identified on	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on	The change sponsor has mapped the designated Sites of Special Scientific interest (SSSs), Special Protection Areas (SPAs), Special Areas of Consensation (SACs) and RAMSAR sites, as identified a	The change sponsor has mapped the designated Sites of Special Scientific interest (SSSIs), Special Protection Areas (SPAs), Special Ames of Conservation (SACs) and RAMSAR sites, as identified of	ial The change uponsor has mapped the designated Sites of Specical Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified in	ial The change sponsor has mapped the designated Sites of Special cial Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special on Areas of Conservation (SACs) and RAMSAR sites, as identified a	The change uponsor has mapped the designated Sites of Special Scientific interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on	The change sponsor has mapped the designated Sites of Special Scientific interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on
		Conservation (SACs) and RAMSAR sites, as identified contraction (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix 8,	d the DSFRA MAGIC Map. CAP1616, Appendix 8, para 976, states that because of dispersion and misling, there is unlikely to be as	the DEFRA MAGIC Map. CAP1616, Appendix 9, para 974, states that because of dispersion and mixing, there is unlikely to be an		sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix 8, para 874, states that because of dispersion and	DSFRA MAGIC Map. CAP1616, Appendix R, para 874, states that because of dispersion and mixing, there is unlikely to be an impact	the DEFRA MAGIC Map. CAP1616, Appendix B, para 874, states that because of dispersion and mixing, there is unlikely to be an	the DEFRA MAGIC Map. CAPSESE, Appendix B, para 874, states that because of dispersion and mixing, there is unlikely to be an	the DSFRA MAGIC Map. CAP1606, Appendix B, para 974, stone that because of dispersion and mixing, there is unlikely to be an	the DGRA MAGIC Map. CAPSGS, Appendix B, para 874, state that because of dispersion and mixing, there is unlikely to be a	the DEFRA MAGIC Map. CAPSESS, Appendix R, para 674, states on that because of dispersion and mixing, there is unlikely to be as	all Scientific Interest (SIGIS), Special Protection Areas (SPAR), Special Areas of Connection (SACI) and RAMIARA since, a disentified on the CICRA MAGIC Map. CHPICSC, Appends 6, pars 874, state that because of disparsion and mining, there is unlikely to be as impact on local air quality from alreath above 1,000th. Furthermore, CHPICSC, Appends 6, pars 880, catales that general, simpact change proposed will not have an impact on greens, simpact change groups will not they are impact on	the DEFRA MAGIC Map. CAP1616, Appendix B, para 974, states that because of dispersion and mixing, there is unlikely to be an	the DEFRA MAGIC Map. CAP1616, Appendix 8, para 874, state that because of dispersion and mixing, there is unlikely to be a	the DGFRA MAGIC Map. CAP1616, Appendix B, para 874, state that because of dispersion and mixing, there is unlikely to be a	et the DEFRA MAGIC Map. CAP1606, Appendix 8, para 874, state an that because of dispersion and mixing, there is unlikely to be a	the DEFRA MAGIC Map. CAP1616, Appendix B, para 976, states an that because of dispersion and mining, there is unlikely to be as	the DEFRA MAGIC Map. CAP1616, Appendix B, para 874, states that because of dispersion and mixing, there is unlikely to be an	the DEFRA MAGIC Map. CAP1616, Appendix R, para 874, states that because of dispersion and mixing, there is unlikely to be an
		para air4, states that because of dependo and para air4, states that because of dependo and making there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, quality from aircraft above 1,000ft. Furthermore,	Furthermore, CAP1616, Appendix R, para RRO, states that in general, airspace change proposal will not have an impact on	Impact on occur ar quanty from arcter above 3,000ff. Furthermore, CAP1616, Appendix B, para 680, states that in general, airspace-change proposal will not have an impact on		frixing, there is uneasy to be an impact on occur air quarry from aircraft above 1,000ft. Furthermore, CAP1616, Appendix 8, para 980, states that in general, airspace change proposal	on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para 880, states that in general, airspace change proposal will not have an impact on biodiversity as they do	Furthermore, CAPSESS, Appendix B, para BBD, states that in general, simpace change proposal will not have an impact on	Furthermore, CAPSESE, Appendix R, para BBD, states that in general, aimpace change proposal will not have an impact on	Furthermore, CAPSESE, Appendix R, para BBD, status that in general, simpace change proposal will not have an impact on	impact on racia air quality from aircraft stocks 1,000ft. Furthermore, CAPSESE, Appendix B, para 880, stones that in general, sirupace-change proposal will not have an impact on	Furthermore, CAPSEDE, Appendix B, para BBD, states that in general, airspace change proposal will not have an impact on	that because of dispersion and mining, there is unlikely to be an impact on local air quality from aircraft above 1,000%. Furthermore, CAPSES, Append & Juna 1880, trates that in general, simpace change proposal will not have an impact on a blookwestly as they do not involve ground-based infrastructure.	Furthermore, CAPSESE, Appendix B, para BBD, states that in general, airspace change proposal will not have an impact on	impact on soon air quality from sircraft above 1,000ff. Furthermone, CAP1616, Appendix R, para 880, states that in general, simpace change proposal will not have an impact on	Furthermore, CAP1616, Appendix B, para 880, states that in general, sirspace change proposal will not have an impact on	Furthermore, CAP1616, Appendix R, para 880, states that in general, airspace change proposal will not have an impact on	impact on local air quality from aircost above 1,000s. Furthermore, CAP1616, Appendix B, para 880, states that in general, airquace change proposal will not have an impact on	impact on locus air quality from aircraft above 1,000ff. Furthermore, CAP1616, Appendix R, para 880, states that in general, aircpace change proposal will not have an impact on	impact on social air quality from airCraft above 1,000ft. Furthermore, CAP1616, Appendix R, para 880, states that in general, airspace change proposal will not have an impact on
		CAP1656, Appendix 8, para 880, states that in general, airspace change proposal will not have an impact on biodivenity at they do not involve impact on biodivenity at they do not involve impact on biodivenity at they do not involve	biodiversity as they do not involve ground-based infrastructure Wowever, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	 biodiversity as they do not involve ground-based infrastructure. However, the change sponsor adknowledges that any potential impact to the designated sites around MAN will be assessed in 		will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated	not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by	biodiversity as they do not involve ground-based infrastructure. However, the change sponsor admowledges that any potential impact to the designated sites around MAN will be assessed in	blodivenity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	biodivenity as they do not involve ground-based infrastructure However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	 biodivenity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sizes around MAN will be assessed in 	 biodivenity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in 	 biodiversity as they do not involve ground-based infrastructure. However, the change sponsor admowledges that any potential impact to the designated sites around MAN will be assessed in 	 biodiversity as they do not involve ground-based infrastructure. However, the change sponsor admowledges that any potential impact to the designated sites around MAN will be assessed in 	biodiversity as they do not involve ground-based infrastructur However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	 biodivenity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in 	ne. biodiversity as they do not involve ground-based infrastructur all However, the change sponsor acknowledges that any potentia in impact to the designated sites around MAN will be assessed in	ne. biodiversity as they do not involve ground-based infrastructure il However, the change sponsor advisowledges that any potential in impact to the designated sites around MAN will be assessed in	 biodiversity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in 	siodivenity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in
		ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to sponsor acknowledges that are potential impact	Stage 3 of the ACP process by Subject Matter Superts.	Stage 2 of the ACP process by Subject Matter Superts.		sites around MAN will be assessed in Stage 3 of the ACP process by Subject Matter Superts.	Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Superts.	Stage 3 of the ACP process by Subject Matter Experts.	Stage 2 of the ACP process by Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts.	Stage 2 of the ACP process by Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts.	Stage 3 of the ACP process by Subject Matter Superts.	Stage 3 of the ACP process by Subject Matter Experts.	itage 3 of the ACP process by Subject Matter Experts.
		Stage 3 of the ACP process by Subject Matter Experts. Stage 3 of the ACP process by Subject Matter Experts.																		
General Aviation Access	Initial Options Appraisal: Qualitative	No change to existing aimpace arrangements. Any General Autotion users of aimpace in the widnity of General Autotion users of aimpace in the widnity of General Autotion users of aimpace in the widnity of MAN will maintain their current level of access. MAN will maintain their current level of access.	No adverse impact to General Aviation access is anticipated as consequence of this ACP. All Visual Reference Points and exist	3 No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing		No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is articipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Asiation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as consequence of this ACP. All Visual Reference Points and existi	No adverse impact to General Aulation access is anticipated as consequence of this ACP. All Visual Reference Points and exist	a No adverse impact to General Aviation access is anticipated as long consequence of this ACP. All Visual Reference Points and existi	a No adverse impact to General Aviation access is anticipated as a onsequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as consequence of this ACP. All Visual Reference Points and exist	No adverse impact to General Aulation access is anticipated as ng consequence of this ACP. All Visual Reference Points and exist	to So adverse impact to General Aviation access is anticipated as ting consequence of this ACP. All Visual Reference Points and wikt	s a No adverse impact to General Aviation access is anticipated as ting consequence of this ACP. All Visual Reference Points and exist	No adverse impact to General Aviation access is anticipated as a on consequence of this ACP. All Visual Reference Points and existing	to adverse impact to General Aulation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing
		MAN will maintain their current sever of access under extant operational arrangements. MAN will maintain their current sever of access under extant operational arrangements.	reviewed and updated (where applicable) prior to implementat to ensure their continued validity. Airxpace classification	I be Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification		access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity.	cutters of Agreement pertaining to General Austion access will be reviewed and updated (where applicable) prior to implementation ensure their continued validity. Airspace dissification requirement	o reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification	reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airquice classification	 Letters of Agreement pertaining to General Austron access with newlewed and updated (where applicable) prior to implementate to ensure their continued validity. Airspace dassification 	to carrieved and updated (where applicable) prior to implemental to ensure their continued validity. Airupate classification	to ensure their continued validity. Airspace classification	to united and updated judens applicable) prior to implementation to ensure their continued validity. Airspace classification	 be betters of Agreement pertaining to General Ariation access will be on reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification 	 Letters of Agreement pertaining to General Avuation access with neviewed and updated (where applicable) prior to implemental to ensure their continued validity. Airspace dassification 	be Littler, or Agreement pertaining to General Aviation access will reviewed and updated (where applicable) prior to implemental to ensure their continued validity. Airupace classification	it be Letters of Agreement pertaining to General Aviation access we stion reviewed and updated (where applicable) prior to implemental to ensure their continued validity. Airspace classification	ition neviewed and updated (where applicable) prior to implementat to ensure their continued validity. Airspace classification	to be setters of Agreement pertaining to General Aviation access will be on reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification	viewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace dassification
			requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.		Airgace classification requirements will be reviewed as part of Stage 3 activities.	will be reviewed as part of Stage 2 activities.	requirements will be reviewed as part of Stage 2 activities.	requirements will be reviewed as part of Stage 2 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 2 activities.	requirements will be reviewed as part of Stage 2 activities.	requirements will be reviewed as part of Stage 2 activities.	requirements will be reviewed as part of Stage 2 activities.	requirements will be reviewed as part of Stage 2 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 2 activities.	requirements will be reviewed as part of Stage 3 activities.	requirements will be reviewed as part of Stage 2 activities.	requirements will be reviewed as part of Stage 3 activities.
General Aviation / Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no continued use of extant procedures, therefore no	The introduction of PBN is expected to deliver benefits by increasing aimpace capacity which in turn will lead to more	The introduction of MIN is expected to deliver benefits by increasing simpace capacity which in turn will lead to more		The introduction of PSN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PRN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight.	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing simpace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing singuize capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing aimpace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing simpace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing simpace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airupace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PSN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more	the introduction of PSW is expected to deliver benefits by noneasing airspace capacity which in turn will lead to more
		economic denent for GA/simines.	ground). This is expected to facilitate economic benefit by potentially increasing the frequency of air transport movement	predictable right paths and fewer delays (soch in the air or on the ground). This is expected to facilitate economic benefit by ts, potentially increasing the frequency of air transport increments,		productable fight paths and fewer delays (both in the ar or on the ground). This is expected to facilitate economic benefit by potentially increasing the frequency of air transport.	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing th frequency of air transport movements, increasing passenger	ground). This is expected to facilitate economic benefit by potentially increasing the frequency of air transport movements,	production right paths and have debys joon in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the frequency of air transport movements,	 processivings park and twel delays post in the arior on ground). This is expected to facilitate economic benefit by potentially increasing the frequency of air transport movement 	processes right paths and rever design poth in the air or on ground). This is expected to facilitate economic benefit by patientially increasing the frequency of air transport movemen	ground). This is expected to facilitate economic benefit by no, potentially increasing the frequency of air transport movement	productions right paths and towar delays, facts in the air or on the ground). This is expected to facilitate economic benefit by ss, potentially increasing the frequency of air transport movements,	ground). This is expected to facilitate economic benefit by potentially increasing the frequency of air transport movements,	 productable tight paths and fewer decays poth in the air or on ground). This is expected to facilitate economic benefit by potentially increasing the frequency of air transport movemen 	predictable right paths and never delays (both in the air or on ground). This is expected to facilitate economic benefit by s, potentially increasing the frequency of air transport movemen	ground). This is expected to facilitate economic benefit by nts, potentially increasing the frequency of air transport movemen	ground). This is expected to facilitate economic benefit by note, potentially increasing the frequency of air transport movement	preaction night paths and fewer delays pach in the air or on the ground). This is expected to facilitate economic benefit by s, potentially increasing the frequency of air transport movements,	predictace regist paths and never decays (poth in the air or on the ground). This is expected to facilitate economic benefit by obtentially increasing the frequency of air transport movements,
			carried.	carried.		movements, increasing passenger numbers and increasing cargo tonnage carried.	numbers and increasing cargo consign carries.	increasing passenger numbers and increasing dargo trainage carried.	arried.	screening passenger humains and screening cargo tannage carried.	corried.	carried.	carried.	conted.	increasing passenger numbers and increasing cargo torinage carried.	increasing passenger numbers and increasing cargo tormage carried.	carried.	increasing passenger numbers and increasing cargo tonnage carried.	carried.	ncreating patteriger numbers and increating cargo tomage partied.
General Aviation / Fuel burn commercial airlines	Initial Options Appraisal: Qualitative	The existing MAN procedures for departures do not enable continuous climb operations. Within Stage 2 of the CAPIGIS process, there is no Within Stage 2 of the CAPIGIS process, there is no	Option 1A L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will	Option 1A R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within be Stage 2 of the CAP1616 process to quantify fuel burn, this will be		Option 19 R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn,	Option 28:s supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage of the CAPSSES process to quantify fuel burn, this will be conducts	Option 29 it supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within stage 2 of the CAPS656 process to quantify fuel burn, this will be	Option 3: supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAPSSSS process to quantify fuel burn, this will be	Option 3 R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within \$ Stage 2 of the CRP\$505 process to quantify fuel burn, this will!	Option 4A L supports continuous dimb operations, reducing th overall amount of fuel burnt. There is no requirement within se Stage 2 of the CAPSSSS process to quantify fuel burn, this will	he Option 4A R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within be Stage 2 of the CAPSIGS process to quantify fuel burn, this will to	 Option 481 supports continuous climb-operations, reducing the overall amount of fuel burnt. There is no requirement within be Stage 2 of the CAPSSOS process to quantify fuel burn, this will be 	Option 48 it supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within e Stage 2 of the CAPSSSS process to quantify fuel burn, this will be	Option 6A L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify fuel burn, this will	 Option 6A R supports continuous climb operations, reducing to overall amount of fuel burnt. There is no requirement within be Stage 2 of the CAP1636 process to quantify fuel burn, this will 	the Option 68 L supports continuous climb operations, reducing to overall amount of fuel burnt. There is no requirement within I be Stage 2 of the CAP1616 process to quantify fuel burn, this will	he Option 68 R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within I be Stage 2 of the CAP1616 process to quantify fuel burn, this will	 Option 7 L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within the Stage 2 of the CAP1616 process to quantify fuel burn, this will be 	Option 7 R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within itage 2 of the CAP1616 process to quantify fuel burn, this will be
		requirement for a change sporsor to conduct requirement for a change sponsor to conduct quantitative fuel burn analysis. This will be covered just that is no other to make a reproduction in Street.	conducted in Stage 2. Therefore, to enable a companion, the los applied is that the shorter the track length, the less fuel is burn with support to this perion it is 29 6/km (24 28 mm) lines with	ogic conducted in Stage 3. Therefore, to enable a comparison, the logic st. applied is that the shorter the track length, the less fuel is burnt.		this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that the sharter the track leasth, the large field in huntry. With research to this notion, it is	in Stage 2. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. With regard to this notion, it is 41 (Kiam (2) 1 force) long When compared to the	conducted in Stage 2. Therefore, to enable a companion, the logi applied is that the shorter the track length, the less fuel is burnt.	conducted in Stage 2. Therefore, to enable a companion, the log applied is that the shorter the track length, the less fuel is burnt. With research to this cention, Iris 36 (Milm ICY Close) long When	c conducted in Stage 2. Therefore, to enable a companion, the los applied is that the sharter the track length, the less fuel is burn with control to this certical Pt 29.75m (Pt 48cm) lose When	gic conducted in Stage 2. Therefore, to enable a companion, the ic applied is that the shorter the track length, the less fuel is burn with research to this cortice, it is 42 d Size. (22 72 mm) lense Wh	ogic conducted in Stage 3. Therefore, to enable a companison, the lot st. applied is that the shorter the track length, the less fuel is burn an. With research to this continu. It is 43 (Giam (27 9) mm) long With	gic conducted in Stage 2. Therefore, to enable a comparison, the logi st. applied is that the shorter the track length, the less fuel is burnt.	ic conducted in Stage 2. Therefore, to enable a comparison, the logical applied is that the sharter the track length, the less fuel is burnt. With research to this person, it is 40 385m (1) \$15m long When	conducted in Stage 2. Therefore, to enable a companion, the is applied is that the shorter the track length, the less fuel is burn with paracel to this portion it is all Silver (21 92 pm) inner Wh	gic conducted in Stage 3. Therefore, to enable a companion, the lot t. applied is that the shorter the track length, the less fuel is burn a. Mith reports to this notion, it is 40.7(km; (21.60cm) lone. Why	logic conducted in Stage 2. Therefore, to enable a comparison, the line. applied is that the shorter the track length, the less fuel is burn with parametre the thir perion. It is 41 60km (22 C 2 mm) loos. With	logic conducted in Stage 2. Therefore, to enable a companison, the lorent companison in the spole of its that the shorter the track length, the less fuel is burn and the second to this continuity in 42 675m (22.72 and lone with	gic conducted in Stage 2. Therefore, to enable a comparison, the logic to applied is that the shorter the track length, the less fuel is burnt. With negarin to this century, it is 28 95km (21 (12 cm) long When	conducted in Stage 2. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fuel is burnt. Althougants to this period, it is 40 G/Brn (21 G/Lend) once When
		2, track mileage is used, based on the theory that the shorter the track mileage, the less greenhouse the shorter the track mileage, the less greenhouse.	compared to the 'do nothing' scenario, Option SA L is longer an at this stage it is assumed that it will require a larger amount o	nd compared to the 'do nothing' scenario, Option 1AR is longer and if at this stage it is assumed that it will require a larger amount of		29.95km (21.57nm) long. When compared to the 'do nothing' scenario, Option 19.9 is longer and at this stage it is assumed	'do nothing' scenario, Option 29 L is longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore	compared to the 'do nothing' scenario, Option 28 R is longer and at this stage it is assumed that it will require a larger amount of	compared to the 'do nothing' scenario, Option 3 L is longer and a this stage it is assumed that it will require a larger amount of fue	compared to the 'do nothing' scenario, Option 3 R is longer and this stage it is assumed that it will require a larger amount of 5	at compared to the 'do nothing' scenario, Option 6A L is longer at el at this stage it is assumed that it will require a larger amount o	nd compared to the 'do nothing' specario, Option 6A R is longer as of at this stage it is assumed that it will require a larger amount of	nd compared to the 'do nothing' scenario, Option 48 L is longer and if at this stage it is assumed that it will require a larger amount of	d compared to the 'do nothing' scenario, Option 48 R is longer and at this stage it is assumed that it will require a larger amount of	compared to the 'do nothing' scenario, Option 6A L is longer at at this stage it is assumed that it will require a larger amount of	d compared to the 'do nothing' scenario, Option 6A R is longer a of at this stage it is assumed that it will require a larger amount of	and compared to the 'do nothing' scenario, Option 68 L is longer a of at this stage it is assumed that it will require a larger amount of	and compared to the 'do nothing' scenario, Option 48 R is longer at of at this stage it is assumed that it will require a larger amount o	d compared to the 'do nothing' scenario, Option 7 L is longer and at this stage it is assumed that it will require a larger amount of fuel	compared to the 'do nothing' scenario, Option 7 R is longer and at this stage it assumed that it will require a larger amount of fuel
		Runway 23t POLSID modal track, the track length is 22.16km (11.96nm). 22.26km (12.56nm).	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.		agrion is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to	More in-depth analysis will be carried out in Stage 2 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 2 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 2 to confirm.	terms of fael burn. More in-depth analysis will be carried out in Stage 3 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 2 to confirm.	terms of fael burn. More in-depth analysis will be carried out in Stage 3 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	in terms of fuel burn. More in-depth analysis will be carried out in Stage 2 to confirm.	in terms of fuel burn. More in-depth analysis will be carried out in Stage 2 to confirm.	terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	nerms of fuel burn. More in-depth analysis will be carried out in itage 2 to confirm.
						comm.														
Commercial airlines Training costs	Initial Options Appraisal: Qualitative	Standard training would be applicable for existing procedures which would be practised by crews procedures which would be practised by crews	It is anticipated that no extra pilot/crew training will be require to enable pilots to fly the new PSN procedures as PSN has	ed It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PSN procedures as PSN has		It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PRN procedures as	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	It is anticipated that no extra pilot/lower training will be required to enable pilots to fly the new PSN procedures as PSN has	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has	It is anticipated that no extra pilot/love training will be require to enable pilots to fly the new PBN procedures as PBN has	it is anticipated that no extra pilot/crew training will be require to enable pilots to fly the new PAN procedures as PAN has	ed it is anticipated that no extra pliot/trew training will be require to enable pliots to fly the new PBN procedures as PBN has.	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has	it is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has	It is anticipated that no extra pilot/crew training will be require to enable pilots to fly the new PSN procedures as PSN has	d It is anticipated that no extra pilot/crew training will be require to enable pilots to fly the new P&N procedures as P&N has	red it is anticipated that no extra pilot/crew training will be requin to enable pilots to fly the new PBN procedures as PBN has	red it is anticipated that no extra pilot/crew training will be require to enable pilots to fly the new PBN procedures as PBN has	d it is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has	t is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has.
Commercial sidious Other costs	Initial Options Appraisal:	through existing simulator exercises. through existing simulator exercises.	become a common navigation standard across the world. Other costs to commonly sirlines may locked underso to Clark	become a common navigation standard across the world. The Cather must be commercial sickness may include underse to Clarke.		PNN has become a common navigation standard across the world. Other costs to common risk indices may include unchang to	common navigation standard across the world. Other costs to commercial sicious may include underse to Dietre	become a common navigation standard across the world. Other much to commercial sirilors may include underso to Clabe.	become a common navigation standard across the world. Other costs to common risk inflow may include underse to Cliebs	become a common navigation standard across the world. Other costs to commercial sickey may include undow to Clieb	become a common navigation standard across the world. Other costs to common risk bridges may include underse to Die	become a common navigation standard across the world. The forther roots to communical distance may include underso to Clark	become a common navigation standard across the world. It Other costs to commercial skillines may include updates to Flight	become a common navigation standard across the world. Other costs to communical sixtings may include underse to Cliebt	become a common navigation standard across the world. Other costs to commercial sidness may include underse to Clie	become a common navigation standard across the world. Other costs to commercial sicious may include underse to Die	become a common navigation standard across the world.	become a common navigation standard across the world.	become a common navigation standard across the world. Other costs to commercial billions may include underso to Cliebt	secome a common navigation standard across the world.
	Qualitative	other costs for commencial sirines - there may be costs associated with maintaining legacy systems to costs associated with maintaining legacy systems to	Management Systems (FMS), navigation databases and operat procedures, increased pilot hire costs versus training etc. It is n	ing Management Systems (FMS), navigation databases and operating procedures, increased pilot hire-costs versus training etc. It is not		Right Management Systems (RMS), ravigation databases and operating procedures, increased pilot hire costs versus	Management Systems (FMS), ravigation databases and operating procedures, increased pilot hire-costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. it is not	Management Systems (FMS), navigation databases and operation procedures, increased pilot hire costs versus training etc. It is n	ng Management Systems (FMS), ravigation databases and operat procedures, increased pilot hire costs versus training etc. It is n	fing Management Systems (PMS), navigation databases and operation procedures, increased pilot hire-costs versus training etc. It is n	ing Management Systems (PMS), navigation databases and operating or procedures, increased pilot hire costs versus training etc. It is not	ng Management Systems (FMS), navigation databases and operating at procedures, increased pilot hire costs versus training etc. it is not	Management Systems (FMS), navigation databases and operat procedures, increased pilot hire costs versus training etc. It is n	ing Management Systems (FMS), ravigation databases and operator procedures, increased pilot hire costs versus training etc. It is n	iting Management Systems (FMS), navigation databases and operat not procedures, increased pilot hire costs versus training etc. It is	ting Management Systems (FMS), navigation databases and operat not procedures, increased pilot hire costs versus training etc. It is n	ng Management Systems (FMS), navigation databases and operating at procedures, increased pilot hire costs versus training etc. it is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not
		continue tying conventional navigation but there continue tying conventional navigation but there are too many variables (e.g. alread) types, on-board; system capability etc.) to consider these effectively. yothern capability etc.) to consider these effectively.	proportionals for MAN to accept the other costs: to commercial airlines of flying PBN procedures.	air Inoportionate for MAN to assess the other costs to commercial airlines of flying PBN procedures.		'other costs' to commercial sirlines of flying PBN procedures.	proportionate for MAN to access the other costs to commercial airlines of flying PBN procedures.	proportionate for MARL to assess the other costs to commercial airlines of flying PRN procedures.	proportionals for MAN to assess the other code to contine cal airlines of flying PBN procedures.	proportionate for MAN to suses the other costs to convincio sintines of figing PBN procedures.	proportionals for MAN to accept the other coots to commerc aidines of flying PRN procedures.	airlines of flying PRN procedures.	air proportionate for MAN to assess the other costs to continencial airlines of figing PBN procedures.	proportionate for MAN to assess the other cods: to constructs airlines of flying PBN procedures.	proportionate for MAN to assess the other costs: to commerciarities of flying PBN procedures.	artines of flying PBN procedures.	airlines of flying PMN procedures.	airlines of Bying PBN procedures.	airlines of flying PRN procedures.	proportionate for MANN to access the other costs: to commercial sirlines of flying PBN procedures.
Airport / Air Infrastructure costs navigation service	Initial Options Appraisal: Qualitative	No additional infrastructure is required at MAN to maintain estant conventional procedures; however, maintain estant conventional procedures; however,	There are no expected additional infrastructure costs. All option relate to the implementation of PSW and no additional	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is required as the introduction of PBN reduces the		There are no expected additional infrastructure costs. All options relate to the implementation of PRN and no	There are no expected additional infrastructure costs. All options relate to the implementation of PRN and no additional infrastructs.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional	There are no expected additional infrastructure costs. All option relate to the implementation of PRN and no additional	There are no expected additional infrastructure costs. All option relate to the implementation of PBN and no additional	There are no expected additional infrastructure costs. All optionshare to the implementation of PRN and no additional	ons. There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional	There are no expected additional infrastructure costs. All option relate to the implementation of PRN and no additional	There are no expected additional infrastructure costs. All option leate to the implementation of PBN and no additional	There are no expected additional infrastructure costs. All option relate to the implementation of PBN and no additional	ions There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional	ions. There are no expected additional infrastructure costs. All option relate to the implementation of PSN and no additional	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional	There are no expected additional infrastructure costs. All options visite to the implementation of PSN and no additional
provider		maintaining accessibility to current ground-based imaintaining accessibility to current ground-based imaintaining accessibility to current ground-based equipment (operated by NSRL) may become prohibitively expensive should a CAP1781 RNAV prohibitively expensive should a CAP1781 RNAV	infrastructure is required as the introduction of PBM reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	linfrastructure is required as the introduction of PRN reduces the reliance on ground infrastructure, in particular ground-based navigation sids are no longer needed.		additional infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation sids are no longer needed.	is required as the introduction of PBN reduces the relance on ground infrastructure, in particular ground-based navigation sids a no longer needed.	infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation sids are no longer needed.	infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based ravigation sids are no longer needed.	infrastructure is required as the introduction of PAN reduces the reliance on ground infrastructure, in particular ground-based travigation sids are no longer needed.	 Intractructure is required as the introduction of PRN reduces the relance on ground infrastructure, in particular ground-based manigation sids are no longer needed. 	he infrastructure is required as the introduction of PBN reduces th reliance on ground infrastructure, in particular ground-based rawigation sids are no longer needed.	 infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based ravigation sids are no longer needed. 	 infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based ravigation sids are no longer needed. 	infrastructure is required as the introduction of PBN reduces to reliance on ground infrastructure, in particular ground-based navigation sids are no longer needed.	 infrastructure is required as the introduction of PRN reduces the reliance on ground infrastructure, in particular ground-based navigation sids are no longer needed. 	the infrastructure is required as the introduction of PRN reduces to reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	the infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation sids are no longer needed.	 infrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation sids are no longer needed. 	ofrastructure is required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based ravigation sids are no longer needed.
		substitution not be implemented prior to the proposed removal date.																		
Airport / No	Initial Options Appraisal:	No charge to operational costs is attributable to	ATC at MAN is contracted out to a third-neutroness "To	is ATC at MAN is contracted out to a third name consolication. The		ATC at MAN is contracted out to a think name nearest	ATC at MAN is contracted out to a think-name comming Thin	ATC at MAN is contracted out to a thinkness remainment. The	ATC at MAN is contracted out to a Windowsky remain wine. This	ACC at MAN is constrained out to a third name assure	ATC at MAN is contracted our to a Whinfurnity name "	is ATC at MAN is contracted our to a Whish name name """.	is ATC at MAN is contracted out to a third native necessition for	ATC at MAN is contraded out to a think name normal wine. This	ATC at MAN is operacted out to a third-next overarior or To	s ATC at MAN is contracted out to a third-name cover "To	his ATC at MAN is contracted gar to a third next access front to	his ATC at MAN is contracted out to a think-next answer for	ATC at MAN is contracted out to a Minforum remainer' Thi-	NTC at MAN is contracted out to a third-name remaination. Thir
navigation service provider	Qualitative	maintaining the extant procedures.	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment		This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some	existing commercial contract between MAN and their chosen ANSI is considered to be an ongoing cost. Some deployment costs are	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	mixing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	existing commendal contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment	skitting commercial contract between MAN and their chosen NSSP is considered to be an ongoing cost. Some deployment
			procedures and training of controllers; however, these cannot identified at this stage of the ACP process.	 we anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process. 		unjunyment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage	environment with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	were anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	www.ew articipated with respect to the implementation of new procedures and training of controllen; however, these cannot be identified at this stage of the ACP process.	procedures and training of controllers; however, these cannot ill identified at this stage of the ACP process.	 were anticipated with respect to the implementation of ne procedures and training of controllers; however, these cannot identified at this stage of the ACP process. 	 we are anticipated with respect to the implementation of ne- be procedures and training of controllers; however, these cannot to identified at this stage of the ACP process. 	 unus are amorpased with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process. 	 www.we attropated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process. 	procedures and training of controllers; however, these cannot identified at this stage of the ACP process.	 common and controllers and training of controllers; however, these cannot identified at this stage of the ACP process. 	the procedures and training of controllers; however, these cannot identified at this stage of the ACP process.	the procedures and training of controllers; however, these cannot i identified at this stage of the ACP process.	w wass are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	consumer amongsted with respect to the implementation of new procedures and training of controllers; however, these cannot be dentified at this stage of the ACP process.
Airport / Air deployment costs navigation service	Initial Options Appraisal: Qualitative	No deployment costs applicable to extant No deployment costs applicable to extant procedures.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen	ix ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen		of the A/D revoces ATC at MAN is contracted out to a third-party organization. This existing commercial contract between MAN and their	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANG	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen	ATC at MAN is contracted out to a third-party organization. This existing commercial contract between MAN and their chosen	ATC at MAN is contracted out to a third-party organisation. The existing commercial contract between MAN and their chosen	is ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen	ATC at MAN is contracted out to a third-party organisation. The existing commercial contract between MAN and their chosen	ATC at MAN is contracted out to a third-party organisation. The existing commercial contract between MAN and their chosen	his ATC at MAN is contracted out to a third-party organisation. The existing commercial contract between MAN and their chosen	his ATC at MAN is contracted out to a third-party organisation. This existing commencial contract between MAN and their chosen	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen	NTC at MAN is contracted out to a third-party organisation. This skitting commercial contract between MAN and their chosen
provider						chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new concedures and training of	is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and mission of controllers in newsey there cannot be identified at	ANSP is considered to be an ongoing cost. Some deployment costs are articipated with respect to the implementation of new considerary and religious of controllers; because these connections.	AWP is considered to be an origing cost. Some deployment costs are articipated with respect to the implementation of new consolutes and training of controllers because these control to	ANCP is considered to be an ongoing cost. Some deployment costs are articipated with respect to the implementation of ne amountaries and training of controllers however these control.	ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of ne announce and resident of methods in houseast these capacit.	ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of ne-	ANSP is considered to be an ongoing cost. Some deployment costs are articipated with respect to the implementation of new annual respect to the implementation of re-	ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new announcement of controllers however these cannot be	ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of ne proodures and training of controllers however these capacit.	ANSP is considered to be an ongoing cost. Some deployment octs are anticipated with respect to the implementation of ne	ANSP is considered to be an ongoing cost. Some deployment ew costs are anticipated with respect to the implementation of ne	ANSP is considered to be an ongoing cost. Some deployment ew costs are anticipated with respect to the implementation of ne	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment outst are anticipated with respect to the implementation of new proportions and recipient of controllers.	WSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new recognizer and training of costrollers because these cannot be
Safety Assessment Safety Assessment	Indial Certines Associate	The 'do perhips' councils assume that corner . The 'do perhips' assumes that corner		be procedures and training of controllers; however, these cannot be identified at this stage of the ACP process. It. Possible hazards have been identified, some of which are extant.		controllers; however, these cannot be identified at this stage of the ACR money.	this stage of the ACP process.	identified at this stage of the ACP process.	identified at this stage of the ACP process. Describe how have identified consumation to a source	identified at this stage of the ACP process. Should a hornor beau been identified some of which we extra	identified at this stage of the ACP process.	identified at this stage of the ACP process. Provide howers have been identified some of which we extend	identified at this stage of the ACP process. Fig. Should be benefit to such as a feet fact of the benefit of the second of the	identified at this stage of the ACP process. Shouldeshounds have been identified some of which we extent	identified at this stage of the ACP process. One bis harnote have been identified some of which are extra	identified at this stage of the ACP process. Provide horselfs have been identified some of which we are not	identified at this stage of the ACP process.	identified at this stage of the ACP process.	proordures and training of controllers; however, these cannot be identified at this stage of the ACP process. Provible harvorie have been identified corne of which we extent	decified at this stage of the ACP process.
	Qualitative	operations at MAN are safe including use of the extant conventional procedures. Following the extant conventional procedures. Following the	Firstly, aircraft executing a MAP may conflict with aircraft on th SID. This is an extant hazard. In addition, options within this	he Firstly, aircraft executing a MAP may conflict with aircraft on the SID. This is an extant hazard, in addition, options within this		extant. Firely, sincraft executing a MAP may conflict with sincraft on the SiD. This is an extant hazard. In addition,	Firstly, aircraft executing a MAP may conflict with aircraft on the Si This is an extant hazard. In addition, options within this envelope	 Firstly, sincraft executing a MAP may conflict with sincraft on the SID. This is an extant hazard. In addition, options within this 	Firstly, aircraft executing a MAP may conflict with aircraft on the SD. This is an extant hazard. In addition, options within this	Firstly, sicroft executing a MAP may conflict with sicroft on the SD. This is an extent hazard, in addition, options within this	 Firstly, aircraft executing a MAP may conflict with aircraft on til SID. This is an extant huzard. In addition, options within this 	he Firstly, aircraft executing a MAP may conflict with aircraft on th SD. This is an extant hazard. In addition, options within this	Firstly, aircraft executing a MAP may conflict with aircraft on the SC. This is an extant hazard, in addition, options within this	Firstly, aircraft executing a MAP may conflict with aircraft on the SQ. This is an extant huzard. In addition, options within this	Firstly, aircraft executing a MAP may conflict with aircraft on til SID. This is an extant hazard. In addition, options within this	e Firstly, aircraft executing a MAP may conflict with aircraft on ti SID. This is an extant hazard. In addition, options within this	the Firstly, aircraft executing a MAP may conflict with aircraft on t SID. This is an extant hazard. In addition, options within this	the Firstly, aircraft executing a MAP may conflict with aircraft on the SID. This is an extant hazard. In addition, options within this	e Firstly, aircraft executing a MAP may conflict with aircraft on the SID. This is an extant hazard, in addition, options within this	Firstly, aircraft executing a MAP may conflict with aircraft on the ID. This is an extant hazard. In addition, options within this
		The 'No nathing' scenario assumes that current apparation at MAN are said including used the selection controllar policies. Following the selection controllar policies. Following the selection controllar policies. Following the supporting the selecting CDL, about disposing NAN supporting the selecting NAN supporting the selecting CDL, about disposing NAN supporting the selecting CDL about the selection CDL supporting the selecting CDL about the selection CDL selection CDL sele	arrivals/transitions, aircraft inbound to Livergool and some GA aircraft operating at low level. Furthermore, there is the potent	It Possible hazers have been dereffled, some of which are extent. Firstly, shortly executing a MoP may profit on white such as the STR possible of the STR possible of the STR possible of the STR possible of the energies profit on white of the STR possible of the energies profit on which the STR possible of the STR possible		ATS route, MAN annual/transitions, shorth indound to Liverpool and some GA sincraft operating at low level.	aminals/transitions, aircraft inbound to Liverpool and some GA aircraft operating at low level. Furthermore, there is the potential to	arrivals/transitions, already inhound to Uverpool and some GA arrivals operating at low level. Furthermore, there is the potential	arrivals, francisions, aircraft inbound to Siverpool and some GA aircraft operating at low level. Furthermore, there is the potential	aminals, transitions, alors if though to George Arts route, MAN aminals, transitions, alors if inbound to George and some GA alors if operating at low level. Furthermore, there is the potent	articals/transitions, sicraft inbound to Liverpool and some Ge all sicraft operating at low level. Furthermore, there is the potent	arrivals/transitions, sircoth inbound to Liverpool and some GA fail sircoth operating at low level. Furthermore, there is the potent	arrivals/transitions, along the telephone of the control of the potential along the po	arrivals/transitions, aircraft inbound to Liverpool and some GA aircraft operating at low level. Furthermore, there is the potential	arrivals/transitions, aircraft inbound to Liverpool and some Gr aircraft operating at low level. Furthermore, there is the poten	artivals/transitions, aircraft inbound to Liverpool and some Gr ial aircraft operating at low level. Furthermore, there is the potent	A anivale/transitions, aircraft inbound to Liverpool and some Gretal aircraft operating at low level. Furthermore, there is the potential	A arrivally transitions, aircraft inbound to Liverpool and some GA stall aircraft operating at low level. Furthermore, there is the potent	identifies a this cage of the AFF proc. Pacifies have the two-the indentifies (some of which are extent. First), a count executing AMP are profite with accords on the First), a count executing AMP are profite with accords on the execution process of the count of the AMP and the AMP and the execution process of the which Counter and the AMP and the for the open count of the AMP and the AMP and the AMP and the displayments. Even the Counter and the AMP and the AMP and the AMP and the AMP and the AMP and the AMP and the AMP and the AMP and the AMP and the	minule, framilitions, aircraft inbound to liverpool and some GA sircraft operating at low level. Furthermore, there is the potential
		the existing navigational aid not be implemented, resulting in a possible increase in ATCO workload, resulting in a possible increase in ATCO workload.	design process. Further assessment will be conducted at Stage and 4 of the CAPSSSS process to confirm the exact nature of all	we wop out of CAs. Insee hazards can be midgated through the design process. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all		These hazards can be mitigated through the design process. Further assessment will be conducted at Stage 3 and 4 of the	wwy.vax. of CAS. I nece hazards can be mitigated through the design process. Further assessment will be conducted at Stage 3 at 4 of the CAPSSSS process to confirm the exact nature of all hazard	design process. Further assessment will be conducted at Stage 2 and 4 of the CAP1616 process to confirm the exact nature of all	ne way out of UAs. These nazards can be mitigated through the design process. Further assessment will be conducted at Stage 3 and 4 of the CAP1636 process to confirm the exact nature of all	 w wup out of CRs. These hazards can be mitigated through the design process. Further assessment will be conducted at Stage and 4 of the CRFSSS process to confirm the exact nature of all 	www.pout onces, interensized can be mitigated through to design process. Further assessment will be conducted at Stage and 4 of the CAPSSSS process to confirm the exact nature of a	we wop our or CAS, mesentatands can be mitigated through to design process. Further assessment will be conducted at Stage. If and 4 of the CAPSESE process to confirm the exact nature of all	w wap out or CAS. These tazards can be mitigated through the design process. Further assessment will be conducted at Stage 3 and 4 of the CAPSESE process to confirm the exact nature of all	 w up out of CRS. Interestaceds can be mitigated through the design process. Further assessment will be conducted at Stage 3 and 4 of the CRPSSSS process to confirm the exact nature of all 	design process. Further assessment will be conducted at Stage and 4 of the CAP1616 process to confirm the exact nature of a	we wop our or LAS. These hazards can be mitigated through: design process. Further assessment will be conducted at Stage and 4 of the CAP1616 process to confirm the exact nature of a	we wisp out or CAs. Inese hazards can be mitigated through e 2 design process. Further assessment will be conducted at Stage all and 4 of the CAP3636 process to confirm the exact nature of a	we wop out or CAS. These fazards can be mitigated through t design process. Further assessment will be conducted at Stage all and 4 of the CAPSSS process to confirm the exact nature of all	www.poutr or cxo. I these nazards can be mitigated through the design process. Further assessment will be conducted at Stage 2 and 4 of the CAP1616 process to confirm the exact nature of all	or servy-use of CAS. These hazards can be mitigated through the design process. Further assessment will be conducted at Stage 3 and 4 of the CAP16G6 process to confirm the exact nature of all
	Summary of Analysis	The 'do nothing' scenario in relation to this ACP is: The 'do nothing' scenario in relation to this ACP is:				CAPSSSS process to confirm the exact nature of all hazards and minimized. When compared to the 'do nothing' scenario, Option 19 R	and mitigations. When compared to the 'do nothing' scenario, Option 28 L serform	hazards and mitigations. When compared to the 'do nothing' scenario, Option 29 R	hazards and mitigations. When compared to the 'do nothing' scenario, Option 31.	hazards and mitigations. When compared to the "do nothing" scenario, Option 2 R	hazards and midgations. When compared to the 'do nothing' scenario, Option 4A L.	bazands and mitigations. When compared to the 'do nothing' scenario, Option 4A.R.	hazards and mitigations. When compared to the 'do nothing' scenario, Option 49 L	hazards and mitigations. When compared to the "do nothing" scenario, Option 69 R	hazards and mitigations. When compared to the 'do nothing' scenario, Option SA L.	hazards and mitigations. When compared to the 'do nothing' scenario, Option SA R	hazards and mitigations. When compared to the 'do nothing' scenario, Option 68 L.	hazards and mitigations. When compared to the 'do nothing' scenario, Option 68 R	hazards and mitigations. When compared to the 'do nothing' scenario, Option 7 L	nazands and mitigations. When compared to the 'do nothing' scenario, Option 7 R
		not an interest to the state of	option performs: -worse in terms of Noise impact, Air Quality, Greenhouse Gas. emissions and Fuel burn.	performs: - worse in terms of Noise impact, Air Quality, Greenhouse-Gas emissions and Fuel burn.		performs: -worse in terms of Greenhouse Gas emissions and Fuel burn. -better in terms of Noise Impart Air Availes Cread?	worse in terms of Greenhouse Gas emissions and Fuel burn better in terms of Noise impact, Air Quality, Capacity and recilien and Scanonic impact from increased effective removine.	performs: a, —worse in terms of Greenhouse Gas emissions and Fuel burn. — better in terms of Najar-imager. Air Analise Console ——	performs: -worse in terms of Greenhouse Gas emissions and Fuel burn. -better in terms of flippe image: Air Analise Creacits	performs: -worse in terms of Greenhouse Gas emissions and Fuel burn. -better in terms of Robin Impart Air Fuelity Const.	performs: -worse in terms of Air Quality, Greenhouse Gas emissions and Fuel burn.	performs: - worse in terms of Air Quality, Greenhouse Gas emissions and Fuel burn.	performs: -worse in terms of Greenhouse Gas emissions and Fuel burnbetter in terms of Noise import Air Fuelin. Female	performs: -worse in terms of Greenhouse Gas emissions and Fuel burn. -better in terms of Noise import Air Fueline Creads:	performs: -worse in terms of Noise impact, Greenhouse Gas emissions a Fuel burn.	performs: - worse in terms of Greenhouse Gas emissions and Fuel burn better in terms of floirs import. Air Auslina Cooperation	performs: - worse in terms of Greenhouse Gas emissions and Fuel burn better in terms of Noise inner Air Custon Canada	performs: - worse in terms of Greenhouse Gas emissions and Fuel burn. - better in terms of Noise igneer Air Analise Const.	When compared to the 'do nothing' contario, Option 7 L performs: -worse in terms of Noise impact, Greenhouse Gas emissions and fault burn. by - better in terms of Ari Quality, Capacity and resilience, and	performs: worse in terms of Greenhouse Gas emissions and Ruel burn. better in terms of Noise impact. Air (hasher franchs and
		removal of the DVDR beacons in December 2022, which would have a significant impact on capacity which would have a significant impact on capacity.	- better in terms of Capacity and resilience, and Economic impa from increased effective capacity.	ect - better in terms of Capacity and resilience, and Economic impact from increased effective capacity.		recilience, and Sconomic impact from increased effective capacity.	 equal/neutral in terms of the remaining criteria because there is change when compared to today's operation. 	nestience, and Economic impact from increased effective capacity equal/heutral in terms of the remaining criteria because there is	recilience, and Economic impact from increased effective capacity equal/heutral in terms of the remaining citeria because there is	recilence, and Economic impact from increased effective capact - equal/neutral in terms of the remaining criteria because there	ty better in terms of Noise impact, Capacity and recilience, and is Economic impact from increased effective capacity.	-better in terms of Noise impact, Capacity and recilience, and Economic impact from increased effective capacity.	reclience, and Economic impact from increased effective capacity - equal/neutral in terms of the remaining citeria because there is	ty recilience, and Economic impact from increased effective capacity is equal/heutral in terms of the remaining otheria because there is	-better in terms of Air Quality, Capacity and resilience, and Economic impact from increased effective capacity.	reclience, and Economic impact from increased effective capac equal/neutral in terms of the remaining criteria because then	resilience, and Economic impact from increased effective capa re is equal/heutral in terms of the remaining criteria because ther	city recilience, and Economic impact from increased effective capacter is - equal/neutral in terms of the remaining criteria because there	ty better in terms of Air Quality, Capacity and resilience, and is Economic impact from increased effective capacity.	recilience, and Economic impact from increased effective capadty. equal/neutral in terms of the remaining criteria because there is
		where of the DOM beause is therein a DOM in the DOM beause is the three the DOM beause is the term of the DOM beause is the term of the DOM beause is the beaute of the DOM beause is the season of the DOM beaute is the season of the DOM beaute is the season of the DOM beaute is the DOM be	equar, neutral in terms of the remaining criteria because there no change when compared to today's operation.	from increased effective capacity. etc equal(neutral in terms of the remaining criteria because there is no change when compared to today's operation.		 equaryneutral in terms of the remaining criteria because there is no change when compared to today's operation. 	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some	no change when compared to today's operation. At this time, it is not possible to fully determine the safety	no crunge when compared to today's operation. At this time, it is not possible to fully determine the safety	no change when compared to today's operation. At this time, it is not possible to fully determine the safety	 equal/heutral in terms of the remaining criteria because then no change when compared to today's operation. 	 eua/feutral in terms of the remaining criteria because there no charge when compared to today's operation. 	is no change when compared to today's operation. At this time, it is not possible to fully determine the safety	no change when compared to today's operation. At this time, it is not possible to fully determine the safety	 equarmentral in terms of the remaining criteria because then no change when compared to today's operation. 	as no change when compared to today's operation. At this time, it is not possible to fully determine the safety	no change when compared to today's operation. At this time, it is not possible to fully determine the safety	no change when compared to today's operation. At this time, it is not possible to fully determine the safety	 equar/heutral in terms of the remaining criteria because there is no change when compared to today's operation. 	no change when compared to today's operation. It this time, it is not possible to fully determine the safety
		naise at lower levels. In terms of Tranquility, Biodiversity, General Aviation acress and Economic Biodiversity, General Aviation acress and Economic Impact, the 'Go nothing' baseline provides and the 'Go nothing' baseline provides	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with som courtes operated by other routes/nearby airports have been identified, but the exact nature of these conflicts is unclear at t	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some nodes consted by other nucleo/nearby singots have been		At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some routes operated by other makes inwards since the	routes operated by other routes/nearby sirports have been identified, but the each nature of these conflicts is unclear at this stage. Further analysis and engagement is remained in Committee.	implications of this specific option. Possible conflicts with some noutes operated by other noutes/nearby alignosts have been identified, but the expot nature of these conflicts in un-	implications of this specific option. Possible conflicts with some routes operated by other routes/hearby airports have been identified, but the east rature of these routins in our	implications of this specific option. Possible conflicts with some routes operated by other routes/hearby airports have been alderofied, but the east nature of these modifies in	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with som reader connected by other representative sensors by	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some routes constant by other routes investigated by the routes in a second by the routes are proportional to the conflict of t	implications of this specific option. Possible conflicts with some routes operated by other routes/hearby algorits have been identified, but the each routes of these modifies is our conflict.	inglications of this specific option. Possible conflicts with some routes operated by other routes; hearby sirports have been is identified, but the exact ratury of these routions is or	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with som routes coented by other route investor simons have been	implications of this specific option. Possible conflicts with some routes operated by other routes/nearby sinports have been identified, but the each nature of these conflicts in	ne implications of this specific option. Possible conflicts with som routes operated by other routes/hearby airports have been this identified, but the exact payment these conflicts in	ne implications of this specific option. Possible conflicts with some nautes operated by other routes/nearby airports have been this identified, but the exact native of these conflicts is	At this time, it is not possible to fully determine the safety implications of this specific option. Possible conflicts with some in course operated by other rouges/howshy airports have?	implications of this specific option. Possible conflicts with some outer operated by other noutes/nearby airports have been declified, but the east nature of these conflicts in unclear or this
		minimal/no charge to today's operations. Furthermore, there are very limited costs incurred as a small of this control, from a safety.	identified, but the exact nature of these conflicts is unclear at t stage. Further analysis and engagement is required in Stage 3 of A of the CAD SCA necess to describe the CAD SCA	this identified, but the exact nature of these conflicts is unclear at this said stage. Further analysis and engagement is required in Stage 3 and is of the CAS-SES concern to describe the Conflict.		been identified, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is provided in Grass 2 and 4 of the Children	of the CAP1616 process to determine this. Furthermore, this option has been assessed as in isolation rather than as a set of design process as most of a wider number.	stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1606 process to determine this. Furthermore, this continuous has been recovered to in	stage. Further analysis and engagement is required in Stage 2 and 4 of the CAPSSS process to determine this. Furthermore, this certion has been supported by in-	d stage. Further analysis and engagement is required in Stage 3 a 4 of the CAPSSSS process to determine this. Furthermore, this serion has been reasoned or in	identified, but the each nature of these conflicts is unclear at to stage. Further analysis and engagement is required in Stage 3 of A of the CAPACAS annous to	this identified, but the exact nature of these conflicts is unclear at the sand stage. Further analysis and engagement is required in Stage it as a single facilities on the conflict of the c	his stage. Further analysis and engagement is required in Stage 2 and 4 of the CAP1616 process to determine this. Furthermore, this notion has been expressed as in	d stage. Further analysis and engagement is required in Stage 2 and 4 of the CAPSESE process to determine this. Furthermore, this notion has been expensed as in	identified, but the exact nature of these conflicts is unclear at a stage. Further analysis and engagement is required in Stage 3 : 4 of the CAST-CAST recovers to describe the second conflicts.	his stage. Further analysis and engagement is required in Stage 3 of 6 of the CAPSSSS process to determine this. Furthermore, this notion has been assessed as a function of the caps.	and stage. Further analysis and engagement is required in Stage 2 is 4 of the CAP1616 process to determine this. Furthermore, this describes have been expected as a continuous and a continuous analysis and continuous and continuous and continuous analysis analysis and continuous a	and stage. Further analysis and engagement is required in Stage 2 at 4 of the CAP1626 process to determine this. Furthermore, this only have been superand or in incident.	nd identified, but the exact nature of these conflicts is undear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAPICAS occurs to describe the conflicts.	stage. Further analysis and engagement is required in Stage 3 and 6 of the CAP1616 process to determine this. Furthermore, this section has been assessed as in include.
		perspective, it is assumed that current MAN operations are safe. Following the removal of the operations are safe. Following the removal of the	option has been assessed as in location rather than as a set of design options as part of a wider system/nunway pair. Addition	his identified, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and is of the CAP-SEG process to determine this. Furthermore, this option has been assessed as in isolation carbet than us a set of nail design options as part of a wider system/furneway pair. Additional		determine this. Furthermore, this option has been assessed as in isolation rather than as a set of design options as part of a	required in Stage 2 to determine the cumulative impact of this option when compared to all the other options.	design options as part of a wider system/nanway pair. Additional analysis is required in Stage 2 to determine the cumulative	design options as part of a wider system/nunway pair. Additional analysis is required in Stage 3 to determine the cumulative	design options as part of a wider system/humway pair. Addition analysis is required in Stage 2 to determine the cumulative	option has been assessed as in lookson rather than as a set of design options as part of a wider system, humany pair. Addition	option has been assessed as in kolation rather than as a set of real design options as part of a wider system/furnway pair. Addition	design options as part of a wider system/nunway pair. Additional analysis is required in Stage 2 to determine the cumulative	design options as part of a wider system/runway pair. Additional analysis is required in Stage 2 to determine the cumulative	option has been assessed as in isolation rather than as a set of design options as part of a wider system, humway pair. Addition	design options as part of a wider system/runway pair. Addition at analysis is required in Stage 2 to determine the cumulative	design options as part of a wider system/runway pair. Addition analysis is required in Stage 2 to determine the cumulative	design options as part of a wider system/runway pair. Addition analysis is required in Stage 2 to determine the cumulative	al option has been assessed as in isolation rather than as a set of design options as part of a wider system/nunway pair. Additional	design options as part of a wider system/runway pair. Additional snalysis is required in Stage 2 to determine the cumulative
		crown, it is somewhelped that ATCO workload may increase due to the enduring requirement for radar vectoring.	impact of this option when compared to all the other options.	impact of this option when compared to all the other options.		water system/runway pair. Additional analysis is required in Stage it to determine the cumulative impact of this option when compared to all the other options.	Saxed on performance in the IOA, Option 28 L has been deemed as Acceptable, as it overflies the third fewest population when	impact of this option when compared to all the other options. Based on performance in the ICIA, Option 28 R has been deemed.	impact of this option when compared to all the other options. Raised on performance in the ICIA, Option 3: Lihas been rejected a	impact of this option when compared to all the other options. Based on performance in the IDA, Option 3 R has been rejected.	aranjois is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options. as	arraysis is required in Stage 3 to determine the cumulative impact of this option when compared to all the other options.	impact of this option when compared to all the other options. Rased on performance in the IOA, Option 48 L has been rejected	impact of this option when compared to all the other options. Rased on performance in the KDA, Option 48 R has been rejected	anaryous is required in Stage 2 to determine the cumulative impact of this option when compared to all the other options.	impact of this option when compared to all the other options. Raised on performance in the IDA, Option 6A R has been rejecte	impact of this option when compared to all the other options. Rased on performance in the IDA, Option 68 L has been rejected.	impact of this option when compared to all the other options. If the option is a second or a second o	A defended on the Gold College (Supplement of Monteco, and A common (Supplement of Monteco, and A common (Supplement of Monteco, and A common (Supplement of Monteco) (Supplem	mpact or this option when compared to all the other options. Based on performance in the IOA, Option 7 R has been rejected as
			as Favourable, as it overflies the second fewest population who	d Saxed on performance in the IDA, Option 1A R has been deemed as Favourable, as it overflies the second fewest population when compared to other routes (originating from the same runway)		Based on performance in the IDA, Option 18 R has been rejected as it overflies a greater population when compared to	compared to other routes (originating from the same runway direction) within the same design envelope.	as Acceptable, as it overflies the third fewest population when compared to other routes (originating from the same runway direction) within the same design envelope.	it overflex a greater population when compared to other option (originating from the came runway direction) within the came design envelope.	 It overflies a greater population when compared to other optio (originating from the same nursely direction) within the same design envelope. 	is Based on performance in the IDA, Option 6A L has been deeme the Preferred option (within this design envelope), as it overflie the fewert population when compared to other routes.	ed Based on performance in the KIA, Option 6A R has been deeme as the Preferred option (within this design envelope), as it overfile the flewest population when compared to other routes.	d as it overflies a greater population when compared to other options (originating from the same runway direction) within the same design envelope.	as it overflies a greater population when compared to other options (originating from the same runway direction) within the same design envelope.	Sased on performance in the KIA, Option 6A L has been rejects as it overfiles a greater population when compared to other options [originating from the same runway direction] within the	d as it overflies a greater population when compared to other options (originating from the same runway direction) within the same design envelope.	as it overflies a greater population when compared to other options (originating from the same runway direction) within the same design envelope.	as it overfies a greater population when compared to other options (originating from the same runway direction) within th same design envelope.	Rased on performance in the ICA, Option 7 L has been rejected as it overflies a greater population when compared to other options (originating from the same runway direction) within the same	t overflies a greater population when compared to other options (priginating from the same runway direction) within the same design envelope.
			direction) within the came design envelope.	compared to other routes (originating from the same runway direction) within the same design envelope.		other options (originating from the same runway direction) within the same design envelope.					(originating from the same runway direction) within the same design envelope.	(originating from the came runway direction) within the came design envelope.			same design envelope.				design envelope.	
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And Michigan and the option of the option option of the option of the option o And the seamonth of the control of t were stated and the end of the plant of the And the control of th When compared to the first desirable quantum Cyllonia KE, when we want to break of the collection of t Based on performance in the 12A, Cytion RC. Not been deemed at Acceptable, as it overfiles the third fewest population when compand to other looses (originating from the same nursely direction) within the Care design everlage.

MAN ACP - INITIAL O	PTIONS APPRAISAL -	FULL ANALYSIS TABLE				No. 1			199
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	Sunday	And the Control of th	counts appeared by other counts/markey symphics has been interested, at other assert and when countful is not the other of the single country of the country of the country of the country of the different country of the country o	in the control of the	All will consequent with the studied process, global K.1. When consequent with the studied process, global K.2. When consequent with the studied process, global K.3. When consequent with the studied process, global K.3. For all the consequent with the studied process, global K.3. For all the consequent with the studied process, global K.3. For all the consequent with the studied process, global K.3. For all the consequent with the studied process, global K.3. For all the consequent with the studied process, global K.3. For all the consequent with the studied process, global K.3. For all the consequent with the studied process, global K.3. For all the consequent with the studied process of the	implaction of the quarter quarter quarter production and the quarter production of the quarter production and the quarter production of the quarter production and the quarter producti	It is to may, it is any pushes to lay demonstrate the depty implication of the specific partial particular and the specific particular and the	specific hashes designed in the many confidence with more interest, the specific production of the more interest, the specific production of the more interest, the specific production of the specific production	An exercised from the first section of the section

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Departure E	nvelope: SID Runv	way 23 West					1						1			
			For the west design envelope, the 'do nothing' scena	HING' BASELINE ario for departures in terms of today's operation is base	Of This is an RNAV1 option that modifies option 2 to minimise the inte	PTION 7 rractions with LPL airspace following stakeholder feedback.	OF This is an RNAV1 option that modifies option 38 to minimise the in	PTION 8 Iteractions with LPL airspace following stakeholder feedback.	This is an RNP1 option that modifies option 4 to minimise the interacti	non 9 ons with LPL airspace following stakeholder feedback.	OP This is an RNP1 option that modifies option SA to minimise the inter	ION 10 Ictions with LPL airspace following stakeholder feedback.	OI This is an RNP1 option that modifies option SB to minimise the inte	TION 11 ractions with LPL airspace following stakeholder feedback.	OPTION 12 This is an RNP1 option that modifies option 6 to minimise the interactions with LPL airs	race following stakeholder feedback.
			they are above 3,000ft. The 'do nothing' scenario for	the west via an EKLAD SID are vectored off the SID once departures consists of a modal track that has been	with current operational practice. It follows the same lateral track a	as option 2 but following stakeholder feedback to eliminate interactions	Runway 27, it has an increased climb gradient up to the point the	LPL delegated airspace is overflown. Thereafter the gradient is	it has an increased climb gradient up to the point the LPL delegated air	leedback to eliminate interactions with LPL inbound traffic to Runway 2 space is overflown. Thereafter the gradient is reduced to one that will	with current operational practice. However, to eliminate interaction	with LPL inbound traffic to Runway 27, it has an increased climb	with current operational practice. However, to eliminate interaction	is with LPL inbound traffic to Runway 27, it has an increased climb	It follows the same lateral track as option 6 with an RF right turn that routes north befinteractions with LPL inbound traffic to Runway 27, it has an increased climb gradient of	p to the point the LPL delegated airspace is
			has also been created that represents an area where	at occurs today. In addition to the modal track, a polygo current operations are dispersed due to radar vectoring a overflight analysis conducted on this SID was based on	the gradient is reduced to one that will result in the route terminati	adient up to the point the LPL delegated airspace is overflown. Thereafts ing in the same location as option 2, which has been designed to a	if reduced to one that will result in the route terminating in the sam. The initial climb gradient in this option is greater than the 6% to 7, identified or flookly by all piccosts within the floot opinions course.	e location as option 38. ,000ft that has been adopted for other routes and which was streetling 5.6. This rouge, identified that come signalify could ourse	result in the route terminating in the same location as option 4. It has an alimnot identical track across the ground as option 2 but to a! The initial climb confiner in this period is constant than the SIV to 7 000	higher navigation standard to provide more accurate track keeping.	gradient up to the point the LPL delegated airspace is overflown. The terminating in the same position as option SA, which has been design the self-in climb product in this continuis constant than the EN to 7.00.	reafter the gradient is reduced to one that will result in the route ned to a constant 6% gradient. Of that have been extended for other courter and which was identified a	gradient up to the point the LPL delegated airspace is overflown. The terminating in the same position as option 58. The initial clinib explication this position is prostor than the EM to 7.6.	ereafter the gradient is reduced to one that will result in the route	overflown. Thereafter the gradient is reduced to one that will result in the route terming. The initial climb gradient in this option is greater than the 6% to 7,000ft that has been flyable by all aircraft within the fleet equipage survey at section 5.6. This survey identifies	dopted for other routes and which was identified as
			the modal track created using Noise and Track Keepir	ng data at altitudes of 4,000ft and 7,000ft with the t. All data is based on current aircraft performance data	The initial climb gradient in this option is greater than the 6% to 7,0	000ft that has been adopted for other routes and which was identified a . This survey identified that some aircraft could exceed this 6% gradient,	this 6% gradient, and because this initial climb gradient is only req	as section 3.6. This solvey identified that some archait coole occur juired to 3,500ft it will be assessed with the airlines to confirm viabi	lity [flyable by all aircraft within the fleet equipage survey at section 5.6. Th	is survey identified that some aircraft could exceed this 6% gradient, a	and flyable by all aircraft within the fleet equipage survey at section 5.6. d. and because this initial climb gradient is only required to 3,500ft it with the fleet equipage survey at section 5.6.	This survey identified that some aircraft could exceed this 6% gradient	flyable by all aircraft within the fleet equipage survey at section 5.6.	This survey identified that some aircraft could exceed this 6% gradient,	and because this initial climb gradient is only required to 3,500ft it will be assessed with	the airlines to confirm viability should it be taken
			and is calculated based on the distance between the	Departure End of Runway and the end of the modal tra	and because this initial climb assettion is only maying to 2 500ft it.	and to be accorded with the sidings to confirm wishlifts should it be taken	The initial climb aradiant has been cut at 12 190 for 221 / 10 290 for	r 23R for the portion of the SID prior to where the route meets the climb gradient of 3.7% is applied to terminate at 7,000ft at the sam							The initial climb gradient has been set at 11.0% for 23L/8.9% for 23R for the portion of buffer of the LPL delegated airspace. Thereafter a maximum climb gradient of 4.4% is a position as option 6. As the option is within a turn segment at the location of the airspa	the SID prior to where the route meets the 3nm splied to terminate at 7,000ft at the same end
					buffer of the LPL delegated airspace. Thereafter a maximum climb g	gradient of 4.2% is applied to terminate at 7,000ft at the same end	on the intersection of the nominal track and the boundary. A restr	riction greater than 3,500 ft would need to be placed upon the seco	ind safe separation.		position as option SA.		end position as option 58. Waypoints will be placed at the location	radient of 4.2% would be required to terminate at 7,000ft at the same of the 3nm boundary to specify that an alkitude of fat or above 3,500ft	intersection of the nominal track and the boundary. A restriction greater than 3500ft v	ould need to be placed upon the waypoints at the
					required to ensure safe separation.	a 3nm boundary to specify that an altitude of 'at or above 3,500ft' is	waypoint to follow the profile of the required climb to ensure that 23L: After departure, the route makes a turn to the right at 0.7nm and therefore allows to the During Brisciple Safety. It continues to	from DER which replicates the turn of the current EKLAD procedur	23L: After departure, the route makes a turn to the right 1nm from DE te heads in a north-westerly direction routing to the south of Warrington 23R: Similar to option for 23L, this route makes a turn to the right whi	and terminates at 7,000ft to the south-east of Liverpool.	Waypoints will be piaced at the location of the snm boundary to spe separation. For 23L, placing a waypoint on this boundary may result in a boundary (in accordance with PANS-OPS requirements). This could re	cify that an altitude of 'at or above 3,500ft' is required to ensure safe in a segment length that is too short between the RF turn and the 3nr liber he account in flight wolld trips for EMF, appropriate, or the	is required to ensure safe separation. The design speed will permit a larger number of aircraft to fly this repotential benefits in terms of noise.	oute in a clean configuration (without the use of flaps) which has	end of the RF turns to follow the profile of the required climb to ensure that the correc The design speed aligns to the CAP778 recommendation and may permit some aircraft use of flass) which has coetental benefits in terms of noise.	attitude is met at the boundary. to fly this route in a clean configuration (without the
					of noise. 23L: After departure, the route makes a turn to the right 1nm from	DER which takes it just to the north of Knutsford through Mere. It then	passes north of Northwich at which point it turns right onto a wes 7,000ft.	sterly heading which takes it overhead Widnes where it terminates a	it north-westerly direction routing to the south of Warrington and termi A speed restriction of 190 KIAS is used for the first turn, thereafter 25	nates at 7,000ft to the south-east of Liverpool. I KIAS would apply. Although PANS-OPS compliant it should be assesse	waypoint can be located at the necessary distance from the RF turn ed the required climb to ensure that the correct altitude is met at the b	and specified with a higher altitude than 3,500ft to follow the profile of	7 23L: After departure, the route makes a turn to the right at 1nm fro heads in a north-westerly direction routing to the south of Warring	m DER which takes it to the north of Knutsford through Mere. It then con and terminates at 7,000ft just west of Widnes.	23L: After departure, the route makes a turn to the right at 1nm from DER which takes heads north on a short straight segment before making a left turn to the west, just to t	e north of Lymm where it combines with the option
					23R: Similar to option for 23L, this route makes a right turn followin	ton and terminates at 7,000ft to the south-east of Liverpool. ng take-off to the north of Knutsford through Mere. It then heads in a	through Mere where it combines with the route for 23L. It then ro	outes north of Northwich at which point it turns right onto a wester	for flyability as part of the procedure validation process within Stage 4 fy	of CAP1616.	The route followed by the options is as follows: 23L: After departure, the route makes a turn to the right at 1nm fro	n DER which takes it just to the north of Knutsford through Mere. It		is it just to the north of Knutsford through Mere. It then heads in a minates at 7,000ft just west of Widnes.	from 23R. The combined routes continue in a westerly direction routing overhead Wan Widnes.	
					north-westerly direction routing to the south of Warrington and ter An element of dispersion would be apparent in the turn due to the A speed restriction of 210 KIAS is applied to the first turn.	rminates at 7,000ft to the south-east of Liverpool. fly-over waypoint and either CF or DF coding.	heading which takes it overhead Widnes where it terminates at 7. An element of dispersion would be apparent in the turn due to the A speed restriction of 200 KIAS then 250 KIAS is used for the first it	e fly-over waypoint and either CF or DF coding.			then heads in a north-westerly direction routing to the south of War 23R: After departure, the route makes a turn to the right which take a north-westerly direction routing to the south of Warrington and to	rington and terminates at 7,000ft just west of Widnes. it over the northern edge of Knutsford through Mere. It then heads i	A speed restriction of 220 KIAS is used for the first turn, thereafter	250 KIAS would apply.	23R: After departure, the route makes a turn to the right which takes it to the north of short straight segment before making a left turn to the west, just to the north of Lymn combined routes continue in a westerly direction routing overhead Warrington and ter	where it combines with the option from 23L. The
					A speed restriction of 210 kiAS is applied to the III's tarri.		A speed restriction of 200 kiAs their 250 kiAs is used for the first	com and second com.			A speed restriction of 220 KIAS is used for the first turn, thereafter 2				A speed restriction of 210 KIAS is applied to the first turn which is the CAP778 recomm	nded speed.
		Level of Analysis			Runway 23L		Rumway 23L	Runway 23R			Famely 23.	Runway 238	Runway 23 L	Rutway 23R	Runway 231.	
Communities	Impact Noise impact on health and	Initial Options Appraisal:	Runway 23L For comparison purposes within the IOA, the 'do	Runway 23R For comparison purposes within the IOA, the 'do	In terms of potential noise impact, initial quantitative analysis has		In terms of potential noise impact, initial quantitative analysis has	In terms of potential noise impact, initial quantitative analysis	In terms of potential noise impact, initial quantitative analysis has	Nutway 25K In terms of potential noise impact, initial quantitative analysis has	In terms of potential noise impact, initial quantitative analysis has	In terms of potential noise impact, initial quantitative analysis has	In terms of potential noise impact, initial quantitative analysis has	In terms of potential noise impact, initial quantitative analysis has	In terms of potential noise impact, initial quantitative analysis has	Itial noise impact, initial quantitative analysis has
	quality of life	Qualitative	nothing' scenario was based upon the existing EKLAD SID. In terms of potential noise impact, initial	SID. In terms of potential noise impact, initial	 Identified that: - Up to 4,000ft, this option overflies approximately 1,300 people an 	identified that: - Up to 4,000ft, this option overflies approximately 2,800 people an	identified that: d - Up to 4,000ft, this option overflies approximately 1,000 people approximately 500 residential buildings.	has identified that: - Up to 4,000ft, this option overflies approximately 1,000 peop	identified that: - Up to 4,000ft, this option overflies approximately 1,800 people and	identified that: - Up to 4,000ft, this option overflies approximately 3,800 people as approximately 1,500 residential buildings.	identified that: - Up to 4,000ft, this option overflies approximately 7,200 people an approximately 3,350 residential buildings.	identified that: - Up to 4,000ft, this option overflies approximately 7,500 people an approximately 3,450 residential buildines.	identified that: 1 - Up to 4,000ft, this option overflies approximately 6, 200 people a approximately 2,900 residential buildings.	identified that: d - Up to 4,000ft, this option overflies approximately 7,500 people an	identified that: identified that: identified that: Up to 4,000ft, this option overflies approximately 14,900 people Up to 4,000ft, and approximately 6,500 residential buildings.	his option overflies approximately 12,400 people by 5,600 residential buildings.
				quantitative analysis has identified that:- Up to 4,000ft, this option overflies approximately 800 per and approximately 350 residential buildings.	approximately 700 residential buildings. - Up to 7,000ft, this option overflies approximately 55,900 people and approximately 27,500 residential buildings.	 approximately 1,350 residential buildings. Up to 7,000ft, this option overflies approximately 55,500 people and approximately 27,129 residential buildings. 	 - Up to 7,000ft, this option overflies approximately 60,500 people and approximately 27,750 residential buildings. 	and approximately 500 residential buildings. - Up to 7,000ft, this option overflies approximately 60,900 people and approximately 28,000 residential buildings.	 approximately 850 residential buildings. Up to 7,000ft, this option overflies approximately 55,500 people and approximately 27,100 residential buildings. 	 - Up to 7,000ft, this option overflies approximately 56,200 people and approximately 27,050 residential buildings. 	- Up to 7,000ft, this option overflies approximately 67,100 people	approximately 3,450 residential buildings. - Up to 7,000ft, this option overflies approximately 66,400 people and approximately 29,900 residential buildings.	- Up to 7,000ft, this option overflies approximately 67,600 people		- Up to 7,000ft, this option overflies approximately 129,400 people - Up to 7,000ft,	his option overflies approximately 129,500 people his 60,350 residential buildings.
			buildings Up to 7,000ft, this option overflies approximately	Up to 7,000ft, this option overflies approximately 10,100 people and approximately 4,900 residential	Assessed up to 7,000ft, this option overflies more people and residential buildings than the 'do nothing' scenario and is therefore	Assessed up to 7,000ft, this option overflies more people and	Assessed up to 7,000ft, this option overflies more people and residential buildings than the 'do nothing' scenario and is therefor	Assessed up to 7,000ft, this option overflies more people and	Assessed up to 7,000ft, this option overflies more people and resident	al Assessed up to 7,000ft, this option overflies more people and	Assessed up to 7,000ft, this option overflies more people and residential buildings than the 'do nothing' scenario and is therefore	Assessed up to 7,000ft, this option overflies more people and	Assessed up to 7.000ft, this option overflies more people and	Assessed up to 7,000ft, this option overflies more people and	Assessed up to 7,000ft, this option overflies more people and Assessed up to	,000ft, this option overflies more people and ngs than the 'do nothing' scenario and is therefore
			6,300 people and approximately 2,900 residential buildings.	buildings.	considered to be of a dis-benefit.	considered to be of a dis-benefit.	considered to be of a dis-benefit.	therefore considered to be of a dis-benefit	be of a dis-benefit.	considered to be of a dis-benefit.	considered to be of a dis-benefit.	considered to be of a dis-benefit.	considered to be of a dis-benefit.	considered to be of a dis-benefit.	considered to be of a dis-benefit. considered to b	of a dis-benefit.
Communities	Air Quality	Initial Options Appraisal: Qualitative		No change to air quality is predicted in maintaining baseline conditions. The majority of the extant procedure involves overflight above 1,000ft, other	Option 7 Loverflies three AQMAs; however, as per CAP1616, para 874, due to mixing and dispersion, the impact on air quality above	Option 7 R overflies three AQMAs; however, as per CAP1616, para B74, due to mixing and dispersion, the impact on air quality above	Option 8 L overflies three AQMAs; however, as per CAP1616, pars 874, due to mixing and dispersion, the impact on air quality above	a Option 8 R overflies three AQMAs; however, as per CAP1616, para 874, due to mixing and dispersion, the impact on air qual	Option 9 Loverflies three AQMAs; however, as per CAP1616, para 87- due to mixing and dispersion, the impact on air quality above 1,000ft in	Option 9 R overflies four AQMAs; however, as per CAP1616 , para 874, due to mixing and dispersion, the impact on air quality above	Option 10 Loverflies four AQMAs; however, as per CAP1616, para 874, due to mixing and dispersion, the impact on air quality above	Option 10 R overflies four AQMAs; however, as per CAP1616, para B74, due to mixing and dispersion, the impact on air quality above	Option 11 L overflies four AQMAs; however, as per CAP1616, para B74, due to mixing and dispersion, the impact on air quality above	Option 11 R overflies three AQMAs; however, as per CAP1616, pars 874, due to mixing and dispersion, the impact on air quality above	Option 12 L overflies three AQMAs; however, as per CAP1616, para B74, due to mixing and dispersion, the impact on air qualify above 1,000tt is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below immediate vicin.	flies three AQMAs; however, as per CAP1616, para ng and dispersion, the impact on air quality above
			than the areas in the immediate vicinity of the	than the areas in the immediate vicinity of the	1,000t is not seen to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1,000th however, for office monors, this is unquelished. Therefore,	1 JUDUIT is not issely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1 1000ft becomes for or of the second of the incompany this is un avoidable. Therefore	1,000tt is not keep to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1,000th however, for confinences, this is unavaidable. Therefore	above 1,000th is not insely to be significant. There are areas within the immediate vicinity of the airport that may be confirmed below 1,000th thousands for orders represent this is	not skey to be significant. There are areas within the immediate worth of the airport that may be overflown below 1,000ft; however, for safe except, this is was wishfully. Therefore, executil, when commoned to the	y 1,000m is not seely to be significant. There are areas within the yimmediate vicinity of the airport that may be overflown below 1,000m becomes for reference on this is unavoidable. Therefore	1,000th is not issely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below a 1,000th boundary for critical processors, this is unavoidable. Therefore,	1,000m is not insery to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1,000m; bosonium for rights represent this is unquisitable. Therefore,	1,000tt is not likely to be significant. There are areas within the immediate vicinity of the airport that may be overflown below 1,000tt however, for calcular represent this is unpositivitie. Therefore,	DOURT is not neety to be significant. There are a reas within the immediate vicinity of the airport that may be overflown below	1_000tt is not issue to be significant. Intereare areas within the immediate vicinity of the airport that may be overflown below immediate vicin 1_000ft; however, for safety reasons, this is unavoidable. Therefore, 1_000ft; however.	by of the airport that may be overflown below
			SID overflies one AQMA. Overflight of these AQMAs	SID overflies one AQMA. Overflight of these AQMAs	overall, when compared to the 'do nothing' scenario, this option is	overall, when compared to the 'do nothing' scenario, this option is	overall, when compared to the 'do nothing' scenario, this option is deemed to be of a dis-benefit as it overflies more AQMAs.	unavoidable. Therefore, overall, when compared to the 'do	'do nothing. Therefore, overall, when compared to the 'do nothing' as scenario, this option is deemed to be of a dis-benefit as it overflies mo	overall, when compared to the 'do nothing' scenario, this option is	overall, when compared to the 'do nothing' scenario, this option is	overall, when compared to the 'do nothing' scenario, this option is deemed to be of a dis-benefit as it overflies more AQMAs.	overall, when compared to the 'do nothing' scenario, this option is deemed to be of a dis-benefit as it overflies more AQMAs.	overall, when compared to the 'do nothing' scenario, this option is	overall, when compared to the 'do nothing' scenario, this option is deemed to be of a dis-benefit as it overflies more AQMAs. deemed to be o	mpared to the 'do nothing' scenario, this option is a dis-benefit as it overflies more AQMAs.
			occurs when the aircraft is above 1,000ft.	occurs when the aircraft is above 1,000ft.				it overflies more AQMAs.	AQMAs.							
Wider Society	Greenhouse Gas immart	Initial Options Appraisal	Current routes do not enable continuous climb	Current routes do not enable continuous rilente	Option 7 L has been designed to support continuous climb	Option 7 R has been designed to support continuous climb	Option 8 L has been designed to support continuous climb	Option 8 R has been designed to supmort mentionnus rilinels.	Option 9 L has been designed to support continuous climb operations.	Option 9 R has been designed to support continuous climb	Option 10 L has been designed to support continuous climb	Option 10 R has been designed to support continuous climb	Option 11 L has been designed to support continuous climb	Option 11 R has been designed to support continuous climb	Option 12 L has been designed to support continuous climb Option 12 R has	been designed to support continuous climb
		Qualitative	length flown by aircraft may vary slightly due to the	operations. It must be noted that the exact track length flown by aircraft may vary slightly due to the	operations. An element of radar vectoring may still be required to manage aircraft separation distances.	operations. An element of radar vectoring may still be required to manage aircraft separation distances.	operations. An element of radar vectoring may still be required to manage aircraft separation distances.	operations. An element of radar vectoring may still be require manage aircraft separation distances.	d to An element of radar vectoring may still be required to manage aircraft separation distances.	operations. An element of radar vectoring may still be required to manage aircraft separation distances.	operations. An element of radar vectoring may still be required to manage aircraft separation distances.	operations. An element of radar vectoring may still be required to manage aircraft separation distances.	operations. An element of radar vectoring may still be required to manage aircraft separation distances.	operations. An element of radar vectoring may still be required to manage aircraft separation distances.	Option 121 has been bangined to support commission camb operations. An element of radar vectoring may still be required to manage aircraft tanger aircraft tan	iement of radar vectoring may still be required to separation distances.
			follow the extant procedures in a broader sense. The	nature of radar vectoring, although aircraft do all follow the extant procedures in a broader sense. The	The track mileage of Option 7 L is 38.73km (20.91nm). When compared to the 'do nothing' scenario, Option 7 L is longer and is	The track mileage of Option 7 R is 40.17km (21.69nm). When compared to the 'do nothing' scenario, Option 7 R is longer and is	The track mileage of Option 8 L is 40.19km (21.70nm). When compared to the 'do nothing' scenario, Option 8 L is longer and is	The track mileage of Option 8 R is 41.85km (22.59nm). When compared to the 'do nothing' scenario, Option 8 R is longer an	The track mileage of Option 9 L is 38.70km (20.90nm). When compare d is to the 'do nothing' scenario, Option 9 L is longer and is therefore	d The track mileage of Option 9 R is 40.12km (21.66nm). When compared to the 'do nothing' scenario, Option 9 R is longer and is	The track mileage of Option 10 L is 39.05km (21.09nm). When compared to the 'do nothing' scenario, Option 10 L is longer and is	The track mileage of Option 10 R is 40.06km (21.63nm). When compared to the 'do nothing' scenario, Option 10 R is longer and is	The track mileage of Option 11 L is 38.32km (20.69nm). When compared to the 'do nothing' scenario, Option 11 L is longer and is	The track mileage of Option 11 R is 39.70km (21.43nm). When compared to the 'do nothing' scenario, Option 11 R is longer and is	The track mileage of Option 12 L is 42.48km (22.94nm). When compared to the 'do nothing' scenario, Option 12 L is longer and is therefore expected to emit more greenhouse gases this option is therefore expect.	e of Option 12 R is 43.20km (23.32nm). When 'do nothing' scenario, Option 12 R is longer and is
			existing procedures do not support optimal aircraft performance and therefore are predicted to have a	existing procedures do not support optimal aircraft performance and therefore are predicted to have a	therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More in-depth analysis will take place	therefore expected to emit more greenhouse gases this option is at deemed to be of dis-benefit. More in-depth analysis will take place a	therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More in-depth analysis will take place	therefore expected to emit more greenhouse gases this optio e at deemed to be of dis-benefit. More in-depth analysis will take	n is expected to emit more greenhouse gases this option is deemed to be dis-benefit. More in-depth analysis will take place at Stage 3, to confin	of therefore expected to emit more greenhouse gases this option is n deemed to be of dis-benefit. More in-depth analysis will take place:	therefore expected to emit more greenhouse gases this option is at deemed to be of dis-benefit. More in-depth analysis will take place a	therefore expected to emit more greenhouse gases this option is deemed to be of dis-benefit. More in-depth analysis will take place :	therefore expected to emit more greenhouse gases this option is t deemed to be of dis-benefit. More in-depth analysis will take place	therefore expected to emit more greenhouse gases this option is at deemed to be of dis-benefit. More in-depth analysis will take place :	therefore expected to emit more greenhouse gases this option is therefore expect deemed to be of dis-benefit. More in-depth analysis will take place at Stago 3, to confirm the exact volumes of greenhouse gases released. Stage 3, to confirm the exact volumes of greenhouse gases released.	ed to emit more greenhouse gases this option is dis-benefit. More in-depth analysis will take place at
			options. Within Stage 2 of the CAP1616 nancess there is no	options. Within Stage 2 of the CAP1616 process, there is no		 Stage 3, to confirm the exact volumes of greenhouse gases released 	. Stage 3, to confirm the exact volumes of greenhouse gases release	ed. place at stage 3, to confirm the exact volumes of greenhouse gases released.	the exact volumes or greenhouse gases revased.	Stage 3, to confirm the exact volumes of greenhouse gases released	stage s, to confirm the exact volumes of greenhouse gases released	Stage 5, to confirm the exact volumes of greenhouse gases released	. Stage 3, to confirm the exact volumes of greenhouse gases reseases	. Stage 5, to confirm the exact volumes of greenhouse gases released	Stage 3, to confirm the exact volumes of greenhouse gases released. Stage 3, to conf	m the exact volumes of greenhouse gases released.
				requirement for a change sponsor to conduct quantitative emissions analysis. This will be covered Stage 3. In order to make a comparison in Stage 2,												
			track mileage is used, based on the theory that the	track mileage is used, based on the theory that the												
			shorter the track mileage, the less greenhouse gases are emitted. In the case of the existing Runway 23L	are emitted. In the case of the existing Runway 23R EKLAD SID modal track, the track length is 26.63km	•											
			(14.80nm).	(14.38nm).												
Wider Society	Capacity and resilience	Initial Options Appraisal:	Maintaining extant procedures would maintain curre canacity however, due to the reliance upon ground.	int Maintaining extant procedures would maintain curr capacity; however, due to the reliance upon ground	The introduction of PBN routes is expected to deliver benefits by increasing aircoace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits increasing aircnary canarity which subsequently leads to more	by The introduction of PBN routes is expected to deliver benefits by increasing aircnary canarity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing aircrarse rangely which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by Interior increasing airspace capacity which subsequently leads to more increasing airsp	of PBN routes is expected to deliver benefits by ce capacity which subsequently leads to more
				based navigational aids, resilience could be significantly affected, following the removal of the	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground ba	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground sed. The reduction of the reliance on outdated ground based navigational and set.	id ground). The reduction of the reliance on outdated ground based	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground based ground). The re	paths and fewer delays (both in air or on the uction of the reliance on outdated ground based
			DVOR in December 2022.	DVOR in December 2022.	navigational aid will significantly increase operational resilience through the introduction of PBN.	navigational aid will significantly increase operational resilience through the introduction of PBN.	navigational aid will significantly increase operational resilience through the introduction of PBN.	navigational aid will significantly increase operational resilienc through the introduction of PBN.	 will significantly increase operational resilience through the introduction PBN. 	on navigational aid will significantly increase operational resilience through the introduction of PBN.	navigational aid will significantly increase operational resilience through the introduction of PBN.	navigational aid will significantly increase operational resilience through the introduction of PBN.	navigational aid will significantly increase operational resilience through the introduction of PBN.	navigational aid will significantly increase operational resilience through the introduction of PBN.		will significantly increase operational resilience eduction of PBN.
Wider Society	Tranquillity	to Wel Oakland Americals	ACARACAC A	As per CAP1616, Appendix B, para 876, change	This option overflies no statutorily identified tranquility receptors	This option overflies no statutorily identified tranquility receptors	This option overflies no statutorily identified tranquility receptors		This option overflies no statutorily identified tranquility receptors						This option overflies no statutorily identified tranquility receptors This option over	
Wider Society	Tranquinty	Initial Options Appraisal: Qualitative	sponsors are required to consider Tranquillity with specific reference to AONBs and National Parks only.	sporsors are required to consider Tranquility with specific reference to AONBs and National Parks only	(AONS or National Parks), nor any identified through community excepts of the programment and is therefore comparable to the 'do nothing' scenarios.	(AONBs or National Parks), nor any identified through community rio engagement and is therefore comparable to the 'do nothing' scenar	(AONBs or National Parks), nor any identified through community in an assertion of the state of	receptors (AONBs or National Parks), nor any identified througario ario community engagement and is therefore comparable to the 'd	(AONs or National Parks), nor any identified through community in neasement and is therefore comparable to the "do nothing" scenario	(AONBs or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scena	(ACMS or National Parks), nor any identified through community in page of the	(AONBs or National Parks), nor any identified through community or engagement and is therefore comparable to the 'do nothing' scenar	(AONBs or National Parks), nor any identified through community leavement and is therefore comparable to the 'do nothing' scena	(AONBs or National Parks), nor any identified through community in engagement and is therefore comparable to the 'do nothing' scenar	(AOMBs or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario engagement and is therefore comparable to the 'do nothing' scenario	nal Parks), nor any identified through community is therefore comparable to the "do nothing" scenario
			unless other areas have been identified through	unless other areas have been identified through community engagement. No additional specific are	and assessed as neutral.	and assessed as neutral.	and assessed as neutral.	nothing' scenario and assessed as neutral.	and assessed as neutral.	and assessed as neutral.	and assessed as neutral.	and assessed as neutral.	and assessed as neutral.	and assessed as neutral.	and assessed as neutral. and assessed as	neutral.
			were identified by community engagement.	were identified by community engagement. The 'do nothing' scenario does not overfly any AON	Bs .											
			or National Parks.	OF NACIONAL PARIS.												
Wider Society	Biodiversity	Initial Options Appraisal:	The change sponsor has mapped the designated Sites	The change sponsor has mapped the designated Sit	es The change sponsor has mapped the designated Sites of Special	The change sponsor has mapped the designated Sites of Special Crimetife Interest (CSSIA). Special Brothertion Army (CBAA). Special	The change sponsor has mapped the designated Sites of Special Ground for Internet (SSSI) - Special Benturing Amer (SBA) - Special	The change sponsor has mapped the designated Sites of Speci-	al The change sponsor has mapped the designated Sites of Special	The change sponsor has mapped the designated Sites of Special	The change sponsor has mapped the designated Sites of Special Groundfir Internet (CSSIc) Special Brothertion Army (CBIds) Special	The change sponsor has mapped the designated Sites of Special Scientific Internet (SSSI) Secretal Bentaction Army (SBIr) Secretal	The change sponsor has mapped the designated Sites of Special	The change sponsor has mapped the designated Sites of Special Countries interest (SSSI). Special Brother tion Areas (SBM). Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Scientific Interes	sor has mapped the designated Sites of Special
		Quantarire	Areas (SPAs), Special Areas of Conservation (SACs) an RAMSAR sites, as identified on the DEFRA MAGIC Ma	nd Areas (SPAs), Special Areas of Conservation (SACs) a p. RAMSAR sites, as identified on the DEFRA MAGIC M											Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that DEFRA MAGIC N	
			CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an	CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an	 because of dispersion and mixing, there is unlikely to be an impact of 	on because of dispersion and mixing, there is unlikely to be an impact of	n because of dispersion and mixing, there is unlikely to be an impact	t on that because of dispersion and mixing, there is unlikely to be a	n dispersion and mixing, there is unlikely to be an impact on local air	because of dispersion and mixing, there is unlikely to be an impact of	on because of dispersion and mixing, there is unlikely to be an impact of	because of dispersion and mixing, there is unlikely to be an impact of	n because of dispersion and mixing, there is unlikely to be an impact of	in because of dispersion and mixing, there is unlikely to be an impact of	because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change Appendix B, par	rsion and mixing, there is unlikely to be an impact on
			an impact on biodiversity as they do not involve eround-based infrastructure. However, the change	an impact on biodiversity as they do not involve ground-based infrastructure. However, the change	acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by	acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by	acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by	However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in	potential impact to the designated sites around MAN will be assessed State 3 of the ACP process by Subject Matter Experts.	in acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by	acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by	acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by	acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by	acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by	involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by	at any potential impact to the designated sites be assessed in Stage 3 of the ACP process by
			sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stag	he sponsor acknowledges that any potential impact to ge designated sites around MAN will be assessed in Sta	the Subject Matter Experts.	Subject Matter Experts.	Subject Matter Experts.	impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.		Subject Matter Experts.	Subject Matter Experts.	Subject Matter Experts.	Subject Matter Experts.	Subject Matter Experts.	Subject Matter Experts. Subject Matter	xperts.
			3 of the ACP process by Subject Matter Experts.	3 of the ACP process by Subject Matter Experts.												
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. Any General Aviation users of airspace in the vicinity of	No change to existing airspace arrangements. Any General Aviation users of airspace in the vicinity of	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated at consequence of this ACP. All Visual Reference Points and exist	a No adverse impact to General Aviation access is anticipated as a ling consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a No adverse import on sequence of this ACP. All Visual Reference Points and existing consequence of	ct to General Aviation access is anticipated as a this ACP. All Visual Reference Points and existing
			MAN will maintain their current level of access under extant operational arrangements.	 MAN will maintain their current level of access under extant operational arrangements. 	er Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to	Letters of Agreement pertaining to General Aviation access will be to reviewed and updated (where applicable) prior to implementation to	Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation	Letters of Agreement pertaining to General Aviation access wit to be reviewed and updated (where applicable) prior to	Il Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to	Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to	Letters of Agreement pertaining to General Aviation access will be to reviewed and updated (where applicable) prior to implementation to	Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to	Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to	Letters of Agreement pertaining to General Aviation access will be o reviewed and updated (where applicable) prior to implementation t	consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements ensure their continued validity.	nent pertaining to General Aviation access will be dated (where applicable) prior to implementation to
					ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	 ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities. 	ensure their continued validity. Airspace classification requiremen will be reviewed as part of Stage 3 activities.	implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3	ensure their continued validity. Airspace classification requirements w be reviewed as part of Stage 3 activities.	Il ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	 ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities. 	ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	sinued validity. Airspace classification requirements as part of Stage 3 activities.
General Aviation /	Economic impact from	Initial Options Appraisal:	No increase to effective capacity anticipated for	No increase to effective capacity anticipated for	The introduction of PBN is expected to deliver benefits by increasing	g The introduction of PBN is expected to deliver benefits by increasing	The introduction of PBN is expected to deliver benefits by increasi	ing The introduction of PBN is expected to deliver benefits by	The introduction of PBN is expected to deliver benefits by increasing	The introduction of PBN is expected to deliver benefits by increasing	ng The introduction of PBN is expected to deliver benefits by increasing	The introduction of PBN is expected to deliver benefits by increasing	The introduction of PBN is expected to deliver benefits by increasing	The introduction of PBN is expected to deliver benefits by increasing	The introduction of PBN is expected to deliver benefits by increasing The introduction	of PBN is expected to deliver benefits by increasing
commercial airlines	increased effective capacity	Qualitative	continued use of extant procedures, therefore no economic benefit for GA/airlines.	continued use of extant procedures, therefore no economic benefit for GA/airlines.	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	paths and fewer delays (both in the air or on the ground). This is	paths and fewer delays (both in the air or on the ground). This is	predictable flight paths and fewer delays (both in the air or on	and fewer delays (both in the air or on the ground). This is expected to	paths and fewer delays (both in the air or on the ground). This is	paths and fewer delays (both in the air or on the ground). This is	paths and fewer delays (both in the air or on the ground). This is	paths and fewer delays (both in the air or on the ground). This is	paths and fewer delays (both in the air or on the ground). This is	airspace capacity which in turn will lead to more predictable flight airspace capacit paths and fewer delays (both in the air or on the ground). This is paths and fewer	delays (both in the air or on the ground). This is
					expected to facilitate economic benefit by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	frequency of air transport movements, increasing passenger	frequency of air transport movements, increasing passenger	potentially increasing the frequency of air transport movemen	ts, transport movements, increasing passenger numbers and increasing	ir expected to facilitate economic benefit by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	frequency of air transport movements, increasing passenger	frequency of air transport movements, increasing passenger	frequency of air transport movements, increasing passenger	frequency of air transport movements, increasing passenger		ransport movements, increasing passenger
						numbers and increasing cargo tonnage carried.	numbers and increasing cargo tonnage carried.	increasing passenger numbers and increasing cargo tonnage carried.			numbers and increasing cargo tonnage carried.	numbers and increasing cargo tonnage carried.	numbers and increasing cargo tonnage carried.	numbers and increasing cargo tonnage carried.		reasing cargo tormage carried.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	enable continuous climb operations.	The existing MAN procedures for departures do not enable continuous climb operations.	Option 7 L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage	Option 7 R supports continuous climb operations, reducing the 2 overall amount of fuel burnt. There is no requirement within Stage 2	Option 8 L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage	Option 8 R supports continuous climb operations, reducing th overall amount of fuel burnt. There is no requirement within	e Option 9 L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the	Option 9 R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage	Option 10 L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage 2	Option 10 R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage	Option 11 L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage	Option 11 R supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage 2	Option 12 L supports continuous climb operations, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 overall amount	orts continuous climb operations, reducing the f fuel burnt. There is no requirement within Stage 2
				Within Stage 2 of the CAP1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn analysis. This will be covered	of the CAP1616 process to quantify fuel burn, this will be conducted	d of the CAP1616 process to quantify fuel burn, this will be conducted	of the CAP1616 process to quantify fuel burn, this will be conduct	ed Stage 2 of the CAP1616 process to quantify fuel burn, this will	be [CAP1616 process to quantify fuel burn, this will be conducted in Stage	of the CAP1616 process to quantify fuel burn, this will be conducted	ed of the CAP1616 process to quantify fuel burn, this will be conducted	of the CAP1616 process to quantify fuel burn, this will be conducted	of the CAP1616 process to quantify fuel burn, this will be conducted	f of the CAP1616 process to quantify fuel burn, this will be conducted	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 that the shorter	process to quantify fuel burn, this will be conducted
			Stage 3. In order to make a comparison in Stage 2, track mileage is used, based on the theory that the	Stage 3. In order to make a comparison in Stage 2, track mileage is used, based on the theory that the	to this option, it is 38.73km (20.91nm) long. When compared to this option, it is 38.73km (20.91nm) long. When compared to the "do nothing" scenario. Option 7 L is longer and at this stage it is	to this option, it is 40.17km (21.69nm) long. When compared to the 'do nothing' scenario. Option 7 R is longer and at this stage it is	to this option, it is 40.19km (21.70nm) long. When compared to ti do nothing' scenario. Option 8 L is longer and at this stage it is	by togic appared is that the shorter the track length, the least lost of the burnt. With regards to this option, it is 41.85km (22.59nm) low When compared to the 'do nothing' scenario. Option 8 R is lor	s protein the track length, the less lose is both. With regards to this goption, it is 38.70km (20.90nm) long. When compared to the 'do lear nothing' scenario. Option 9 L is longer and at this stage it is assumed	that the solution it is 40.12km (21.66km) long. When compared to the 'do nothing' scenario. Option 9 R is longer and at this stage it is	to this option, it is 39.05km (21.09nm) long. When compared to the 'do nothing' scenario. Option 10 L is longer and at this stage it is	to this option, it is 40.06km (21.63nm) long. When compared to this option, it is 40.06km (21.63nm) long. When compared to the 'do nothing' scenario. Option 10 R is longer and at this stage it is	to this option, it is 38.32km (20.69nm) long. When compared to the 'do nothing' scenario. Option 11 L is longer and at this stage it is	to this option, it is 39.70km (21.43nm) long. When compared to the 'do nothing' scenario. Option 11 R is longer and at this stage it is	that the shorter the unackingun, time has built boths. With regards that the shorter to this option, it is 42.48km (22.94nm) long. When compared to the 'do nothing' scenario, Option 12 Lis longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore, assumed that it will require a larger amount of fuel burn, therefore,	is 43.20km (23.32nm) long. When compared to the ario. Option 12 R is longer and at this stage it is
					s assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. Mor	assumed that it will require a larger amount of fuel burn, therefore, re this option is deemed to be of dis-benefit in terms of fuel burn. Mor	assumed that it will require a larger amount of fuel burn, therefore this option is deemed to be of dis-benefit in terms of fuel burn. Mr.	e, and at this stage it is assumed that it will require a larger amoore of fuel burn, therefore, this option is deemed to be of dis-bens	ant that it will require a larger amount of fuel burn, therefore, this option of the deemed to be of dis-benefit in terms of fuel burn. More in-depth	s assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. Mor	as assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More	assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. Mor	assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. Mor	assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. Mor	assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	will require a larger amount of fuel burn, therefore, med to be of dis-benefit in terms of fuel burn. More
			EXLAD SID modal track, the track length is 27.41km (14.80nm).	EKLAD SID modal track, the track length is 26.63km (14.38nm).	in-depth analysis will be carried out in Stage 3 to confirm.	in-depth analysis will be carried out in Stage 3 to confirm.	in-depth analysis will be carried out in Stage 3 to confirm.	in terms of fuel burn. More in-depth analysis will be carried ou Stage 3 to confirm.	t in analysis will be carried out in Stage 3 to confirm.	in-depth analysis will be carried out in Stage 3 to confirm.	in-depth analysis will be carried out in Stage 3 to confirm.	in-depth analysis will be carried out in Stage 3 to confirm.	in-depth analysis will be carried out in Stage 3 to confirm.	in-depth analysis will be carried out in Stage 3 to confirm.	in-depth analysis will be carried out in Stage 3 to confirm. in-depth analysi	will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	procedures which would be practised by crews through existing simulator evertices	Standard training would be applicable for existing procedures which would be practised by crews through existing simulator exercises.	It is anticipated that no extra protycrew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	 It is anticipated that no extra protyrnew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navisation standard across the world. 	It is anticipated that no extra protycrew training will be required t enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world	to it is anticipated that no extra prior/crew training will be requir to enable pilots to fly the new PBN procedures as PBN has become a common navisation standard across the world	ed it is anticipated that no extra prior/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is amorphise that no extra prot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navieation standard arms the world.	 It is anticipated that no extra protycrew training will be required to enable pilots to fly the new PBN procedures as PBN has become a rowmon navigation standard arms the world. 	It is anticipated that no extra protycrew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navisation standard across the world	It is anticipated that no extra priot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	it is anticipated that no extra protycrew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common payleation standard arross the world.	It is anticipated that no extra pilot/crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	hat no extra protycrew training will be required to ly the new PBN procedures as PBN has become a line standard across the world
Commercial airlines	Other costs	Initial Options Appraisal:	It is not proportionate for MAN to assess potential		Other costs to commercial airlines may include undates to Flight	Other costs to commercial airlines may include undates to Flight	Other cods to commercial airlines may include undates to Flight	Other roots to commercial airlines may include undates to File	ht Other neds to rommerrial airlines may include undates to Flight	Other mots to commercial airlines may include undates to Flight	Other costs to commercial airlines may include undates to Flight	Other roots to commercial airlines may include undates to Flight	Other costs to commercial airlines may include undates to Flight	Other costs to commercial aidines may include undates to Flight	Other costs to commercial aidines may include undates to Flight Other costs to c	immerrial airlines may include undates to Flight
		Qualitative	other costs for commercial airlines - there may be costs associated with maintaining legacy systems to	It is not proportionate for MAN to assess potential other costs for commercial airlines - there may be costs associated with maintaining legacy systems to	procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training	g procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is 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	eased pilot hire costs versus training etc. It is not
			continue flying conventional navigation but there are too many variables (e.g. aircraft types, on-board	continue flying conventional navigation but there as too many variables (e.g. aircraft types, on-board	proportionate for MAN to assess the "other costs" to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the "other costs" to commercial airlines of flying PBN procedures.	etc. It is not proportionate for MAN to assess the 'other costs' commercial airlines of flying PBN procedures.	to proportionate for MAN to assess the 'other costs' to commercial airlin of flying PBN procedures.	es proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial proportionate for	r MAN to assess the 'other costs' to commercial PBN procedures.
			agraem capaciaty etc.) to consider these effectively.	system capacitity etc.) to consider these effectively.												
Airport / Air	Infrastructure costs	Initial Options Appraisal:	No additional infrastructure is required at MAN to	No additional infrastructure is required at MAN to maintain extant conventional procedures; however,	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All opti	ions There are no expected additional infrastructure costs. All options rela	te There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	ected additional infrastructure costs. All options
navigation service provider		Qualitative	maintaining accessibility to current ground-based	maintaining accessibility to current ground-based		relate to the implementation of PBN and no additional infrastructur nd is required as the introduction of PBN reduces the reliance on groun	e relate to the implementation of PBN and no additional infrastruct d is required as the introduction of PBN reduces the reliance on gro	relate to the implementation of PBN and no additional und infrastructure is required as the introduction of PBN reduces t	to the implementation of PBN and no additional infrastructure is required as the introduction of PBN reduces the reliance on ground	relate to the implementation of PBN and no additional infrastructu- is required as the introduction of PBN reduces the reliance on grou-	are relate to the implementation of PBN and no additional infrastructure and is required as the introduction of PBN reduces the reliance on groun	relate to the implementation of PBN and no additional infrastructur d is required as the introduction of PBN reduces the reliance on groun	e relate to the implementation of PBN and no additional infrastructu d is required as the introduction of PBN reduces the reliance on grou	relate to the implementation of PBN and no additional infrastructured is required as the introduction of PBN reduces the reliance on ground	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure relate to the implementation of PBN reduces the reliance on ground is required as the introduction of PBN reduces the reliance on ground.	lementation of PBN and no additional infrastructure introduction of PBN reduces the reliance on ground
			equipment (operated by NERL) may become prohibitively expensive should a CAP1781 RNAV	equipment (operated by NERL) may become prohibitively expensive should a CAP1781 RNAV	infrastructure, in particular ground-based navigation aids are no longer needed.	infrastructure, in particular ground-based navigation aids are no longer needed.	infrastructure, in particular ground-based navigation aids are no longer needed.	reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	infrastructure, in particular ground-based navigation aids are no longs needed.	infrastructure, in particular ground-based navigation aids are no longer needed.	infrastructure, in particular ground-based navigation aids are no longer needed.	infrastructure, in particular ground-based navigation aids are no longer needed.	infrastructure, in particular ground-based navigation aids are no longer needed.	infrastructure, in particular ground-based navigation aids are no longer needed.	as required as the introduction of PBN reduces the resance on ground is required as the infrastructure, in particular ground-based navigation aids are no infrastructure, i longer needed.	particular ground-based navigation aids are no
			substitution not be implemented prior to the propose removal date.	ed substitution not be implemented prior to the propo removal date.												
Airport / Air navigation service	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the extant procedures.	No change to operational costs is attributable to maintaining the extant procedures.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP	ATC at MAN is contracted out to a third-party organisation. This sexisting commercial contract between MAN and their chosen ANS	ATC at MAN is contracted out to a third-party organisation. The existing commercial contract between MAN and their chosen	ATC at MAN is contracted out to a third-party organisation. This existi commercial contract between MAN and their chosen ANSP is	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP	ATC at MAN is contracted out to a third-party organisation. This is existing commercial contract between MAN and their chosen ANSP	ATC at MAN is contracted out to a third-party organisation. This is existing commercial contract between MAN and their chosen ANSP	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is existing commercial contract between MAN and their chosen ANSP is existing commercial contract between MAN and their chosen ANSP is existing commercial considerated to be an engoing costs. Some deployment costs are anticipated with respect to the implementation of new procedures anticipated with	entracted out to a third-party organisation. This cial contract between MAN and their chosen ANSP is
provider					considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers because the	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers: however, they	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedure and training of controllers. Named of the costs	ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of no	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures an he training of controllers. Assessed these costs are the interest of the costs.	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers because the	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers because the	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers, bosoning these seconds in Jacobs.	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers because their sounds to the controllers.	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers however, they controlled to the controllers to t	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures anticipated with and training of controllers however the deployment to the control to the c	an ongoing cost. Some deployment costs are respect to the implementation of new procedures outpollers; however, those connect by ideal for the connect by th
					and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	procedures and training of controllers; however, these cannot identified at this stage of the ACP process.	be training of controllers; however, these cannot be identified at this stag of the ACP process.	 and training of controllers; however, these cannot be identified at this stage of the ACP process. 	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	
Airport / Air	deployment costs	Initial Options Appraisal:	No deployment costs applicable to extant procedures	s. No deployment costs applicable to extant procedur	es. ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. The	is ATC at MAN is contracted out to a third-party organisation. This existi	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This ATC at MAN is contracted between MAN and their chorne ANCS is contract many and their chorne ANCS is contract.	intracted out to a third-party organisation. This
navigation service provider		Qualitative			considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new prevenues.	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures.	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedure	ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of nu	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures an	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new provedures:	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new pro-extured	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures.	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures.	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new provedures.	existing commercial contract between MAN and their chosen ANSP is existing comme considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures anticipated with	an ongoing cost. Some deployment costs are respect to the implementation of new procedures
					and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	procedures and training of controllers; however, these cannot identified at this stage of the ACP process.	be training of controllers; however, these cannot be identified at this stag of the ACP process.	e and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process.	and training of controllers; however, these cannot be identified at this stage of the ACP process. and training of outrollers; however, these cannot be identified at this stage of the ACP process.	ontrollers; however, these cannot be identified at ACP process.
Safety Assessment	Safety Assessment	Initial Options Appraisal:	The 'do nothing' scenario assumes that current	The 'do nothing' scenario assumes that current	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are exta	nt. Possible hazards have been identified, some of which are extant. First	y, Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant.	Possible hazards have been identified, some of which are extant. Possible hazard:	have been identified, some of which are extant.
		Qualitative	operations at MAN are safe including use of the extar conventional procedures. Following the removal of enund has of navigational aids supporting the existing	operations at MAN are safe including use of the ext conventional procedures. Following the removal of are emunchassed navigational aids supporting the exist	This is an extant hazard. In addition, there is the potential for faster	Firstly, aircraft executing a MAP may conflict with aircraft on the Silir This is an extant hazard. In addition, there is the potential for faster aircraft to catch up with shower aircraft due to dispersion in the turn	 Firstly, aircraft executing a MAP may conflict with aircraft on the S This is an extant hazard. In addition, there is the potential for fasts aircraft to catch up with shower aircraft due to dispersion in the tu- 	SID. Firstly, aircraft executing a MAP may conflict with aircraft on t er SID. This is an extant hazard. In addition, there is the potential on. for factor aircraft to catch on with slower aircraft due to	the aircraft executing a MAP may conflict with aircraft on the SID. This is a leatant hazard. In addition, there is the potential for facter aircraft to catch un with chaver aircraft due to dispersion in the turn which may	Firstly, aircraft executing a MAP may conflict with aircraft on the SI This is an extant hazard. In addition, there is the potential for faster aircraft to catch up with shower aircraft due to dispersion in the turn	ID. Firstly, aircraft executing a MAP may conflict with aircraft on the SID This is an extant hazard. In addition, there is the potential for faster aircraft to catch up with shower aircraft due to dispersion in the turn	 Firstly, aircraft executing a MAP may conflict with aircraft on the SI This is an extant hazard. In addition, there is the potential for faster aircraft to catch up with sinuse aircraft due to dispersion in the turn 	 Firstly, aircraft executing a MAP may conflict with aircraft on the SI This is an extant hazard. In addition, there is the potential for faster aircraft to catch up with slower aircraft due to dispersion in the turn. 	Firstly, aircraft executing a MAP may conflict with aircraft on the SII This is an extant hazard. In addition, there is the potential for faster aircraft to catch up with shower aircraft due to dispersion in the turn	Firstly, aircraft executing a MAP may conflict with aircraft on the SID. This is an extant hazard. In addition, there is the potential for faster This is an extant hazard. In addition, there is the potential for faster This is an extant hazard. In addition, there is the potential for faster This is an extant.	secuting a MAP may conflict with aircraft on the SID. hazard. In addition, there is the potential for faster up with slower aircraft due to dispersion in the turn
			SIDs, aircraft departing MAN would continuously require radar vectoring (should CAP1781 or a	ng ground-based navigation al aids supporting the exist SIDs, aircraft departing MAN would continuously require radar vectoring (should CAP1781 or a commercial agreement to maintain the existing	which may lead to a loss of separation. Furthermore, options within this envelope may conflict with Liverpool traffic. MAN	 which may lead to a loss of separation. Furthermore, options within this envelope may conflict with Liverpool traffic, MAN 	which may lead to a loss of separation. Furthermore, options with this envelope may conflict with Liverpool traffic, MAN	in dispersion in the turn, which may lead to a loss of separation. Furthermore, options within this envelope may conflict with	lead to a loss of separation. Furthermore, options within this envelope may conflict with Liverpool traffic, MAN arrivals/transitions and some	which may lead to a loss of separation. Furthermore, options within this envelope may conflict with Liverpool traffic, MAN	 which may lead to a loss of separation. Furthermore, options within this envelope may conflict with Liverpool traffic, MAN 	which may lead to a loss of separation. Furthermore, options within this envelope may conflict with Liverpool traffic, MAN	which may lead to a loss of separation. Furthermore, options within this envelope may conflict with Liverpool traffic, MAN	which may lead to a loss of separation. Furthermore, options within this envelope may conflict with Liverpool traffic, MAN	which may lead to a loss of separation. Furthermore, options within this envelope may conflict with Liverpool traffic, MAN this envelope m	o a loss of separation. Furthermore, options within y conflict with Liverpool traffic, MAN
			commercial agreement to maintain the existing navigational aid not be implemented), resulting in a	commercial agreement to maintain the existing navigational aid not be implemented), resulting in a												
			possible increase in ATCO workload.	possible increase in ATCO workload.	procedurally if required. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and militarities.	procedurally if required. Further assessment will be conducted at of Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	procedurally if required. Further assessment will be conducted at f Stage 3 and 4 of the CAP1616 process to confirm the exact nature all hazards and mitigations.	the design process or procedurally if required. Further e of assessment will be conducted at Stage 3 and 4 of the CAP161i process to confirm the exact nature of all hazards and	assessment will be conducted at Stage 3 and 4 of the CAP1616 proces to confirm the exact nature of all hazards and mitigations.	procedurally if required. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature all hazards and mitigatives	procedurally if required. Further assessment will be conducted at of Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	procedurally if required. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazaris and misleations.	procedurally if required. Further assessment will be conducted at f Stage 3 and 4 of the CAP1616 process to confirm the exact nature all hazards and mitigations.	procedurally if required. Further assessment will be conducted at if Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigatives.	These hazards can be mitigated through the design process or procedurally if required. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards can militari	quired. Further assessment will be conducted at the CAP1616 process to confirm the exact nature of initiations
					all hazards and mitigations.	all hazards and mitigations.	all hazards and mitigations.	process to confirm the exact nature of all hazards and mitigations.		all hazards and mitigations.	all hazards and mitigations.	all hazards and mitigations.	ename images.ett).	all hazards and mitigations.	an nazards and i	magain and the

				When compared to the 'do nothing' scenario, Option 7 R performs:		When compared to the 'do nothing' scenario, Option 8 R			When compared to the 'do nothing' scenario, Option 10 L performs:					
			- worse in terms of Air Quality, Noise impact, Greenhouse Gas	- worse in terms of Air Quality, Noise impact, Greenhouse Gas	- worse in terms of Air Quality, Noise impact, Greenhouse Gas	performs:	- worse in terms of Air Quality, Noise impact, Greenhouse Gas emission		- worse in terms of Air Quality, Noise impact, Greenhouse Gas	- worse in terms of Air Quality, Noise impact, Greenhouse Gas	- worse in terms of Air Quality, Noise impact, Greenhouse Gas	- worse in terms of Air Quality, Noise impact, Greenhouse Gas	- worse in terms of Air Quality, Noise impact, Greenhouse Gas	- worse in terms of Air Quality, Noise impact, Greenhouse Gas
		solution in terms of airspace modernisation and is		emissions and Fuel Burn.	emissions and Fuel Burn.		and Fuel Burn.	emissions and Fuel Burn.	emissions and Fuel Burn.	emissions and Fuel Burn.	emissions and Fuel Burn.	emissions and Fuel Burn.	emissions and Fuel Burn.	emissions and Fuel Burn.
			- better in terms of Capacity and resilience, and Economic impact	- better in terms of Capacity and resilience, and Economic impact		emissions and Fuel Burn.	- better in terms of Capacity and resilience, and Economic impact from		- better in terms of Capacity and resilience, and Economic impact	- better in terms of Capacity and resilience, and Economic impact	- better in terms of Capacity and resilience, and Economic impact	- better in terms of Capacity and resilience, and Economic impact	- better in terms of Capacity and resilience, and Economic impact	- better in terms of Capacity and resilience, and Economic impact
		December 2022, which would have a significant impact		from increased effective capacity.	from increased effective capacity.	- better in terms of Capacity and resilience, and Economic impact		from increased effective capacity.	from increased effective capacity.	from increased effective capacity.	from increased effective capacity.	from increased effective capacity.	from increased effective capacity.	from increased effective capacity.
				 equal/neutral in terms of the remaining criteria because there is no 	- equal/neutral in terms of the remaining criteria because there is no		- equal/neutral in terms of the remaining criteria because there is no	- equal/neutral in terms of the remaining criteria because there is n	- equal/neutral in terms of the remaining criteria because there is no	- equal/neutral in terms of the remaining criteria because there is no	- equal/neutral in terms of the remaining criteria because there is n	- equal/neutral in terms of the remaining criteria because there is no		- equal/neutral in terms of the remaining criteria because there is n
		enable continuous climb operations to 7,000ft, which		change when compared to today's operation.	change when compared to today's operation.	- equal/neutral in terms of the remaining criteria because there is	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.
		leads to a greater volume of fuel burn, emissions and				no change when compared to today's operation.								
			At this time, it is not possible to fully determine the safety		At this time, it is not possible to fully determine the safety		At this time, it is not possible to fully determine the safety implications		At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety		At this time, it is not possible to fully determine the safety
						At this time, it is not possible to fully determine the safety	of this specific option. Possible conflicts with some routes operated by		implications of this specific option. Possible conflicts with some	implications of this specific option. Possible conflicts with some	implications of this specific option. Possible conflicts with some	implications of this specific option. Possible conflicts with some	implications of this specific option. Possible conflicts with some	implications of this specific option. Possible conflicts with some
							other routes/nearby airports have been identified, but the exact nature		routes operated by other routes/nearby airports have been	routes operated by other routes/nearby airports have been	routes operated by other routes/nearby airports have been	routes operated by other routes/nearby airports have been	routes operated by other routes/nearby airports have been	routes operated by other routes/nearby airports have been
				identified, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4			of these conflicts is unclear at this stage. Further analysis and	identified, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and			identified, but the exact nature of these conflicts is unclear at this	identified, but the exact nature of these conflicts is unclear at this	identified, but the exact nature of these conflicts is unclear at this	identified, but the exact nature of these conflicts is unclear at this
				stage. Further analysis and engagement is required in Stage's and 4 of the CAP1616 process to determine this. Furthermore, this option					stage. Further analysis and engagement is required in Stage 3 and 4 in of the CAP1616 process to determine this. Furthermore, this option					
				has been assessed as in isolation rather than as a set of design options as part of a wider system/runway pair. Additional analysis is		3 and 4 of the CAP1616 process to determine this. Furthermore,		has been assessed as in isolation rather than as a set of design	has been assessed as in isolation rather than as a set of design is options as part of a wider system/runway pair. Additional analysis is					has been assessed as in isolation rather than as a set of design
				on required in Stage 3 to determine the cumulative impact of this option			determine the cumulative impact of this option when compared to all		on required in Stage 3 to determine the cumulative impact of this option					
Included Other	ne to the enduring requirement for radar		when compared to all the other options.		when compared to all the other options.		the other options.	when compared to all the other options.			when compared to all the other options.	when compared to all the other options.		when compared to all the other options.
Weltering.		vectoring.	when compared to all the other options.	when compared to all the other options.	when compared to all the other options.	cumulative impact of this option when compared to all the other		when compared to all the other options.	when compared to all the other options.	when compared to all the other options.	when compared to all the other options.	when compared to all the other options.	when compared to all the other options.	when compared to all the other options.
				Based on performance in the IQA. Option 7 R has been deemed the	0			David an analysis in the 104 Out on David and and a	Based on performance in the IOA. Option 10 L has been rejected as	D	B	B		David an and annual in the 104 Carlos 43 D has been actually
			Favourable, as it overflies the second fewest population when	Preferred oction (within this design envelope), as it overflies the			Preferred option (within this design envelope), as it overflies the fewest						it overflies a greater population when compared to other options	
				fewest gooulation when compared to other routes (originating from			population when compared to other routes foriginating from the same						n (originating from the same runway direction) within the same design	
			direction) within the same design envelope.		direction) within the same design envelope		runway direction) within the same design envelope.	direction) within the same design envelope.	envelone	envelone	envelone	envelone	envelone	envelone
						compared to other routes (originating from the same runway								
						direction) within the same design envelope								
						arectory worm one same design envelope								
			I .	1	I .	I .	1	1		1	1	1		1

MAN ACP - INITIAL OPTIONS APPRAISAL - FULL ANALY	ISIS TABLE	85.40	95.60	KARK KAR	w	NAME .	som.	KARN	EARM	EXIL		con	u	EASTM.
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East the approximation and will be the state of the state	e results werd design envelopes, the "like resthing" varietates for departures, in terms of instay's, inn is havend arresend ownered aperations where aircraft resulting to the west size the ESSAS, ESSAS. CRITY SIGN. The "like resthing" varieties for departures connected of a resultal track that has been d to granulate an accounting representation of advances unstable, in addition to the model track, a	This splane is included by greated as REACT registration of the REACD INTO Edu. The presentant was the fly sprangined, positionated in griduals the hart at the ministing markets: - 2010 this has been as ACCT SEL - which have the ACM of the Control of the Control of the course of presentant in the other and ACCT SEL - 2010 this is at ACCT SEL - 2010 this in a ACCT SEL -	This spill on in included by provide a 1986 of replication of the ISSENT FEST SID. The presenter can the fight suppoints, may kinetic regulate the four at the ministry resultion. Side the fortion is seld CE SID. All is in a seld CE SID. And the four the fortion the SID and in the replication the form of the recent presention is therefore all gas in the SID place. Side the four the control is the seld CE SID. Side the control is the SID SID and the four the SID and in this replication the form of the recent presention is therefore all gas in the SID place. Side the control is the SID SID and the SID side of the seld SID and the SID side of the SID	Age 12 to a MICE special that could find the first a similar way to the current CSSE department for each law to the text the CSSE of special to the CSSE of spec		Dos agrico com on 1995 and 197 codings of the control leaf by from 2001 for forward 2003 to and of the shade in it is circles to a quite critically, but the total after the first indexes, but the result to provide greater and described to the Control leaf to the control leaf to the control leaf to the control of the control leaf to the control of th	3.3. The regions can as MEV with ME solding right term in the currency or agrice ME, strong that the loop grid the Memory 2.5 and regions for the current term position of MEV 2012 agric (m). The regions for the current term position of MEV 2012 agric (m) for the College of MEV agric (m) and the regions of the design position of the current term of the design position of the design position of the design position of the current term of the design position of th	S. in seriller This, in an 1997 with MY useling initially [Sim 200 for forward 200] to realize a look around forwhold influent on singularities or intended consequent realized in the initial to replicate the serille and the serille initial and initial	er No. in an NASAS option included to provide a similar restrict that of option 1A (the NASA rents of their against in the right health from the DRI to reduce the impact of miss on En- the opticated made come impact bless. Ne providers com to Equip suggesteds.	TO 28, DV SQC housesse, it came and initial Don in, an ASSAC applice involved it approach as no initiar resolution between the impact of notice are founded in the initial and initial an	aption 38 had using an initial 35° to ask adjustment to the right. To is follows: the same results as aption 38 for the remainder of the in- 50.		SIGNI ED. This option has been designed following bildered. F. Ramany 27 VED Marriad made have forewards, with the national of lower Mithelministers and or separation or their a of lowe the interaction using certain tops with.	Dis is as an IRV I applies with NF coding as an adventube to the survent (SSEMES), it along is related to the interestion, with the propagated PS Annany 27 (SSEME-viral market have the most helitating calculated the feedback it is, incline to applies I below to the suntil after Standard is reduce makes impact on him behalds. This applies has been consensed applies as 22 controller from the control market in line with recipient such as requestion or interest from
parting game reading or this title early 20	nn han aine been o realed that represents an arms about a curred specialism and dispersed due to existering and potentially many effect people on the ground. The overlight analysis, conducted on Il was based on the resolul in as a realed uning flator and Track Enging data as distinctes of 4,300 2000 with the addition of a radar ventoring arms where appropriate. All data is based on surren	the Congrey Principle Saliny, This seriller invents to avoid Established. In a registrated work in Malessa, a briller leaks now they around an the oursenstroade. Disc seriler advantable the march of Established, the Anthron excluding a behinur to interveni to residence in office deuters. The naive continues in this direction until resorbing 7,000% for the north exist of Cheston.	Earlier, Distriction from the second consistent. As a registration with failure a resist must be second to be recently 50. Distriction districted in the number of distriction of the second second resistance of the second second resistance of the	for 10. The conditional matter continue in a condition to avoid provided by direction to avoid fine that is avoid them notice a left term to the conditional matter in this condition and in the matter in the condition and in the condition an	tercurrent reals. This realist advantable for earth of Southfant, then then realists a secural left burn to the north sensit of	The design operated grow in the CDFTE content extends and may prevent unsertained by the content as these configuration. publishment for all Engal which the particular extends in terms prevent and the content of the other particular and the content of the con	25. We departure the nation and if have better gift at 2.2 mm have 280 which replicates the harm of the current pro-	22. Mer digestion, the restricted as an EF term is the sight. Then have 200 which takes, it position the earth of Keskhelmi. Then states and all the might be retained the reader and the restricted as a second of terminal theoretical the residence of the residence and the restricted as a second of the relation that all paint earth of the relation that all paint earth of the relation that all the restricted and the recention of 2000 the cold of Scientists. 2,7000 3. 2000 3.	torm. 20. Across it makes a 27 track adjustment at 200 to the right to require the result of Analos on to Milliam the came track on 1. Land readers well to combine with the option for 200 just and south waveley direction to could forthwish and then makes a last turn to the usuals of tra- tem. Service.	tend and in the south of likers. It then of of Over Tablety, Personals continued in a CET in the adjustment at DEX to the right to resolute follows the search continued in a disharm to terminate at 7,000% south of 2006, in order	is the number of Coulchest and its throught of More. It then pill and Cover Tablery. The combined results continues in a south of Winsourheam is terminated in 2,000th anoth of Motod. It is the number of Knobuland and to the south of Motod. It is the number of Knobuland and to the south of Winson. It then	ia, a badhe of 2 Jew (in lineauith CAPASE) and cade statements in aption uses, an 1907 EF her initially (Inn 200 her Bussey) or sadius of the humis shorter incomain a basicitatio, moved the Efor extended controlline by approximately 27° which consten, a real	to make a kink around Englished. This is like other options, but south of Northwish. Althird how to the right make, almost morth.	gione is belief of 1.2 cm (in live with CPE-BE) and sends in mander the interaction using revised organization. This spilors was a received M leve in clinical (in Jene Bilde for borney) (in marks a lish amount of troubs for before treating the section) for extended commany controllers. Do's is like other spilors, but thereating of the leve is whenter and the subsequent issuel in the sends is longer in a revisit or applies with high particle like deviated. In larger in a revisit or applies to this life and high like deviate. The asymmetric of the machine life is that in 10 of lines bland Bills required for lands 28/218 to achine \$1,000 at the 2.2 cm buffer.
elevated entitle Nation 3	t performance date and is calculated burstion for distance between the Departure lind of flures e and of the model track. There has been no excellight analysis conducted with regardate define a busiline for the MONT!	 A speed was instead of 200 GML in used for the first hars, the realiser 210 GML would apply. 		133. May dispute or from our medium has the first plan medium for mental of this shade of Andreador of Andrea	COLUMN AND AND AND AND AND AND AND AND AND AN	positions in this dimedian will have the disablement and there have a file make a more valuable variable, because in minimum, and its retirement, and its retirement, and its retirement, and its retirement in the register in which as the retirement of the shallow of a local term from CES. Reliableing a solution of the shallow of the retirement of the re	B. Marcia of Chemies. 2705. Aller dependent the result makes, an EV form in the right in make in the matter distributed. Inclinating a shart short gift on a stress that the region for 200, and form left are a tract intertained in sufficient the mark of like the point in 200, and form in left are a tract in the right (in the life in the mark). It continues in this is, and it continues in the life in th		(b) discontinuation 27 to an adjustment of 20th attention to restrict the month of South job month of Student of ending send to continue with the option for 25% around Extent sends washing alternation to avoid Sentencial and then makes a last turn to the south of the of Educal.	feet is there believe the services is no 1.5. Millions the service believe this to extend the eight to extend the extend the eight to extend the extend the eight to extend the extend t	of Over Tables, The combinationales continue in a south of Wineserbern to terminate of 7,000% south of Selval. To m, thereafter 250 GUE would apply.	active reference of size in your entering one operator without any	regulared for both 25L/25H to achieve 3,500H/she required option with the design principles Tullety and Policy.	area. The precedure soon radius to fix rading, and the slimb gradient has been set at UK.
Elli due regional sumpare	e in its convent lest al regular une and the roots usually being atlitude for traffic leasing CAL. A time of this ICI has been provided at Option LE and for assessment purposes, this option has been reed against data relating to the ICILIO'dis motiting' userants.					continues in this direction will contribute of Salament and their hum. Tell code, a more wall variety freak and terminates at 1,00 shows to thisse. It is present materials and 200 tills is applied for the first term which is the PASC OPCOPTER recommended upwal.	A Segment moderation of 220 GGEs, applied to the first form which is the CAPTE recommended upon.		Expend extriction of 200/210 GEUs used for the first and second turn, thereafter 200 G	ili semili aggiy.	5	was limishi ing ta abasiga apatana usitain this amediapa, and as a raus menigariani. Ili Jiber departure, the music makes an EF burn in the right I can han B and then right in return the route sorth of the extended numary o	ie that achieved the required 1,000% vertical separation was = 200 which taken. Fijust his the mostly of Enabeland, 19 then have, entreline where it combines, with the option her 200. It	als note in agriculty of the facility and a service are egipt not retained attitude that is a place to the service of training and a service of training and the service of training and the service of training and training and the service of training and training and the service of training and the service of training and training and training and the service of training and training and training and the service of training and training and training and the service of training and training and the service of training and training and training and the service of training and training and training and the service of training and and training an
											2	mellinum jaak in iherusuh elikeribasish and nerih eliki inkeled and M. Jiller depunture, iherusuke makes an 10' kore he ihe right ahish ka ghi ke rekar ihe rasile merih elike mikmilati nasaay sentetiin ahi Northasish and merih eliki moland and keminake, at 7,000k juvin	imminutes at 7 (2000) rough of Calvall. Class, 10 Jun 1 to the month of Enabland. It then turns, left and then well combines, with the option for 2%. It continues to the vauls and of Calvall.	or 3 (MICA south of Kinhari.). Augment michirolox of 1900 ESE is applied in the Erels hom, 200 ESE for the several harn and 2000 ESES thereafter.
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Summary of dealphic States	e melting' commarie i rondution to tito. (27 to. The "dis-melting' commarie in reduction to tito. (27 to. coloide meltion on it ideas, not provide a coloide meltion in terms of a compare extraction and its semidative following (the color of the Color of t	When compared in the 'do nothing' comer's, Option 12-1 patheres: and the compared in the 'do nothing' comer's, Option 12-1 patheres: and the comercial in one of Balancingon, Option or Comercial Indiana. And the compared in the 'do nothing' comercia, Option 12-1 patheres: and the comercial in one of Balancingon, Option or Comercial Indiana.	Because and the first the design of the desi	Other compared to the following of waters, fighted 251 by the compared to the following of waters, fighted 251 by the compared to the following of water to the compared to the following of water to the compared to the following of water to the compared to the compared to the following of water to the compared to the	When compared to the 'demoking' conserts, Option SC 8 performs, performs, security internal Complexes Easts and Red Sum.	When compared in the "do nothing" contains, Option SEA parkets. — were in to some of the continuer force, and full facts.	When compared to the "do realising" women's, Option 15 gatheres was in long of 8 and house faces, and find hors.	EX. Management in the first including veneral, global EX. When a trained filter stage, and filter stage, and filter stage, and filter stage, global EX. When is the set filter stage, in death stage, and will be a set of the stage, and the stage an	When compared to the "do making" commain, Option 781. When compared to the performs performs perform processes of commandation and find from a commandation of the com	"the mathing scenario, Option 74.8 When compared to the Variability scenario, Option 78.1 When compared to the Variability scenario, Option 78.1 performs performed from an African and Facilities and Commission	ters compared to the life withing sumaria, Option 79.8. We share: present of Grantings Easts and held hors. The latest of Grantings Easts and held hors.	then compared to the 'Me nathing' scenario, Option 8 i. Frame, servario imms of Micharimperi, Greenbauer Gaves and Fuel	When compared to the 'six nothing' comaris, Option ES order no: owner in terms of Noise Impact, Greenhouse Eases and Isal	When compared to the "do making" common, Option 33 E performs:
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a melle has bande has and mail	in a greater values of hed burn, metalans in a greater values of hed burn, metalans into allower levels. In terms of Transpolling and mixe at leaser levels. In terms of Transpolling and mixe at leaser level he between the Benderman by common and the impacts (the 'ten motion') bender greater than the motion's property of	Since Simp 2 is not provide to find primer view of the state of the st	One specific sprine Preschler confiles to with the service specific sprine of the specific sprine Preschler confiles to with two readers appropriate for without the sprine of the sprin	All this form, bit is adjusted that he folly determine the subty population. If this is present the pr	Sithis time, it is not people to fully determine the subtly	At this time, it is not perceived a fair a fair a determine the subtry	A the studying action compared to broke by agreed on the studying action and proceedings that the study determined from the study implementation of this species the studying action contains a contracted to study the species. The studying action action compared the study to contract the studying action and the studying action of the studying action of the studying action contracted to study the studying action of the studying action action of the studying action of the studying action of the studying action of the studying action of the studying action of the studying action of the studying	her deep after a respectful teleph, species. As on the gas after a respectful teleph, species. All this lens, the set provides help deferred teleph species. All this lens, the set provides help deferred teleph species. All this lens, the set provides help deferred teleph species. All this lens, the set provides help deferred teleph species he set the set provides help deferred teleph species.	At this time, this and perceited in fully determine the surface. At this time, it is not perceited against Perceited and the same implications of this specific against Perceited and the same imprised any other making perceited against the same intention, but the meant of which and the same intention, but the meant of which and the same intention, but the meant of which and the same intention, but the meant of which and the same intention of the same and the same of the same and the same intention.	modifiers fully determine the subty and to option. Parallée conflicts with some implications of this specific spilon. Parallée conflicts with some implications of this specific option. Parallée conflicts with some implications of this specific option. Parallée conflicts with some implications of this specific option. Parallée conflicts with some implications of this specific option. In this specific option. Parallée conflicts with some implications of this specific option. In thi	this time, it is not provided to fully determine the safety plantium of this specific against Passable and it is not provided by the safety passable to the specific against passable to the same safety passable to the safety passa	This time, this compared to take it agreement. It is the compared to take it is a compared to take the compared to	The state of the second companies to the second sec	
Furthern as a res	and the Collection on Science Street, and the Collection of Science Science Street, and the Collection of Sc	whether the section of the confidence of the con	analyses of the control and th	Institute of the country of the coun	his sings further analysis and engagements is required in large Land Lad the CREATE process in distance this, furthermore, this option has been concerned as in tradition wither there are noted design options as part of a miles system/screen and	When compared her the string of comparing from 18 of the comparing from	inger sienflag, hat der mach nahmen dem gelein hatet in den dies niege Turker met des verscheiten der sieden in meiste dies niege Turker met jeden an der gegenne in de der verscheiten der I am d. de der CONSCI gewann in de der mit der in der der des spellen has been answerd as, in beladeren verbeit der des spellen has been answerd as, in beladeren verbeit der des spellen has been answerd as, in beladeren verbeit der des spellen has been answerd as, in beladeren verbeit der des spellen has been answerd as, in beladeren verbeit der des spellen has been answerd as, in beladeren verbeit der des spellen has been answerd as, in beladeren verbeit der des spellen has been answerd as, in beladeren verbeit der der spellen has been answerd an einer der spellen besteht der der spellen has been answerd an einer der spellen besteht der der spellen has been answerd an einer der spellen besteht der der spellen has been answerd an einer der spellen besteht der spellen besteht der spellen besteht der spellen der spellen has been answerd an einer der spellen besteht der sp	shorted at the CEAS and the event retires of the ev	at this stage harbon analysis and angagement in required in large. One stage harbon analysis and angagement in required in large. Six stage harbon and large. Six stage harbon and start is a large of the stage harbon and a six harbon than an a six of stage and an analysis of stage and stage against an apart of a state representational part of a state representation and the stage against an apart of a state representation and the stage against an apart of a state representation and the stage against an apart of a state representation and the stage against an apart of a state representation and the stage against an apart of a state representation and the stage against an apart of a state representation and the stage against an apart of a state representation and the stage against an apart of a state representation and the stage against a stage against a stage against a stage against an apart of a stage against a sta	lipis and engagement in required in Bage (systems to determine this. Furthermore, Lond at the CAPSEE presents in determine this. Furthermore, Standard or in Industries makes the same and as in Industries makes	n siege. Farther analysis and engagement is required in linger and a self-the CAPACIA prosents in determine this Farthermore, is a self-the CAPACIA prosents in determine this far thermore, is a self-the CAPACIA prosent of a self-the replace than as a last distings applices as part of a self-the replace through a self-the replace through the self-through through through the self-through through through the self-through through through the self-through through through through the self-through through the self-through through through through the self	institled, but the manti-values of tenue conflicts is unclass at its stage. Further enalphis and engagement is required in Stage and 6 of the CAPSES presens to determine this. Auritement, is against has been accounted as in including rather than as a	dentified, but the must natured those anothers to under at this single. Further analysis and engagements in required in Ringe I and the CEPTADE process to determine this. Furthermore, his option has been assessed as in building rather than as a	registration and reflects quarticle operation. In particular the confidence with consideration of the consideratio
DVSM, may be	ions are safe. Following the removal of the operations are safe. Following the removal of the operations are safe. Following the service of the OUChs, this arisementing the initial service of the ordering requirement for removal during the ordering and are removing.	und all dissipp registers as part of a wider system/conseq pair. Additional entangles is required in English in determinant between the confidence of the system of the wider system consequent in all the other system. Additional entangles is the determinant between the confidence of the system	Based on your formers are in the GEA, Option 13.6. You have deemed the Professor against paths this design analogo, as it can fill on the beam impossible. Professor displays the design analogo, as it can fill on the beam impossible. Professor displays the design analogo, as it can fill on the beam impossible. Professor displays the design analogo, as it can fill on the beam impossible and in a compart of the section of the section of the section in the section of	Additional conjusts to expect the larger law determined to translational conjusts to expect the larger law determined to translational conjusts the larger law determined to septement. Best of an expect law law law law determined to septement. Best of an expect law	lidditional analysis is required in Dage I to determine the normalistic impact of this option after comparation of the other spinors.	Additional analysis is required in Talogo Tax determine the annulation impact of this option when compact is not the option. Sensel on performance in the CAL Option SE Non-loss on the	det de famigie geldenne an gener de a militer springel versier. Additional mention has been de de familier de la companyation d	propries and of design applicans, any parties of a miles or quinterly-investigating and an indicate propries are partied as miles or primary parties and the propries and any parties or primary parties and the propries and the propries and any parties or propries and the propries and any parties of this regions where compared in all the other primary.	àdditional analysis is required in Stage 3 to determine the sumulative impact of this option when compared to all the other options.	required in Stage 3 to determine the bits option when compared to all the other required in Stage 3 to determine the summarism impact of this option when compared to all the other regions.	ditional analysis is required in Stage I to determine the mulative impunish this option when compared to all the other tions.	of all design options as part of a stater system/humany pair. Additional analysis is required in lings 2 to determine the Analysis impact of this option when compared to all the other plane.	et of design options as part of a wider upden/various pair. Idditional analysis in required in Bage 3 to determine the unclaive impact of this option when compared to all the other splans.	Additional analysis is required in Bags 10 to determine the executative impact of this epition when sumpared to all the other options. Bland on parlier recover in the DA, Option 304 has been capacide.
		Action of an performance in othe DA, Option 1141. No. have denoted that reference appears politics this design emoralized, in it another content appears politics this design emoralized, in it is extended to the Performance politics in design emoralized, in it is extended to the Performance politics in design emoralized, in its core limit. On the Texas of population above appears of the content of the Texas of the Performance politics above are population above appeared to such an extended to the politics above and population above appeared to such an extended to the politics above and population above appeared to such an extended to the politics above an extended appeared to such as extended appeared to such an extended appeared to such an extended appeared to such as extended and appeared to such as extended appeare	women one same energy enactions. Increase direction literature distingtone diagnostic distriction and distric	Beard on preferences in the CES, Option 28 This has desired. In a Amphilip in a 1 seed this field the bear popular and the CES, Option 28 This bear desired in a compared in order or sinch projection of the cost popular and the cost popular			Manual on gardion manual in the LEA, Option IX: Elses have on it conflice, a grade population when conquest the options populating has been aware manual placeholds;	The state of the s	wasse on performance in the ICAL Option TALL has been deemed. Bused on performance led in Profession against pathics this design emerging, as its cention. One Profession against the formit population when compare of its other reside. In the lamit population when compare of its other reside. In the profession of the compare of the other reside. In the profession of the compare of the other reside.	on terrano, uppero 16 E has been deterred. Essael on performance in the IGE, Option 781 has been deterred. Services in the internal period on a language of the internal period on an Extensive Services. As the services of t	one on personnance in the 12th, Option 78 II has been deemed. Formulatin, as it overfilm the second deem population when the paper of the date route, inclinating from the same running rection plants in the same design enough per continue.	oned on performance in the ISA, Option EL has been rejected as a meritim a greater population when compared to other options originating from the same running direction) within the same	land on performance in the IGA, Option II. Elvas been rejected in it overfilms a greater papulation when compared in other spines (originating from the same runsary direction) within the	Based on preference in riche Dui, Option 338 has been rejenied as it conflies a greater production when companied in other options judgicularly have the same running direction (within the same design monthage.
		pur grant grant me sare running direktur) within the same durige modeys. (Indignating them the same running direktur) within the same daying modeys.					una della medige.	and description	an grammyr. dailgrandige			no grammation .	are engrerolops	



Arrivals





Arrival Envelope: Runway 05 North 3,000ft (Baseline ROSUN)

			ROSUN and MIRSI Holds. A modal track has been derit today. The 'do nothing' scenario for arrivals consists or current operations where most arrivals are radar vect polygon has also been created that represents an area dispersed due to radar vectoring and potentially may conducted on this transition was based on the modal alittude of 7,000ft with the addition of a radar vectoria aircraft performance data and is calculated based on t start of the modal track. For the purpose of the IOA, the change sponsor has el	ved to provide an accurate representation of what occurs if modal tracks that have been generated based upon ored from the Hold. In addition to the modal tracks, a a where current operations and approaches to MAN are affect people on the ground. The overflight analysis track created using Noise and Track Keeping data from an ng area where appropriate. All data is based on current	Option 1A has an IAF at 7,000ft to the north-west of the airport in the operations. It is designed to facilitate an equal CDA profile to all runwa From this location the route splits and turns south-west, west of Urmst urning on to the final approach to the west of Northwich at 3,000ft for The descent gradient to the FAF is 3.5%/2.01* for Runway 05L and 3.28 range for low noise approaches and within the acceptable range for CD Option 1A for Runway 05R was rejected at the DPE stage and has there	ys. ton, Irlam, Partington, Cadishead and then east of Warrington before reither Runway 05L or Runway 05R. Ks/L.88* for Runway 05R. These gradients are within the optimum As defined within ICAO guidance.	Middlebrook Stadium). It has been designed to reduce potential inter runways. It also provides a broadly equal CDA for both runway direct! From this location the route splits, and heads south-west in the vicini Both routes then turn left to establish aircraft on final approach to th	e vicinity of the Middlebrook Retail Park (marked on VFR charts as ractions with departures and to facilitate a CDA profile to all ions. ity of Atherton and routes just to the east of central Warrington. is west of Northwich at 3,000ft for either Runway 055. Toes psyl_1_66* for Runway 058. These gradients are at the lower end of	Option 9A has an IAF at 7,000ft to the north of the airport just to the eas This position results in this being the longest transition for Runway 05 an From this location the route splits, heads initially south to avoid Bolton a Both routes then turn left to establish aircraft on final approach at 3,000 The descent gradient to the FAF is 2.72%/1.56° for Runway 051 and 2.58° low noise approaches but just within the acceptable range for CDAs defined to the state of the s	d therefore the least optimal CDA profile. Ind then turns south-west to and tracks to the east of Warrington. If for either Runway 05L or OSR. 4/1.48° for Runway 05R. These gradients are below the optimum for
Group Communities	Impact Noise impact on health and quality of life	Level of Analysis Initial Options Appraisal: Qualitative	Runway 05L In terms of potential noise impact, the ROSUN 'do nothing' scenario overflies approximately 943,000 people and approximately 439,300 residential buildings.	Runway 05R In terms of potential noise impact, the ROSUN 'do nothing' scenario overfiles approximately 952,300 people and approximately 445,400 residential buildings.	Rumway 05L In terms of potential noise impact, Option 1A L overflies approximately 90,400 people and approximately 43,300 residential buildings. When compared to the 'do nothing's cenario, this option overflies fewer people and residential buildings and as such is seen as beneficial.	Runway 05R NOT ASSESSED	Runway 05L In terms of potential noise impact, Option 8A L overflies approximately 172,200 people and approximately 82,700 residential buildings. When compared to the 'don onthing' scenario, this option overflies fewer people and residential buildings and as such is seen as beneficial.	residential buildings. When compared to the 'do nothing'	Runway 05L In terms of potential noise impact, Option 9A L overflies approximately 149,900 people and approximately 71,350 residential buildings. When compared to the 'do nothing' scenario, this option overflies fewer 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 or final approach to MAN. For safety reasons, aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. In terms of AQIMAs, the ROSUN 'do nothing' scenario overflies 13 AQIMAs and overflight of these AQIMAs occurs when the aircraft is above 1,000ft.	baseline conditions, the majority of the extant procedures involves overflight above 1,000ft, other than the areas in the immediate vicinity or final approach to MAN. 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, the ROSUN 'do nothing' scenario	Option 1A L overflies three AQMAs, having said that, as per CAP1616, para B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate areas surrounding the airport that may be overflown below 1,000ft, however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be of benefit as it overflies fewer AQMAs.		above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft	CAP1616, para 874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are wareas within the immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the final approach phases of flight.	immediate area surrounding the airport that may be overflown below 1,000ft, however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to the	para B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	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 CAP1616 process, there is no requirement for a day sponsor to conduct quantitative fuel burn or emission analysis; this will be conducted in Stage 3. In order to make a comparison, track mileage is used as a provoy using the theory that the shorter the track mileage, the less greenhouse gases are emitted. With regards to the 'do nothing' scenario track length:	descent approaches to all runways at MAN from 7,000ft. It must be noted that the exact track length if 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	Option 1A L has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 1A L is 58.40km (31.53nm). When compared to the 'do nothing' scenario, Option 1A L is shorter and is therefore expected to emit less greenhouse gases and this option is deemed to be of benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.		Option 8A L has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 8A L is 64.46km (34.81nm). When compared to the do nothing scenario, Option 8A L is shorter and is therefore expected to emit less greenhouse gases and this option is deemed to be of benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	approach operations. An element of tactical radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 8A R is 66.85km [36.09mm]. When compared to the 'do nothing' scenario, Option 8A R is shorter and is therefore expected to emit less greenhouse gases and this option is deemed to be of benefit. More in-depth analysis at	Option 9A L has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 9A L is 69.38km (37.46nm). When compared to the 'do nothing' scenario, Option 9A L is shorter and is therefore expected to entil less greenhouse gases and this option is deemed to be of benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	approach operations. An element of tactical radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 9A R is 71.94km (38.84nm). When compared to the 'do nothing' scenario, Option 9A R is shorter and is therefore expected to emit less greenhouse gases and this option is
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative		capacity; however, due to the reliance upon ground- based navigational aids, resilience could be	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 aid will significantly increase operational resilience through the introduction of PBN.		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 aid will significantly increase operational resilience through the introduction of PBN.	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		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 aid will significantly increase operational resilience through the introduction of PBN.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	unless other areas have been identified through community engagement. No additional specific areas were identified by community engagement.	specific reference to AONBs and National Parks only,	This option overflies no statutorily identified tranquillity receptors (AONBs or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.		This option overflies no statutorily identified tranquillity receptors (AONBS or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.		This option overflies no statutorily identified tranquillity receptors (AONBS or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	This option overflies no statutorily identified tranquillity receptors (AONBs or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.
Wider Society	Biodiversity	initial Options Appraisal: Qualitative	of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Mag CAP 1616, Appendix B, para B74, states that because dispersion and mixing, there is unlikely to be a miguo no 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. However, the change sponsor acknowledges that any potential impact to the	of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and ARMSAR sites, as identified on the DEFRA MAGIC Map. If CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para B 74, states that because of dispersion and mising, there is unlikely to be an impact on local air quality from aircraft above 1,000ff. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.		The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, States that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	Scientific interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA Mario(Imap. CAPIGIG, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential	MAGIC Map. CAP1616, Appendix B, para B74, states that because of	Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para 874, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para 880, states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor
General Aviation	Access	initial Options Appraisal: Qualitative	No change to existing airspace arrangements. Any General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under extant operational arrangements.	extant operational arrangements.	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Avaition access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.		No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to

IAF Steak - OPTION 1A

IAF 3 - OPTION 8A

IAF 4 - OPTION 9A

	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 General Aviation/airlines.	continued use of extant procedures, therefore no economic benefit for General Aviation/airlines.	The introduction of 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	The introduction of 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 by potentially increasing the frequency of air transport movements, increasing passenger number and increasing cargo tonnage carried.	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 by	The introduction of 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	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 by potentially increasing the
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	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	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 ROSUN OSR 'do nothing' scenario the track length is 79.37km (42.86nm) long.	Option 1A L supports continuous descent approaches, 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 58.40km (31.53mm) long. When compared to the donothing 'scenario, Option 1A L is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore, this option is deemed to be beneficial in terms of fuel burn. More indepth analysis will be carried out in Stage 3 to confirm.	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 64.46km [34.81mm] long, When compared to the 'do nothing' scenario, Option 8A L is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore,	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 66.85km (36.09mm) long. When compared to the 'do nothing' scenario, Option 8A R is shorter and at this stage it is assumed that it will require a	nothing' scenario, Option 9A L is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore, this option is deemed to be beneficial in terms of fuel burn. More in-depth analysis	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 71.94km (38.84mm) long. When compared to the 'do nothing' scenario, Option 9A R is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore,
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative		procedures which would be practised by crews through	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue	other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pillot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is 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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative		No additional infrastructure is required at MAN to maintain extant conventional procedures; however, maintaining accessibility to current ground-based equipment (operated by NERL) may become prohibitively expensive should a CAP1781 RNAV substitution not be implemented prior to the proposed removal date.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the
Airport / Air navigation service provider	Operational costs	initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the existing procedures.	maintaining the existing procedures.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be a nonging cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an enging cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational cost are anticipated with respect to the implementation of new	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative			ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an oneging cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	operations at MAN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft arriving at MAN would continuously require radar vectoring (should CAP1781 or a commercial agreement to maintain the existing navigational aid not be implemented), resulting in a potential increase in ATCO workload.	operations at MAN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft arriving at MAN would continuously require radar vectoring (Should CAP1781 or a commercial agreement to maintain the existing navigational aid not be implemented), resulting in a potential increase in ATCO workload.	The only hazard that was identified was a potential conflict with MAN proposed SIDs that could cause a possible loss of horizontal/vertical separation, causing an increase in ATCO workload. This hazard can be mitigated through the design process. Work has already commenced to understand and resolve the interactions with twerpool. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	proposed SIDs that could cause a possible loss of horizontal/vertical separation, causing an increase in ATCO workload. This hazard can be mitigated through the design process. Work has already commenced to understand and resolve the interactions with Liverpool. Further assessment will be conducted at Stage 3 and 4 of the CAP1516 process to confirm the exact nature of all hazards and mitigations.	MAN proposed SIDs that could cause a possible loss of horizontal/vertical separation, causing an increase in ATCO workload. This hazard can be mitigated through the design process. Work has already commenced to understand and resolv the interactions with Liverpool. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	to understand and resolve the interactions with Liverpool. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.
		oummary of Analysi	viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the DVOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing arrival arrangements do not enable continuous descent approaches from 7,000ft, which could lead to a greater volume of fue burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, General Aviation access and economic impact, the '60 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 MAN operations are safe. Following the removal of the DVORs, it is acknowledged that ATCO workload may increase due	viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the DVOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing arrival arrangements do not enable continuous descent approaches from 7,000ft, which could lead to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, General Aviation 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 MAN operations are safe. Following the removal of the DVORs, it is acknowledged that ATCO workload may increase due to the enduring requirement for radar vectoring.	- equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3	When compared to the 'do nothing' scenario, Option 8A L performs: better in terms of Noise impact, Air Quality, Greenhouse Gases, Fue Burn, Capacity and resilience and Economic impact from increased effective capacity. - equal/neutria in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this. Furthermore, this option has been assessed in isolation rather than a a set of design options as part of a wider system/runway pair. Additional analysis will be 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 8A L has been deemed as the Acceptable option, as it overflies the third fewest population when compared to other design options (originating from the IAF).	performs - better in terms of Noise impact, Air Quality, Greenhouse Gases, Fuel Burn, Capacity and resilience and Economic impact from increased effective capacity equal/neutral in terms of the remaining criteria because there in o change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this. Furthermore, this option has been assessed in isolation rather	Burn, Capacity and resilience and Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is no s change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this. Furthermore, this option has been assessed in isolation rather than as a set of design options as part of a wider system/runway pair. Additional analysis will be 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 L has been deemed as the Favourable option, as it overfiles second fewest population when	better in terms of Noise impact, Air Quality, Greenhouse Gases, Fuel Burn, Capacity and resilience and Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this. Furthermore, this option has been assessed in isolation rather than as a set of design options as part of a wider system/runway pair.

Arrival Envelope: Runway 05 North 2,000ft (Baseline ROSUN)

ROSUN and MIRSI Holds. A modal track has been derived to provide an accurate representation of what occurs today. The 'do nothing' scenario for arrivals consists of modal tracks that have been generated based upon current operations where most arrivals are radar vectored from the Hold. In addition to the modal tracks, a polygon has also been created that represents an area where current operations and approaches to MAN are dispersed due to radar vectoring and potentially may affect people on the ground. The overflight analysis conducted on this transition was based on the modal track created using Noise and Track Keeping data from an altitude of 7,000ft with the addition of a radar vectoring area where appropriate. All data is based on current aircraft performance data and is calculated based on the distance between the Arrival End of Runway and the

For the purpose of the IOA, the change sponsor has elected to use the data aligned to the ROSUN 'do nothing' scenario as it most closely aligns to current operations and the positions of the IAFs that are being assessed.

For arrivals from the north, the 'do nothing' scenario in terms of today's operation is based around the existing Option 13 has an IAF at 7,000ft to the north-north-west of the airport in the vicinity of Worsley, co-located with the IAF for option 23L/23R North 11A and has been designed to reduce potential interactions and increase the lateral separation from LPL Runway 27 arrivals. From the Worsley area, west of Prestwich, the route splits, and heads south-west just to the west of Irlam and overflying Cadishead and Lymm. Both routes then turn left to establish aircraft on final approach at 2,000ft for either Runway 05L or 05R. The descent gradient to the FAF is 4.37%/2.50° for Runway 05L and 4.09%/2.34° for Runway 05R. These gradients are optimum for low noise approaches and within the acceptable range for CDAs defined within ICAO guidance.

IAF 12 - OPTION 13

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Group	Impact	Level of Analysis	Runway 05L	Runway 05R	Runway 05L	Runway 05R
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In terms of potential noise impact, the ROSUN 'do nothing' scenario overflies approximately 943,000 people and approximately 439,300 residential buildings.	In terms of potential noise impact, the ROSUN 'do nothing' scenario overflies approximately 952,300 people and approximately 445,400 residential buildings.	In terms of potential noise impact, Option 13 L overflies approximately 118,700 people and approximately 55,200 residential buildings. When compared to the 'do nothing' scenario, this option overflies fewer people and residential buildings and as such is seen as beneficial.	In terms of potential noise impact, Option 13 R overflies approximately 131,200 people and approximately 60,750 residential buildings. When compared to the 'do nothing' scenario, this option overflies fewer 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 or final approach to MAN. 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, the ROSUN 'do nothing' scenario overflies 13 AQMAs and overflight of these AQMAs occurs when the aircraft is above 1,000ft.	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 or final approach to MAN. 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, the ROSUN 'do nothing' scenario overflies 12 AQMAs and overflight of these AQMAs occurs when the aircraft is above 1,000ft.	para B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the	Option 13 R overflies two AQMAs, having said that, as per CAP1616, para B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be of benefit as it overflies fewer AQMAs.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	sponsor to conduct quantitative fuel burn or emissions analysis; this will be conducted in Stage 3. In order to make a comparison, track mileage is used as a proxy using the theory that the shorter the track mileage, the less greenhouse gases are emitted. With regards to the 'do nothing' scenario track lengths,	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 CAP1616 process, there is no requirement for a change	compared to the 'do nothing' scenario, Option 13 L is shorter and is therefore expected to emit less greenhouse gases and this option is deemed to be of a benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	Option 13 R has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 13 R is 54.73km (29.55nm). When compared to the 'do nothing' scenario, Option 13 R is shorter and is therefore expected to emit less greenhouse gases and this option is deemed to be of a 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	capacity; however, due to the reliance upon ground-	capacity; however, due to the reliance upon ground-	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 aid will significantly increase operational resilience through the introduction of PBN.	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 aid will significantly increase operational resilience through the introduction of PBN.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP1616, 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. No additional specific areas were identified by community engagement. The ROSUN 'do nothing' scenario does not overfly any AONBs or National Parks.	As per CAP1616, 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. No additional specific areas were identified by community engagement. The ROSUN 'do nothing' scenario does not overfly any AONBs or National Parks.	This option overflies no statutorily identified tranquillity receptors (AONBs or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	This option overflies no statutorily identified tranquillity receptors (AONBs or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the	CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change proposal will not have	because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the designated sites	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGiC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN 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. Any General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under extant operational arrangements.	No change to existing airspace arrangements. Any General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under extant operational arrangements.		No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.
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 General Aviation/airlines.	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for General Aviation/airlines.	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 by potentially increasing the	The introduction of 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	and periods of level flight in the approach phase. In the	-	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 52.21km (28.19nm) long. When compared to the 'do nothing' scenario, Option 13 L is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore,	Option 13 R supports continuous descent approaches, 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 54.73km (29.55nm) long. When compared to the 'do nothing' scenario, Option 13 R is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore, this option is deemed to be beneficial in terms of fuel burn. More indepth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	Standard training would be applicable for existing procedures which would be practised by crews through existing simulator exercises.	Standard training would be applicable for existing procedures which would be practised by crews through existing simulator exercises.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.

Commercial airlines	Other costs	Initial Options Appraisal: Qualitative		other costs for commercial airlines - there may be 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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	No additional infrastructure is required at MAN to maintain extant conventional procedures; however, maintaining accessibility to current ground-based equipment (operated by NERL) may become prohibitively expensive should a CAP1781 RNAV substitution not be implemented prior to the proposed removal date.	No additional infrastructure is required at MAN to maintain extant conventional procedures; however, maintaining accessibility to current ground-based equipment (operated by NERL) may become prohibitively expensive should a CAP1781 RNAV substitution not be implemented prior to the proposed removal date.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the existing procedures.	No change to operational costs is attributable to maintaining the existing procedures.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No deployment costs applicable to extant procedures	No deployment costs applicable to extant procedures	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	conventional procedures. Following the removal of	conventional procedures. Following the removal of	proposed SIDs that could cause a possible loss of horizontal/vertical	The only hazard that was identified was a potential conflict with MAN proposed SIDs that could cause a possible loss of horizontal/vertical separation, causing an increase in ATCO workload. This hazard can be mitigated through the design process. Work has already commenced to understand and resolve the interactions with Liverpool. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.
		Summary of Analysis	viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the DVOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing arrival arrangements do not enable continuous descent approaches from 7,000ft, which could lead to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, General Aviation 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	viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the DVOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing arrival arrangements do not enable continuous descent approaches from 7,000ft, which could lead to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, General Aviation 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	- equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this.	Burn, Capacity and resilience and Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified

Arrival Envelope: Runway 05 North 2,500ft (Baseline ROSUN)

Arrival Envelope: Runway 05 North 2,500ft (Baseline ROSUN)							IAF 3 - OPTION 8B		IAF 4 - OPTION 9B		
			For arrivals from the north, the 'do nothing' scenario ir ROSUN and MIRSI Holds. A modal track has been deriv today. The 'do nothing' scenario for arrivals consists of current operations where most arrivals are radar vecte polygon has also been created that represents an area dispersed due to radar vectoring and potentially may a conducted on this transition was based on the modal t altitude of 7,000ft with the addition of a radar vectorin aircraft performance data and is calculated based on ti start of the modal track. For the purpose of the IOA, the change sponsor has eli	n terms of today's operation is based around the existing red to provide an accurate representation of what occurs f modal tracks that have been generated based upon ored from the Hold. In addition to the modal tracks, a	Option 1B has an IAF at 7,000ft to the north-west of the airport in the operations. It is designed to facilitate a CDA profile to all runways.	st of Urmston, Irlam and east of Warrington towards base-leg positions S00ft for either Runway 05L or 05R. 96%/2.27* Runway 05R. These gradients are within the optimum range	Option 8B has an IAF at 7,000ft to the north-west of the airport in the Middlebrook Stadium). It has been designed to reduce potential interarunways. From this location the route splits, heads south-west and routes to th	vicinity of the Middlebrook Retail Park (marked on VFR charts as actions with departures and to facilitate a CDA profile to all e east of Warrington. Both routes then turn left to establish .45%/1.98° for Runway 05R. These gradients are within the ange for CDAs defined within ICAO guidance.	Option 9B has an IAF at 7,000ft to the north of the airport in the vicinity of Bolton and is designed to facilitate a CDA profile to all runways. From this location the route splits, heads south-west and tracks to the east of Warrington. Both routes then turn left to establish aircraft on finial approach at 2,500ft for either Runway 05L or 05R. The descent gradient to the FAF is 3.24%/1.6% for Runway 05L and 3.07%/1.76* for Runway 05R. These gradients at the lower end of the optimum range for low noise approaches but within the acceptable range for CDAs defined within ICAO guidance. Option 9B for Runway 05R was rejected at the DPE stage and has therefore not been assessed.		
Group	Impact	Level of Analysis	Runway 05L	Runway 05R	Runway 05L	Runway 05R	Runway 05L	Runway 05R NOT ASSESSED	Runway 05L	Runway 05R NOT ASSESSED	
Communities	•	Initial Options Appraisal: Qualitative	In terms of potential noise impact, the ROSUN 'do nothing' scenario overflies approximately 943,000 people and approximately 439,300 residential buildings.	In terms of potential noise impact, the ROSUN 'do nothing' scenario overflies approximately 952,300 people and approximately 445,400 residential buildings.	In terms of potential noise impact, Option 1B L overflies approximately 83,700 people and approximately 40,350 residential buildings. When compared to the 'do nothing' scenario, this option	In terms of potential noise impact, Option 1B R overflies approximately 85,600 people and approximately 40,750 residential buildings. When compared to the 'do nothing' scenario, this option	In terms of potential noise impact, Option 8B L overflies approximately 159,400 people and approximately 76,800 residential	·	In terms of potential noise impact, Option 98 L overflies approximately 150,000 people and approximately 71,850 residential buildings. When compared to the 'do nothing' scenario, this option overflies fewer 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 or final approach to MAN. 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, the ROSUN 'do nothing' scenario overflies 13 AQMAs and overflight of these AQMAs occurs when the aircraft is above 1,000ft.	than the areas in the immediate vicinity or final approach to MAN. For safety reasons, aircraft are required to establish a safe and stable flight profile during the final approach phases of flight.	para B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be of benefit as it	para B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000ft, however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to	e above 1,000ft is not likely to be significant. There are areas within the v immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft		Option 9B L overflies three AQMAs, having said that, as per CAP1616, para 874, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the low limmediate area surrounding the airport that may be overflown below 1,000ft, however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be of benefit as it overflies fewer AQMAs.		
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	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 CAP1616 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 mileage is used as a proxy using the theory that the shorter the track mileage, the less greenhouse gases are emitted. With regards to the 'do nothing' scenario track lengths	Current arrival operations do not enable continuous descent approaches to all runways at MAN from 7,000ft. 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 eAP1516 process, there is no requirement for a change s sponsor to conduct quantitative fuel burn or emissions analysis; this will be conducted in Stage 3.1 no order to make a comparison, track mileage is used as a proxy e using the theory that the shorter the track mileage, the less greenhouse gases are emitted. 5, With regards to the 'do nothing' scenario track lengths, the ROSUN OSR' do nothing' scenario track is 79.37km (42.86nm) long.	be required to manage aircraft separation distances. The track mileage of Option 1B L is 53.06km (28.65nm). When compared to the 'do nothing' scenario, Option 1B L is shorter and is therefore expected to emit less greenhouse gases and this option is deemed to be of benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	therefore expected to emit less greenhouse gases and this option is deemed to be of benefit. More in-depth analysis at Stage 3 is	be required to manage aircraft separation distances. The track mileage of Option 8B L is 59.33km (32.04nm). When compared to the 'do nothing' scenario, Option 8B L is shorter and is therefore expected to emit less greenhouse gases and this option is deemed to be of benefit. More in-depth analysis at Stage 3 is		Option 9B L has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 9B L is 63.94km (34.52nm). When compared to the 'do nothing' scenario, Option 9B L is shorter and is therefore expected to emit less greenhouse gases and this option is deemed to be of 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		t Maintaining extant procedures would maintain current capacity; however, due to the reliance upon ground- based navigational aids, resilience could be significantly affected, following the removal of the DVOR in December 2022.	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more predictable light paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground-based navigational aid will significantly increase operational resilience through the introduction of PBN.	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 aid will significantly increase operational resilience through the introduction of PBN.	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 aid will significantly increase operational resilience through the introduction of PBN.		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 aid will significantly increase operational resilience through the introduction of PBN.		
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	were identified by community engagement.	As per CAP1616, 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. No additional specific areas were identified by community engagement. The ROSUN 'do nothing' scenario does not overfly any AONBs or National Parks.	and assessed as neutral.	This option overflies no statutorily identified tranquillity receptors (AONBs or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.	This option overflies no statutorily identified tranquillity receptors (AON8s or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.		This option overflies no statutorily identified tranquillity receptors (AONBs or National Parks), nor any identified through community engagement and is therefore comparable to the 'do nothing' scenario and assessed as neutral.		
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR Sites, as identified on the DEFRA MAGIC Map CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impac on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the	of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map, GCAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve	local air quality from aircraft above 1,000ft. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact or local air quality from aircraft above 1,000ft. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the designated sites	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on		The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIS), Special Protection Areas (SPAs), Special Areas of Conservation (SAcs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above Jo00ff. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN 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. Any General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under extant operational arrangements.	No change to existing airspace arrangements. Any General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under extant operational arrangements.	reviewed and updated (where applicable) prior to implementation to	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.		No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.		
	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 General Aviation/airlines.	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for General Aviation/airlines.	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 by potentially increasing the	expected to facilitate economic benefit by potentially increasing the	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		The introduction of 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.		

General Aviation / commercial airlines		nitial Options Appraisal: Qualitative	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 ROSUN OSL 'do nothing' scenario the track length is 75.97km (41.02nm) long.	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 ROSUN OSR do nothing' scenario the track length is 79.37km (42.86nm) long.	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 53.06km (26.56mm) long. When compared to the 'do nothing' scenario, Option 1B L is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore, this option is deemed to be beneficial in terms of fuel burn. More indepth analysis will be carried out in Stage 3 to confirm.	Option 1B R supports continuous descent approaches, reducing the overall amount of fuel burnt. There is no requirement within Stage 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 56.59km (30.56mm) long, When compared to the 'do nothing' scenario, Option 1B R is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore, this option is deemed to be beneficial in terms of fuel burn. More indepth analysis will be carried out in Stage 3 to confirm.	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 59.33km (32.04mm) long, When compared to the 'do nothing' scenario, Option 8B L is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore, this option is deemed to be beneficial in terms of fuel burn. More indepth analysis will be carried out in Stage 3 to confirm.	Option 9B L supports continuous descent approaches, 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 63.94km (34.52mm) long. When compared to the 'do nothing' scenario, Option 9B L is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore, this option is deemed to be beneficial in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	
Commercial airlines		nitial Options Appraisal: Qualitative	Standard training would be applicable for existing procedures which would be practised by crews through existing simulator exercises.			It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	
Commercial airlines	Other costs	nitial Options Appraisal: Qualitative	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 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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pillot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	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 MAN to assess the "other costs" to commercial airlines of flying PBN procedures.	
Airport / Air navigation service provider	Infrastructure costs	nitial Options Appraisal: Qualitative	prohibitively expensive should a CAP1781 RNAV substitution not be implemented prior to the proposed removal date.	substitution not be implemented prior to the proposed removal date.	is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	
Airport / Air navigation service provider	Operational costs	nitial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the existing procedures.	No change to operational costs is attributable to maintaining the existing procedures.	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	
Airport / Air navigation service provider		nitial Options Appraisal: Qualitative	No deployment costs applicable to extant procedures	No deployment costs applicable to extant procedures	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	
Safety Assessment	Safety Assessment	nitial Options Appraisal: Qualitative	operations at MAN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft arriving at MAN would continuously require radar vectoring (should CAP1781 or a commercial agreement to maintain the existing	operations at MAN are safe including use of the extant conventional procedures. Following the removal of ground-based navigational aids supporting the existing SIDs, aircraft arriving at MAN would continuously require radar vectoring (should CAP1781 or a	proposed SIDs that could cause a possible loss of horizontal/vertical separation, causing an increase in ATCO workload. This hazard can be mitigated through the design process. Work has already commenced	proposed SIDs that could cause a possible loss of horizontal/vertical	separation, causing an increase in ATCO workload. This hazard can be mitigated through the design process. Work has already commenced	The only hazard that was identified was a potential conflict with MAN proposed SIDs that could cause a possible loss of horizontal/vertical separation, causing an increase in ATCO workload. This hazard can be mitigated through the design process. Work has already commenced to understand and resolve the interactions with Liverpool. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	
		Summary of Analysis	viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the DVOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing arrival arrangements do not enable continuous descent approaches from 7,000ft, which could lead to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, General Aviation 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 MAN operations are safe. Following the removal of the DVDRs, it is acknowledged that ATCO workload may increase due	viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unvisible following the removal of the DVOR beacons in December 2022, which would have a significant impact on capacity and resilience. The existing arrival arrangements do not enable continuous descent approaches from 7,000ft, which could lead to a greater volume of fuel burn, emissions and noise at lower levels. In terms of Tranquillity, Biodiversity, General Aviation 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 MAN operations are safe. Following the removal of the DVORs, it is acknowledged that ATCO workload may increase due	better in terms of Moise impact, Air Quality, Greenhouse Gases, Fuel Burn, Capacity and resilience and Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this. Furthermore, this option has been assessed in isolation rather than as a set of design options as part of a wider system/nunway pair. Additional analysis will be required in Stage 3 to determine the cumulative impact of this option when compared to all the other options.	Burn, Capacity and resilience and Economic impact from increased effective capacity. -equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this.	Letter in terms of Noise impact, Air Quality, Greenhouse Gases, Fuel Burn, Capacity and resilience and Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this. Furthermore, this option has been assessed in isolation rather than as a set of design options as part of a wider system/runway pair. Additional analysis will be required in Stage 3 to determine the cumulative impact of this option when compared to all the other options.	When compared to the 'do nothing' scenario, Option 9B L performs: - better in trems of Noise impact, Air Quality, Greenhouse Gases, Fuel Burn, Capacity and resilience and Economic impact from increased effective capacity equal/neutrial in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this. Furthermore, this option has been assessed in isolation rather than as a set of design options as part of a wider system/runway pair. Additional analysis will be 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 9B L has been deemed as the Favourable option, as it overflies the second fewest population when compared to other design options (originating from the IAF).	

Arrival Envelope: Runway 05 South 2,500ft (Baseline DAYNE) IAF 8 - OPTION 7B IAF 10 - OPTION 9B Jption 78 has an IAF at 7,000tt co-located as use examing "from this location the route splits and needs west, south of Macciesfield, north of Congleton and over Middt to establish aircraft on final approach at 2,500th for either Runway 05s. or 05s. The descent graders to the FAF is 3,354/219* for Runway 05s, Gan ad 3,654/2,058* Runway 05s. These grad for low noise approaches and within the acceptable range for CDAs defined within ICAO guidance. From this location that crouse spitis and neasts west, south of nomines Chape, notin or Sanatoman and over Monaewich. Both routes the time right to stabilish aircraft on final approach at £5,000 ff ceither Runway (9.5 or 508. This is the southermost option and has been designed to maintain Sana separation from the boundary of CAS in accordance with the CAA containment; policy. The descent gradient to the FAF is 4.26%/4.44* for Runway (9.51, and 4.06%/4.23* Runway (9.87. These gradients are within the optimum range for law noise approaches and within the acceptable range for CDAs defined within ICAO guidance. withbound departures. He descent gradient to the FAF is 3.82%/2.19° for Runway 05L and 3.67%/2.1° for Runway 05R. The r low noise approaches and within the acceptable range for CDAs defined within ICAO guidance. of potential noise impact, Option 18 L overfiles and the Vir. Typo people and approximately 13,800 residential buildings and as such is seen as lending. Typo people and residential buildings and as such is seen as lendings. The vir. Typo people and residential buildings and as such is seen as lendings. The vir. Typo people and residential buildings and as such is seen as lendings. The vir. Typo people and residential buildings and as such is seen as lendings. The vir. Typo people and residential buildings and as such is seen as lendings. The vir. Typo people and residential buildings and as such is seen as lendings. The vir. Typo people and residential buildings. When compared to the 'do nothing' scenario, this option overfiles fewer people and residential buildings and as such is seen as beneficial. Option 18 Loverflies three AQMAs, having said that, as per CAP1515, para 874, due to mining and dispersion, the impact on air quality above 1,000f is not likely to be significant. There are areas within the immediate area surrounding the airport hat may be overflown below 1,000f; however, for safety reasons, this is unavoidable, as aircraft are required to be called as a feat and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to the footneting scenario, this option is deemed to be of benefit as it overflies fewer AQMAs. Option 18 L has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still be required to manage airrants separation distances. The track mileage of Option 18 is 55.75km [31.56m], When compared to the 'on configing search, option 58 is 55.75km [31.57km], When compared to the 'on configing search, option 58 is 55.75km [31.57km], When compared to the 'on configing search, option 58 is 55.75km [31.57km], When compared to the 'on configing search, option 58 is 55.75km [31.57km], When compared to the 'on configing search, option 58 is is shorter and is therefore expected to emit less greenhouse gases and this option is deemed to be of benefit. More in depth analysis at Stage 3 is required to confirm the eact volumes of greenhouse gases released. Option 58 I has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still be required to manage airrants separation distances. The track mileage of Option 58 is his been designed to support continuous descent approach operations. An element of tactical radar vectoring may still be required to manage airrants separation distances. The track mileage of Option 58 is his option at its shorter and is therefore expected to emit less greenhouse gases and this option is deemed to be of benefit. More in-depth analysis at Stage 3 is required to confirm the eact volumes of greenhouse gases released. e introduction of PBN routes is expected to deliver benefits by The introduction of PBN routes is expected to deliver benefits by creasing airspace capacity which subsequently leads to more vedictable flight paths and fewer delays (both in air or on the ound). The reduction of the reliance on outdated ground-based vigational aid will significantly increase operational resilience rough the introduction of PBN. 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 aid will significantly increase operational resilience through the introduction of PBN. 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 aid will significantly increase operational resilience through the introduction of PBN. increasing airspare and values a Expectate to deliver desires by increasing airspare 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 awaygational aid will significantly increase operational resilience through the introduction of PBN. The introduction of any times the depiction of their tenents of intensing airpapac capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the relations on their relations of their relations on their relations of their relations on their relations on their relations of their relations of their relations on their relations of their re Iditional specific areas ingagement. On additional specific area were identified by community engagement. On overfiles no AONBs and one National Sustainal Sustaina Susta The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs), and RAMSAR sites, as identified on the DEFRA MAGIC Map, CAP1615, Appendix B, para 875, states that because of dispersion and mixing, there is unlikely to be an impact to be designated sites of special around 1000 for the change sponsor has mapped the designated Sites of Special Interest (SSSs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs), and RAMSAR sites, as identified on the DEFRA MAGIC Map, CAP1615, Appendix B, para 875, states that because of dispersion and mixing, there is unlikely to be an impact to because of dispersion and mixing, there is unlikely to be an impact on blookershy as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites of Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map, CAP1615, Appendix B, para 875, states that because of dispersion and mixing, there is unlikely to be an impact on local air valuely from aircraft above 1,000f. Furthermore, CAP1615, Appendix B, para 875, states that because of dispersion and mixing, there is unlikely to be an impact on local air valuely from aircraft above 1,000f. Furthermore, CAP1615, Appendix B, para 875, states that because of dispersion and mixing, there is unlikely to be an impact on local air valuely from aircraft above 1,000f. Furthermore, CAP1615, Appendix B, para 880, states that in general, airspace change proposal will not have an impact to to indiversity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites of Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC MAP, CAP1616, Appendix B, para 880, states that in general, airspace change proposal will not have an impact on local air valuely from aircraft above 1, No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing consequence of this ACP. All Visual Reference Points and existing c The introduction of 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 proceed to facilitate economic benefit by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. The introduction of 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 proceed to facilitate economic benefit by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. The introduction of 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 proceed to facilitate economic benefit by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. The introduction of 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 proceed to facilitate economic benefit by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. The introduction of 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 proceed to facilitate economic benefit by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight pa General Aviation / Economic impact from potion 1B L supports continuous descent approaches, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1516 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the log capilled is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 54.52m; 102.54mml ngo. When compared to the 'do nothing' scenario, Option 1B it is shorter and at this stage it is saumed that it will require a smaller amount of fuel burn, therefore, this option is deemed to be beneficial in terms of fuel burn. More indepth analysis will be carried out in Stage 3 to confirm. | Diption 58 R supports continuous descent approaches, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1516 process to quantify fuel burn, this will be conducted in Stage 5. 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 54.52m; 15.02mml ngo. When compared to the 'do nothing' scenario, Option 1B it is shorter and at this stage it is sammed that it will require a smaller amount of fuel burn, therefore, this option is deemed to be beneficial in terms of fuel burn. More indepth analysis will be carried out in Stage 3 to confirm. | Diption 58 R supports continuous descent approaches, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1516 process to quantify fuel burn, this will be conducted in Stage 2. 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 55.52m; in Endows in the shorter the track length, the less fuel is burnt. With regards to this option, it is 55.52m; in Endows in the shorter the track length, the less fuel is burnt. With regards to this option, it is 55.52m; in Endows in the shorter and at this stage it is assumed has the fuel fuely analysis will be 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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures. 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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures. Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating Management Systems (FMS), navigation databases and operating procedures, increased plicit hier costs versus training et. It is not procedure, increased plicit hier costs versus training et. It is not procedure, increased plicit hier costs versus training et. It is not procedured. For MAN to assess the 'other costs' to commercial airlines of flying PSM procedures. 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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures. Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navigation databases and operating procedures, increased pilot his recost sversus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airli of flying PBN procedures. r costs to commercial airlines may include updates to Flight agement Systems (FMS), navigation databases and operating dures, increased pilot hire costs versus training etc. It is not ortionate for MAN to assess the 'other costs' to commercial as of flying PBN procedures. Other costs to commercial airlines may include updates to Flignt Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures. There are no expected additional infrastructure costs. All options relate to the implementation of PRN and no additional infrastructure is articipated to be required as the introduction of PRN and no additional infrastructure is articipated to be required as the introduction of PRN and no additional infrastructure is articipated to be required as the introduction of PRN reduces the relatince on ground infrastructure, in particular ground-based navigation aids are no integer receded. There are no expected additional infrastructure costs. All options relate to the implementation of PRN and no additional infrastructure is to the implementation of PRN and no additional infrastructure is articipated to be required as the introduction of PRN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no integer receded. There are no expected additional infrastructure costs. All options relate to the implementation of PRN and no additional infrastructure is to the implementation of PRN and no additional infrastructure is articipated to be required as the introduction of PRN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer receded. reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed. reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed. nce on ground infrastructure, in particular ground-based gation aids are no longer needed. reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed. eliance on ground infrastructure, in particular ground-based ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to use of their departy organisation. This existing commercial contract between MAN and their chosen ANSP is considered to a considered to the an enging cost. Some operational costs are articipated with respect to the implementation of new procedures and training of controllers, however, these cannot be identified at this stage of the ACP process. ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered or to an entire question and to ask are articipated with respect to the implementation of new procedures and training of controllers, however, these cannot be identified at this stage of the ACP process. ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered or be an enoging cost. Some operational costs are articipated with respect to the implementation of new procedures and training of controllers, however, these cannot be identified at this stage of the ACP process.

Airport / Air	Deployment costs		No deployment costs applicable to extant procedures	No deployment costs applicable to extant procedures	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This existing	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This existing	
navigation service		Qualitative			existing commercial contract between MAN and their chosen ANSP is	existing commercial contract between MAN and their chosen ANSP is	existing commercial contract between MAN and their chosen ANSP is	existing commercial contract between MAN and their chosen	commercial contract between MAN and their chosen ANSP is considered	existing commercial contract between MAN and their chosen ANSP is	commercial contract between MAN and their chosen ANSP is considered	existing commercial contract between MAN and their chosen ANSP is
provider					considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	ANSP is considered to be an ongoing cost. Some deployment costs	to be an ongoing cost. Some deployment costs are anticipated with	considered to be an ongoing cost. Some deployment costs are	to be an ongoing cost. Some deployment costs are anticipated with	considered to be an ongoing cost. Some deployment costs are
					anticipated with respect to the implementation of new procedures	anticipated with respect to the implementation of new procedures	anticipated with respect to the implementation of new procedures	are anticipated with respect to the implementation of new	respect to the implementation of new procedures and training of	anticipated with respect to the implementation of new procedures	respect to the implementation of new procedures and training of	anticipated with respect to the implementation of new procedures
					and training of controllers; however, these cannot be identified at this	and training of controllers; however, these cannot be identified at thi	and training of controllers; however, these cannot be identified at this	procedures and training of controllers; however, these cannot be	controllers; however, these cannot be identified at this stage of the ACP	and training of controllers; however, these cannot be identified at this	controllers; however, these cannot be identified at this stage of the ACP	and training of controllers; however, these cannot be identified at this
					stage of the ACP process.	stage of the ACP process.	stage of the ACP process.	identified at this stage of the ACP process.	process.	stage of the ACP process.	process.	stage of the ACP process.
Safety Assessment	Safety Assessment	Initial Options Appraisal:	The 'do nothing' scenario assumes that current	The 'do nothing' scenario assumes that current	The only hazard that was identified was a potential conflict with MAN	The only hazard that was identified was a potential conflict with MAN	The only hazard that was identified was a potential conflict with MAN	The only hazard that was identified was a potential conflict with	The only hazard that was identified was a potential conflict with MAN	The only hazard that was identified was a potential conflict with MAN	The only hazard that was identified was a potential conflict with MAN	The only hazard that was identified was a potential conflict with MAN
,			operations at MAN are safe including use of the extant	operations at MAN are safe including use of the extant		proposed SIDs that could cause a possible loss of horizontal/vertical		MAN proposed SIDs that could cause a possible loss of	proposed SIDs that could cause a possible loss of horizontal/vertical	proposed SIDs that could cause a possible loss of horizontal/vertical	proposed SIDs that could cause a possible loss of horizontal/vertical	proposed SIDs that could cause a possible loss of horizontal/vertical
			conventional procedures. Following the removal of	conventional procedures. Following the removal of			separation, causing an increase in ATCO workload. This hazard can be		separation, causing an increase in ATCO workload. This hazard can be	separation, causing an increase in ATCO workload. This hazard can be	separation, causing an increase in ATCO workload. This hazard can be	separation, causing an increase in ATCO workload. This hazard can be
					mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be	workload. This hazard can be mitigated through the design	mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be
			SIDs, aircraft arriving at MAN would continuously	SIDs, aircraft arriving at MAN would continuously	conducted at Stage 3 and 4 of the CAP1616 process to confirm the	conducted at Stage 3 and 4 of the CAP1616 process to confirm the	conducted at Stage 3 and 4 of the CAP1616 process to confirm the		conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact	conducted at Stage 3 and 4 of the CAP1616 process to confirm the	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact	conducted at Stage 3 and 4 of the CAP1616 process to confirm the
			require radar vectoring (should CAP1781 or a	require radar vectoring (should CAP1781 or a	exact nature of all hazards and mitigations.	exact nature of all hazards and mitigations.	exact nature of all hazards and mitigations.	the CAP1616 process to confirm the exact nature of all hazards	nature of all hazards and mitigations.	exact nature of all hazards and mitigations.	nature of all hazards and mitigations.	exact nature of all hazards and mitigations.
			commercial agreement to maintain the existing	commercial agreement to maintain the existing				and mitigations.				
			navigational aid not be implemented), resulting in a	navigational aid not be implemented), resulting in a				_ ·				
			potential increase in ATCO workload.	potential increase in ATCO workload.								
		Summary of Analysis	The 'do nothing' scenario in relation to this ACP is not a	The 'do nothing' scenario in relation to this ACP is not a			When compared to the 'do nothing' scenario, Option 6B L performs:		When compared to the 'do nothing' scenario, Option 7B L performs:	When compared to the 'do nothing' scenario, Option 7B R performs:		When compared to the 'do nothing' scenario, Option 9B R performs:
			viable option as it does not provide a sustainable	viable option as it does not provide a sustainable	- better in terms of Noise Impact, Air Quality, Greenhouse Gases, Fuel	- better in terms of Noise Impact, Air Quality, Greenhouse Gases, Fue	- better in terms of Noise Impact, Air Quality, Greenhouse Gases, Fuel	performs:	- better in terms of Noise Impact, Air Quality, Greenhouse Gases, Fuel	- better in terms of Noise Impact, Air Quality, Greenhouse Gases, Fue	- better in terms of Noise Impact, Air Quality, Greenhouse Gases, Fuel	- better in terms of Noise Impact, Air Quality, Greenhouse Gases, Fuel
			solution in terms of airspace modernisation and is	solution in terms of airspace modernisation and is		Burn, Capacity and resilience and Economic impact from increased	Burn, Capacity and resilience and Economic impact from increased	- better in terms of Noise Impact, Air Quality, Greenhouse Gases,	Burn, Capacity and resilience and Economic impact from increased	Burn, Capacity and resilience and Economic impact from increased	Burn, Capacity and resilience and Economic impact from increased	Burn, Capacity and resilience and Economic impact from increased
			unviable following the removal of the DVOR beacons in	unviable following the removal of the DVOR beacons in	effective capacity.	effective capacity.		Fuel Burn, Capacity and resilience and Economic impact from	effective capacity.	effective capacity.	effective capacity.	effective capacity.
					- equal/neutral in terms of the remaining criteria because there is no			increased effective capacity.	- equal/neutral in terms of the remaining criteria because there is no	- equal/neutral in terms of the remaining criteria because there is no	- equal/neutral in terms of the remaining criteria because there is no	- equal/neutral in terms of the remaining criteria because there is no
				on capacity and resilience. The existing arrival	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.	- equal/neutral in terms of the remaining criteria because there is	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.
			arrangements do not enable continuous descent	arrangements do not enable continuous descent				no change when compared to today's operation.				
						At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety		At this time, it is not possible to fully determine the safety implications o		At this time, it is not possible to fully determine the safety implications of	
		l l	volume of fuel burn, emissions and noise at lower	volume of fuel burn, emissions and noise at lower			implications of this specific option. The change sponsor has identified		this specific option. The change sponsor has identified that there may be		this specific option. The change sponsor has identified that there may be	
			evels. In terms of Tranquillity, Biodiversity, General	levels. In terms of Tranquillity, Biodiversity, General	be some possible conflicts with some routes operated by adjacent	that there may be some possible conflicts with some routes operated		implications of this specific option. The change sponsor has	some possible conflicts with some routes operated by adjacent airports,	that there may be some possible conflicts with some routes operated		that there may be some possible conflicts with some routes operated
					airports, but the exact nature of these conflicts is unclear at this stage.			identified that there may be some possible conflicts with some	but the exact nature of these conflicts is unclear at this stage. Further	by adjacent airports, but the exact nature of these conflicts is unclear	but the exact nature of these conflicts is unclear at this stage. Further	by adjacent airports, but the exact nature of these conflicts is unclear
		l l	paseline' provides minimal/no change to today's	baseline' provides minimal/no change to today's				routes operated by adjacent airports, but the exact nature of	analysis and engagement is required in Stage 3 and 4 of the CAP1616	at this stage. Further analysis and engagement is required in Stage 3		at this stage. Further analysis and engagement is required in Stage 3
			operations. Furthermore, there are very limited costs	operations. Furthermore, there are very limited costs	CAP1616 process to determine this.	and 4 of the CAP1616 process to determine this.	and 4 of the CAP1616 process to determine this.	these conflicts is unclear at this stage. Further analysis and	process to determine this.	and 4 of the CAP1616 process to determine this.	process to determine this.	and 4 of the CAP1616 process to determine this.
			ncurred as a result of this scenario. From a safety	incurred as a result of this scenario. From a safety	L	L	La arara ara	engagement is required in Stage 3 and 4 of the CAP1616 process	L	La arara ara	La aracia ara	
							Furthermore, this option has been assessed in isolation rather than as	to determine this.	Furthermore, this option has been assessed in isolation rather than as a	Furthermore, this option has been assessed in isolation rather than as	Furthermore, this option has been assessed in isolation rather than as a	Furthermore, this option has been assessed in isolation rather than as
				are safe. Following the removal of the DVORs, it is	a set of design options as part of a wider system/runway pair.	a set of design options as part of a wider system/runway pair.	a set of design options as part of a wider system/runway pair.	Control of the contro	set of design options as part of a wider system/runway pair. Additional	a set of design options as part of a wider system/runway pair.		a set of design options as part of a wider system/runway pair.
			acknowledged that ATCO workload may increase due		Additional analysis will be required in Stage 3 to determine the	Additional analysis will be required in Stage 3 to determine the	Additional analysis will be required in Stage 3 to determine the	Furthermore, this option has been assessed in isolation rather	analysis will be required in Stage 3 to determine the cumulative impact	Additional analysis will be required in Stage 3 to determine the		Additional analysis will be required in Stage 3 to determine the
1			to the enduring requirement for radar vectoring.	to the enduring requirement for radar vectoring.	cumulative impact of this option when compared to all the other	cumulative impact of this option when compared to all the other	cumulative impact of this option when compared to all the other	than as a set of design options as part of a wider system/runway pair. Additional analysis will be required in Stage 3 to determine	of this option when compared to all the other options.	cumulative impact of this option when compared to all the other	of this option when compared to all the other options.	cumulative impact of this option when compared to all the other
1					options.	options.			0	options.	December 2015 Annual Control of the	options.
1					Based on performance in the IOA. Option 1B L has been deemed as	0			Based on performance in the IOA, Option 7B L has been deemed as the	Based on performance in the IOA. Option 7B R has been deemed as	Based on performance in the IOA, Option 9B L has been deemed as the	Based on performance in the IOA. Option 9B R has been deemed as
1						Based on performance in the IOA, Option 1B R has been deemed as		other options.	Favourable option, as it overflies the second fewest population when			
1						the Preferred option, as it overflies the fewest population when	the Acceptable option, as it overflies the third fewest population when	Based on performance in the IOA. Option 6B R has been deemed	compared to other design options (originating from the IAF).	the Favourable option, as it overflies the second fewest population	other design options (originating from the IAF).	the Rejected option, as it overflies the greater population when
					compared to other design options (originating from the IAF).	compared to other design options (originating from the IAF).	compared to other design options (originating from the IAF).	as the Acceptable option, as it overflies the third fewest		when compared to other design options (originating from the IAF).		compared to other design options (originating from the IAF).
								population when compared to other design options (originating				
							I .	population which compared to other design options (originating		1	L	

Arrival Envelope: Runway 23 North 3,000ft (Baseline ROSUN/MIRSI)

			current operations where most arrivals are radar vector polygon has also been created that represents an area widispersed due to radar vectoring and potentially may affonducted on this transition was based on the modal traditude of 7,000ft with the addition of a radar vectoring aircraft performance data and is calculated based on the start of the modal track.	where current operations and approaches to MAN are fect people on the ground. The overflight analysis ack created using Noise and Track Keeping data from an area where appropriate. All data is based on current	establish aircraft on final approach at 3,000ft for either Runway 23L or The descent gradient to the FAF is 4.45%/2.55° for Runway 23L and 4.: approaches and within the acceptable range for CDAs defined within I	32%/2.48° for Runway 23R. These gradients are optimal for low noise	Oldham. Both routes then turn right to establish aircraft on final appro- This option is included to provide a design option from an IAF created where design options were required that minimise the impact on LPL The descent gradient to the FAF is 4.45%/2.55° for Runway 23L and 4.2 noise approaches and within the acceptable range for CDAs defined w	specifically for Runways 05L/05R (05L/05R 2,000ft FAF option 13), Runway 27 arrivals. 27%/2.45° for Runway 23R. These gradients are optimal for low
Group	Impact	Level of Analysis	Runway 23L	Runway 23R	Runway 23L	Runway 23R	Runway 23L	Runway 23R
Communities	Noise impact on health and quality of life		nothing' scenario. In terms of potential noise impact, the ROSUN 'do nothing' scenario overflies approximately 409,800 people and approximately 185,700 residential buildings. Westerly arrivals for Runway 23L are compared to a modal track, which is based on the MIRSI 'do nothing'	For comparison purposes within the IOA, for Runway 23R, Easterly arrivals are compared to the ROSUN 'do nothing' scenario. In terms of potential noise impact, the ROSUN 'do nothing' scenario overflies approximately 368,800 people and approximately 167,550 residential buildings. Westerly arrivals for Runway 23R are compared to a modal track, which is based on the MIRSI 'do nothing' scenario from the West and Southwest. In terms of potential noise impact, this scenario overflies approximately 717,300 people and approximately 325,900 residential buildings.	buildings. When compared to the 'do nothing' scenario, this option	In terms of potential noise impact, Option 7B R overflies approximately 260,500 people and approximately 120,950 residential buildings. When compared to the 'do nothing' scenario, this option overflies fewer people and residential buildings and as such is seen as beneficial.	buildings. When compared to the 'do nothing' scenario, this option	residential buildings. When compared to the 'do nothing'
Communities	Air Quality		overflies 7 AQMAs and the MIRSI 'do nothing' scenario	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 or final approach to MAN. 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, the ROSUN 'do nothing' scenario overflies 6 AQMAs and the MIRSI 'do nothing' scenario overflies 9 AQMAs. Overflight of these AQMAs occurs when the aircraft is above 1,000ft.	para B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be neutral as it	Option 7B R overflies seven AQMAs, having said that, as per CAP1616, para B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be of dis-benefit as it overflies more AQMAs.	para B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to	CAP1616, para B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable
Wider Society	Greenhouse Gas impact		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 CAP1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emission analysis; this will be conducted in Stage 3. In order to make a comparison, track mileage is used as a proxy using the theory that the shorter the track mileage, the less greenhouse gases are emitted. With regards to the 'do nothing' scenario track lengths, the ROSUN 23L 'do nothing' scenario track is 54.13km (29.23nm) long. Meanwhile, the MIRSI 23L 'do nothing'	CAP1616 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 mileage is used as a proxy using the theory that the shorter the track mileage, the less greenhouse gases are emitted. With regards to the 'do nothing' scenario track lengths, the ROSUN 23R 'do nothing' scenario track is 58.51km	be required to manage aircraft separation distances. The track mileage of Option 7B L is 52.09km (28.13nm). When compared to the 'do nothing' scenario, Option 7B L is shorter and is therefore expected to emit less greenhouse gases and this option is	Option 7B R has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 7B R is 52.73km (28.50nm). When compared to the 'do nothing' scenario, Option 7B R is shorter and is therefore expected to emit less greenhouse gases and this option is deemed to be of benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	be required to manage aircraft separation distances. The track mileage of Option 11B L is 51.97km (28.06nm). When compared to the 'do nothing' scenario, Option 11B L is shorter and is therefore expected to emit less greenhouse gases and this option is	Option 11B R has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 11B R is 52.88km (28.55nm). When compared to the 'do nothing' scenario, Option 11B R is shorter and is therefore expected to emit less greenhouse gases and this option is deemed to be of benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
Wider Society	Capacity and resilience		capacity; however, due to the reliance upon ground- based navigational aids, resilience could be significantly	capacity; however, due to the reliance upon ground-	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 aid will significantly increase operational resilience through the introduction of PBN.	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 aid will significantly increase operational resilience through the introduction of PBN.	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 aid will significantly increase operational resilience through the introduction of PBN.	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 aid will significantly increase operational resilience through the introduction of PBN.
Wider Society	Tranquillity		unless other areas have been identified through community engagement. No additional specific areas were identified by community engagement. The ROSUN 'do nothing' scenario overflies no AONBs and one National Park.	As per CAP1616, 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. No additional specific areas were identified by community engagement. The ROSUN 'do nothing' scenario overflies no AONBs and one National Park. The MIRSI 'do nothing' scenario overflies no AONBs and one National Park.	This option overflies no statutorily identified tranquillity receptors (AONBs or National Parks), nor any identified through community engagement and is therefore and is therefore deemed to be beneficial compared to the 'do nothing' scenario.	This option overflies no statutorily identified tranquillity receptors (AONBs or National Parks), nor any identified through community engagement and is therefore and is therefore deemed to be beneficial compared to the 'do nothing' scenario.	This option overflies no statutorily identified tranquillity receptors (AONBs or National Parks), nor any identified through community engagement and is therefore and is therefore deemed to be beneficial compared to the 'do nothing' scenario.	This option overflies no statutorily identified tranquillity receptors (AONBs or National Parks), nor any identified through community engagement and is therefore and is therefore deemed to be beneficial compared to the 'do nothing' scenario.

For arrivals from the north, the 'do nothing' scenario in terms of today's operation is based around the existing Option 7B has an IAF at 7,000ft to the north-west of the airport in the vicinity of Harwood. It is designed to facilitate a CDA profile to all

establish aircraft on final approach at 3,000ft for either Runway 23L or 23R.

From this location the route splits and heads south-east between Bolton and Bury but overhead Oldham. Both routes then turn right to

ROSUN and MIRSI Holds. A modal track has been derived to provide an accurate representation of what occurs

rent operations where most arrivals are radar vectored from the Hold. In addition to the modal tracks, a

today. The 'do nothing' scenario for arrivals consists of modal tracks that have been generated based upon

IAF 12 - OPTION 11B (MIRSI)

Option 11B has an IAF at 7,000ft to the north-west of the airport in the vicinity of Worsley, co-located with the IAF for option 05L/05R

From this location the route splits and heads south-east overhead Farnworth, then heads east, just to the north of Prestwich overhead

Oldham. Both routes then turn right to establish aircraft on final approach at 3,000ft for either Runway 23L or 23R.

North 13. It is designed to facilitate a CDA profile to all runways.

Wider Society E	Siodiversity	Initial Options Appraisal: Qualitative	of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACS) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, 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. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage	of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change proposal will not have	will not have an impact on biodiversity as they do not involve ground- based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	based infrastructure. However, the change sponsor acknowledges	local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change proposai	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.
General Aviation	Access			No change to existing airspace arrangements. Any General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under extant operational arrangements.	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.
General Aviation / Ecommercial airlines i	cconomic impact from ncreased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for General Aviation/airlines.	No increase to effective capacity anticipated for continued use of extant procedures, therefore no economic benefit for General Aviation/airlines.	The introduction of 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	The introduction of 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	The introduction of 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	The introduction of 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	and periods of level flight in the approach phase. In the case of the ROSUN 23L 'do nothing' scenario the track length is 54.13km (29.23nm) long. Meanwhile, the	and periods of level flight in the approach phase. In the	Option 7B L supports continuous descent approaches, 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 52.09km (28.13nm) long. When compared to the ROSUN 'do nothing' scenario, Option 7B L is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore, this option is deemed to be beneficial in terms of fuel burn. More indepth analysis will be carried out in Stage 3 to confirm.	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	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	conducted in Stage 3. Therefore, to enable a comparison, the logic
Commercial airlines	Fraining costs	Initial Options Appraisal: Qualitative	Standard training would be applicable for existing procedures which would be practised by crews through existing simulator exercises.	Standard training would be applicable for existing procedures which would be practised by crews through existing simulator exercises.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.
Commercial airlines (Other costs	Initial Options Appraisal: Qualitative	other costs for commercial airlines - there may be costs associated with maintaining legacy systems to continue flying conventional navigation but there are too many		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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	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 MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.
Airport / Air navigation service provider	nfrastructure costs	Initial Options Appraisal: Qualitative	equipment (operated by NERL) may become	No additional infrastructure is required at MAN to maintain extant conventional procedures; however, maintaining accessibility to current ground-based equipment (operated by NERL) may become prohibitively expensive should a CAP1781 RNAV substitution not be implemented prior to the proposed removal date.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the existing procedures.	No change to operational costs is attributable to maintaining the existing procedures.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	No deployment costs applicable to extant procedures	No deployment costs applicable to extant procedures	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.
Safety Assessment S	afety Assessment	Initial Options Appraisal: Qualitative	conventional procedures. Following the removal of ground-based navigational aids supporting the existing	conventional procedures. Following the removal of	The only hazard that was identified was a potential conflict with MAN proposed SIDs that could cause a possible loss of horizontal/vertical separation, causing an increase in ATCO workload. This hazard can be mitigated through the design process. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	proposed SIDs that could cause a possible loss of horizontal/vertical	The only hazard that was identified was a potential conflict with MAN proposed SIDs that could cause a possible loss of horizontal/vertical separation, causing an increase in ATCO workload. This hazard can be mitigated through the design process. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	The only hazard that was identified was a potential conflict with MAN proposed SIDs that could cause a possible loss of horizontal/vertical separation, causing an increase in ATCO workload. This hazard can be mitigated through the design process. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.

ecember 2022, which would have a significant impact December 2022, which would have a significant impact equal/neutral in terms of the remaining criteria because there is no - worse in terms of Air Quality. equal/neutral in terms of the remaining criteria because there is no increased effective capacity. n capacity and resilience. The existing arrival equal/neutral in terms of the remaining criteria because there is no equal/neutral in terms of the remaining criteria because there is on capacity and resilience. The existing arrival hange when compared to today's operation. change when compared to today's operation. rangements do not enable continuous descent rrangements do not enable continuous descent hange when compared to today's operation. no change when compared to today's operation. roaches from 7,000ft, which could lead to a greater approaches from 7,000ft, which could lead to a greater At this time, it is not possible to fully determine the safety At this time, it is not possible to fully determine the safety lume of fuel burn, emissions and noise at lower volume of fuel burn, emissions and noise at lower mplications of this specific option. The change sponsor has identified At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified At this time, it is not possible to fully determine the safety vels. In terms of Tranquillity, Biodiversity, General levels. In terms of Tranquillity, Biodiversity, General that there may be some possible conflicts with some routes operated | implications of this specific option. The change sponsor has identified | that there may be some possible conflicts with some routes operated | implications of this specific option. The change sponsor has viation access and economic impact, the 'do nothing Aviation access and economic impact, the 'Do Nothing by adiacent airports, but the exact nature of these conflicts is unclear | that there may be some possible conflicts with some routes operated | by adiacent airports, but the exact nature of these conflicts is unclear | identified that there may be some possible conflicts with some at this stage. Further analysis and engagement is required in Stage 3 by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 routes operated by adjacent airports, but the exact nature of seline' provides minimal/no change to today's baseline' provides minimal/no change to today's at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this. and 4 of the CAP1616 process to determine this. these conflicts is unclear at this stage. Further analysis and erations. Furthermore, there are very limited costs operations. Furthermore, there are very limited costs engagement is required in Stage 3 and 4 of the CAP1616 process curred as a result of this scenario. From a safety incurred as a result of this scenario. From a safety and 4 of the CAP1616 process to determine this. spective, it is assumed that current MAN operations perspective, it is assumed that current MAN operation urthermore, this option has been assessed in isolation rather than a Furthermore, this option has been assessed in isolation rather than as to determine this are safe. Following the removal of the DVORs, it is are safe. Following the removal of the DVORs, it is a set of design options as part of a wider system/runway pair. rthermore, this option has been assessed in isolation rather than as a set of design options as part of a wider system/runway pair. knowledged that ATCO workload may increase due acknowledged that ATCO workload may increase due Additional analysis will be required in Stage 3 to determine the a set of design options as part of a wider system/runway pair. Additional analysis will be required in Stage 3 to determine the urthermore, this option has been assessed in isolation rather to the enduring requirement for radar vectoring. to the enduring requirement for radar vectoring. cumulative impact of this option when compared to all the other Additional analysis will be required in Stage 3 to determine the cumulative impact of this option when compared to all the other than as a set of design options as part of a wider system/runway imulative impact of this option when compared to all the other pair. Additional analysis will be required in Stage 3 to determine the cumulative impact of this option when compared to all the Based on performance in the IOA, Option 7B L has been deemed as Based on performance in the IOA, Option 11B L has been deemed as other options. the Preferred option, as it overflies the fewest population when Based on performance in the IOA, Option 7B R has been deemed as the Favourable option, as it overflies the second fewest population ompared to other design options (originating from the IAF). the Preferred option, as it overflies the fewest population when when compared to other design options (originating from the IAF). mpared to other design options (originating from the IAF). ased on performance in the IOA, Option 11B R has been dee as the Favourable option, as it overflies the second fewest oopulation when compared to other design options (originating

better in terms of Noise Impact, Greenhouse Gases, Fuel Burn,

ranquillity, Capacity and resilience, and Economic impact from

increased effective capacity.

When compared to the 'do nothing' scenario, Option 7B R performs:

better in terms of Noise Impact, Greenhouse Gases, Fuel Burn,

Tranquillity, Capacity and resilience, and Economic impact from

ncreased effective capacity.

When compared to the 'do nothing' scenario, Option 11B L performs:

better in terms of Noise Impact, Greenhouse Gases, Fuel Burn,

Tranquillity, Capacity and resilience, and Economic impact from

ncreased effective capacity.

When compared to the 'do nothing' scenario, Option 11B R

better in terms of Noise Impact, Greenhouse Gases, Fuel Burn,

Franquillity, Capacity and resilience, and Economic impact from

Summary of Analysis The 'do nothing' scenario in relation to this ACP is not a The 'do nothing' scenario in relation to this ACP is not a When compared to the 'do nothing' scenario, Option 7B L performs:

iviable following the removal of the DVOR beacons in Junyiable following the removal of the DVOR beacons in

riable option as it does not provide a sustainable

solution in terms of airspace modernisation and is

able option as it does not provide a sustainable

olution in terms of airspace modernisation and is

	elope: Kunway 23	NOTER 3,500TE (Ba	seline ROSUN/MIRSI)	ING' BASELINE	IAF STEAK - O	PTION 1A (MIRSI)	IAF 4 - OPTION	7A (ROSUN)	IAF 3 - OPTIO	N 8A (MIRSI)	IAF 12 - OP	TION 11A (MIRSI)
				n terms of today's operation is based around the existing and to provide an accurate representation of what occurs		e vicinity of Aspull. It is designed to facilitate a CDA profile to all runway: Prestwich and Oldham but north of Manchester city centre. Both routes		vicinity of Harwood. It is designed to facilitate a CDA profile to all	Option 8A has an IAF at 7,000ft to the north-west of the airport in the vic Middlebrook Stadium), co-located with the IAF for option 05L/05R North		Option 11A has an IAF at 7,000ft to the north-west of the airport in the It is designed to facilitate a CDA profile to all runways.	e vicinity of Worsley, co-located with the IAF for option 05L/05R North
				modal tracks that have been generated based upon ored from the Hold. In addition to the modal tracks, a	then turn right to establish aircraft on final approach at 3,500ft for ei The descent gradient to the FAF is 2.99%/1.71° for Runway 23L and 2	ither Runway 23L or 23R.	From this location the route splits and heads south-east between Bolt establish aircraft on final approach at 3,500ft for either Runway 23L o		From this location the route splits and heads east, to the south of Bury an approach at 3.500ft for either Runway 23L or 23R.		From this location the route splits and heads south-east overhead Far Both routes then turn right to establish aircraft on final approach at 3	nworth, then heads east, just to the north of Prestwich overhead Oldhai .500ft for either Runway 23L or 23R.
			polygon has also been created that represents an area		optimum for low noise approaches but within the acceptable range fi		The descent gradient to the FAF is 3.64%/2.09° for Runway 23L and 3 optimum range for low noise approaches and within the acceptable range.	53%/2.02° for Runway 23R. These gradients are within the	The descent gradient to the FAF is 2.84%/1.63° for Runway 23L and 2.76 low noise approaches but within the acceptable range for CDAs defined within the acceptable range.			specifically for Runways 05L/05R (05L/05R 2,000ft FAF option 13), whe
			conducted on this transition was based on the modal t	rack created using Noise and Track Keeping data from an ig area where appropriate. All data is based on current							The descent gradient to the FAF is 3.59%/2.05° for Runway 23L and 3 range for low noise approaches and within the acceptable range for C	.44%/1.97° for Runway 23R. These gradients are within the optimum
				he distance between the Arrival End of Runway and the								
								I				
Communities	Noise impact on health and	Level of Analysis Initial Options Appraisal:	For comparison purposes within the IOA, for Runway	For comparison purposes within the IOA, for Runway		Runway 23R In terms of potential noise impact, Option 1A R overflies	Runway 23L In terms of potential noise impact, Option 7A L overflies	Runway 23R In terms of potential noise impact, Option 7A R overflies	Runway 23L In terms of potential noise impact, Option 8A L overflies approximately	Runway 23R In terms of potential noise impact, Option 8A R overflies	Runway 23L In terms of potential noise impact, Option 11A L overfiles approximat	
	quality of life	Qualitative	nothing' scenario. In terms of potential noise impact,		buildings. When compared to the 'do nothing' scenario, this option	al approximately 292,000 people and approximately 132,350 residential buildings. When compared to the 'do nothing' scenario, this option	buildings. When compared to the 'do nothing' scenario, this option	residential buildings. When compared to the 'do nothing'		buildings. When compared to the 'do nothing' scenario, this option	compared to the 'do nothing' scenario, this option overflies fewer peo	ple buildings. When compared to the 'do nothing' scenario, this option
			the ROSUN 'do nothing' scenario overflies approximately 409,800 people and approximately	overflies approximately 368,800 people and approximately 167,550 residential buildings.	overflies fewer people and residential buildings and as such is seen as beneficial.	s overflies fewer people and residential buildings and as such is seen as beneficial.	 overflies fewer people and residential buildings and as such is seen as beneficial. 	scenario, this option overflies fewer people and residential buildings and as such is seen as beneficial.	and residential buildings and as such is seen as beneficial.	overflies fewer people and residential buildings and as such is seen as beneficial.	s and residential buildings and as such is seen as beneficial.	overflies fewer people and residential buildings and as such is seen beneficial.
			185,700 residential buildings. Westerly arrivals for Runway 23L are compared to a	Westerly arrivals for Runway 23R are compared to a modal track, which is based on the MIRSI 'do nothing'								
			modal track, which is based on the MIRSI 'do nothing' scenario from the West and Southwest. In terms of	scenario from the West and Southwest. In terms of potential noise impact, this scenario overflies								
			potential noise impact, this scenario overflies approximately 753,900 people and approximately	approximately 717,300 people and approximately 325,900 residential buildings.								
Communities	Air Quality	Initial Options Appraisal:	342,550 residential buildings. No change to air quality is predicted in maintaining	No change to air quality is predicted in maintaining	Option 1A Loverflies eight AOMAs, having said that, as per CAP1616	i. Ootion 1A R overflies eight AOMAs, having said that, as per CAP1616	. Option 7A Loverflies seven AOMAs, having said that, as per CAP1616	Option 7A R overflies seven AOMAs, having said that, as per	Option 8A L overflies eight AQMAs, having said that, as per CAP1616,	Option 8A R overflies eight AOMAs, having said that, as per CAP1616	Ootion 11A L overflies eight AOMAs, having said that, as per CAP1616	5. Option 11A R overflies eight AOMAs, having said that, as per
		Qualitative	baseline conditions, the majority of the extant procedures involves overflight above 1,000ft, other	baseline conditions, the majority of the extant procedures involves overflight above 1,000ft, other	para B74, due to mixing and dispersion, the impact on air quality		para B74, due to mixing and dispersion, the impact on air quality	CAP1616, para B74, due to mixing and dispersion, the impact on	para B74, due to mixing and dispersion, the impact on air quality above		para B74, due to mixing and dispersion, the impact on air quality abo	
			than the areas in the immediate vicinity or final approach to MAN. For safety reasons, aircraft are	than the areas in the immediate vicinity or final approach to MAN. For safety reasons, aircraft are	immediate area surrounding the airport that may be overflown below	w immediate area surrounding the airport that may be overflown below	w immediate area surrounding the airport that may be overflown below	areas within the immediate area surrounding the airport that ma	y immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft are		w immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft a	
			required to establish a safe and stable flight profile during the final approach phases of flight.	required to establish a safe and stable flight profile during the final approach phases of flight.	final approach phases of flight. Therefore, overall, when compared to	final approach phases of flight. Therefore, overall, when compared to	final approach phases of flight. Therefore, overall, when compared to	flight profile during the final approach phases of flight. Therefore,	approach phases of flight. Therefore, overall, when compared to the 'do	final approach phases of flight. Therefore, overall, when compared to		do flight profile during the final approach phases of flight. Therefore,
			overflies 7 AQMAs and the MIRSI 'do nothing' scenario	overflies 6 AQMAs and the MIRSI 'do nothing' scenario		the 'do nothing' scenario, this option is deemed to be of benefit as it overflies fewer AQMAs.	the 'do nothing' scenario, this option is deemed to be of equally beneficial as it overflies the same number of AQMAs.	overall, when compared to the 'do nothing' scenario, this option i deemed to be of dis-benefit as it overflies more AQMAs.	s nothing' scenario, this option is deemed to be of benefit as it overflies fewer AQMAs.	the 'do nothing' scenario, this option is deemed to be of benefit as it overflies fewer AQMAs.	nothing' scenario, this option is deemed to be of benefit as it overflies fewer AQMAs.	overall, when compared to the 'do nothing' scenario, this option is deemed to be of benefit as it overflies fewer AQMAs.
			overflies 9 AQMAs. Overflight of these AQMAs occurs when the aircraft is above 1,000ft.	overflies 9 AQMAs. Overflight of these AQMAs occurs when the aircraft is above 1,000ft.								
Vider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current arrival operations do not enable continuous descent approaches to all runways at MAN from	Current arrival operations do not enable continuous descent approaches to all runways at MAN from	Option 1A L has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still	Option 1A R has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still			Option 8A L has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still be required		Option 11A L has been designed to support continuous descent appro operations. An element of tactical radar vectoring may still be require	
					be required to manage aircraft separation distances. The track mileage of Option 1A L is 62.79km (33.90nm). When	be required to manage aircraft separation distances. The track mileage of Option 1A R is 63.92km (34.51nm). When	be required to manage aircraft separation distances. The track mileage of Option 7A L is 56.85km (30.69nm). When	still be required to manage aircraft separation distances. The track mileage of Option 7A R is 57.61km (31.11nm). When	to manage aircraft separation distances. The track mileage of Option 8A L is 65.00km (35.10nm). When	be required to manage aircraft separation distances. The track mileage of Option 8A R is 65.92km (35.60nm). When	to manage aircraft separation distances. The track mileage of Option 11A L is 57.16km (30.87nm). When	be required to manage aircraft separation distances. The track mileage of Option 11A R is 58.18km (31.42nm). When
			radar vectoring. Existing procedures do not support optimal aircraft performance and therefore are	radar vectoring. Existing procedures do not support optimal aircraft performance and therefore are	compared to the 'do nothing' scenario, Option 1A L is shorter and is therefore expected to emit less greenhouse gases and this option is	compared to the 'do nothing' scenario, Option 1A R is shorter and is therefore expected to emit less greenhouse gases and this option is	therefore expected to emit more greenhouse gases and this option is	is therefore expected to emit less greenhouse gases and this		therefore expected to emit less greenhouse gases and this option is	compared to the 'do nothing' scenario, Option 11A L is shorter and is therefore expected to emit less greenhouse gases and this option is	compared to the 'do nothing' scenario, Option 11A R is shorter and therefore expected to emit less greenhouse gases and this option is
					deemed to be of benefit. More in-depth analysis at Stage 3 is require to confirm the exact volumes of greenhouse gases released.	d deemed to be of benefit. More in-depth analysis at Stage 3 is require to confirm the exact volumes of greenhouse gases released.	d deemed to be of dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	option is deemed to be of benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases	e deemed to be of benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	deemed to be of benefit. More in-depth analysis at Stage 3 is require to confirm the exact volumes of greenhouse gases released.	d deemed to be of benefit. More in-depth analysis at Stage 3 is required confirm the exact volumes of greenhouse gases released.	to deemed to be of benefit. More in-depth analysis at Stage 3 is requi to confirm the exact volumes of greenhouse gases released.
			sponsor to conduct quantitative fuel burn or emissions	e CAP1616 process, there is no requirement for a change sponsor to conduct quantitative fuel burn or emissions	B			released.				
				analysis; this will be conducted in Stage 3. In order to make a comparison, track mileage is used as a proxy								
			less greenhouse gases are emitted.	using the theory that the shorter the track mileage, the less greenhouse gases are emitted.	•							
				With regards to the 'do nothing' scenario track lengths, the ROSUN 23R 'do nothing' scenario track is 58.51km	•							
				(31.59nm) long. is Meanwhile, the MIRSI 23R 'do nothing' scenario track								
			86.15km (46.52nm) in length.	is 72.00km (38.88nm) in length.								
Vider Society	Capacity and resilience	Initial Options Appraisal:	Maintaining outant procedures would maintain surron	Maintaining output procedures would maintain current	t The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	The introduction of DDN courter is connected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by	The introduction of PBN routes is expected to deliver benefits by
vider society	Capacity and resilience	Qualitative	capacity; however, due to the reliance upon ground-	capacity; however, due to the reliance upon ground-	increasing airspace capacity which subsequently leads to more	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more	increasing airspace capacity which subsequently leads to more	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the	increasing airspace capacity which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground	increasing airspace capacity which subsequently leads to more
			affected, following the removal of the DVOR in December 2022.	y based navigational aids, resilience could be significantly affected, following the removal of the DVOR in December 2022.	ground). The reduction of the reliance on outdated ground-based navigational aid will significantly increase operational resilience	ground). The reduction of the reliance on outdated ground-based navigational aid will significantly increase operational resilience	ground). The reduction of the reliance on outdated ground-based navigational aid will significantly increase operational resilience	ground). The reduction of the reliance on outdated ground-based	The reduction of the reliance on outdated ground-based navigational aid will significantly increase operational resilience through the introduction	ground). The reduction of the reliance on outdated ground-based		aid ground). The reduction of the reliance on outdated ground-based
			becember 2022.	December 2022.	through the introduction of PBN.	through the introduction of PBN.	through the introduction of PBN.	through the introduction of PBN.	of PBN.	through the introduction of PBN.	of PBN.	through the introduction of PBN.
Vider Society	Tranquillity	Initial Options Appraisal:	As per CAP1616, Appendix B, para B76, change	As per CAP1616, Appendix B, para B76, change	This option overflies no statutorily identified tranquillity receptors	This option overfiles no AONBs and one National Park. It is therefore	This pation quartiles no statutorile identified transmillite recenture	This option overflies no AONBs and one National Park. It is	This option overflies no statutorily identified tranquillity receptors	This option overflies no AONBs and one National Park. It is therefore	This pation quefflies no statutarily identified tranquillity recentors	This option overflies no AONBs and one National Park. It is therefor
videi society	Tranquinty	Qualitative	sponsors are required to consider Tranquillity with	sponsors are required to consider Tranquillity with	(AONBs or National Parks), nor any identified through community engagement and is therefore deemed to be beneficial compared to	comparable to the 'do nothing' scenario and assessed as neutral.	(AONBs or National Parks), nor any identified through community engagement and is therefore deemed to be beneficial compared to	therefore comparable to the 'do nothing' scenario and assessed	(AONBs or National Parks), nor any identified through community engagement and is therefore and is therefore deemed to be beneficial	comparable to the 'do nothing' scenario and assessed as neutral.	(AONBs or National Parks), nor any identified through community engagement and is therefore and is therefore deemed to be beneficial	comparable to the 'do nothing' scenario and assessed as neutral.
			unless other areas have been identified through	unless other areas have been identified through			the 'do nothing' scenario.	as neud al.	compared to the 'do nothing' scenario.		compared to the 'do nothing' scenario.	
			were identified by community engagement.	community engagement. No additional specific areas were identified by community engagement. The ROSUN 'do nothing' scenario overfiles no AONBs								
			and one National Park.	and one National Park. d The MIRSI 'do nothing' scenario overflies no AONBs an								
			one National Park.	one National Park.								
	A										The change sponsor has mapped the designated Sites of Special Scien	
Vider Society	Biodiversity	Initial Options Appraisal: Qualitative	of Special Scientific Interest (SSSIs), Special Protection	of Special Scientific Interest (SSSIs), Special Protection	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special		Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special	The change sponsor has mapped the designated sites of special scien Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on th
			RAMSAR sites, as identified on the DEFRA MAGIC Map	RAMSAR sites, as identified on the DEFRA MAGIC Map.	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact or	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that	the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states	MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that	MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact
						local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change				local air quality from aircraft above 1,000ft. Furthermore, CAP1616,	quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendis para B80. states that in general, airspace change proposal will not ha	B, local air quality from aircraft above 1,000ft. Furthermore, CAP161
			Furthermore, CAP1616, Appendix B, para B80, states	Furthermore, CAP1616, Appendix B, para B80, states	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	proposal will not have an impact on biodiversity as they do not	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure.	an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any	proposal will not have an impact on biodiversity as they do not
			an impact on biodiversity as they do not involve groun		d- acknowledges that any potential impact to the designated sites	acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by Subject	acknowledges that any potential impact to the designated sites	However, the change sponsor acknowledges that any potential	potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.		potential impact to the designated sites around MAN will be assessed	
			acknowledges that any potential impact to the	acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage	Matter Experts.	Matter Experts.	Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts.	Suges of the Per process by Subject Matter Experts.	Matter Experts.	a sage so the see process by subject matter expensi	Matter Experts.
				3 of the ACP process by Subject Matter Experts.								
					I							
Seneral Aviation	Access	Initial Options Appraisal:	No change to existing airspace arrangements. Any	No change to existing airspace arrangements. Any	No adverse impact to General Aviation access is anticipated as a		No adverse impact to General Aviation access is anticipated as a		No adverse impact to General Aviation access is anticipated as a consequence of this ACP, All Visual Reference Points and existing Letters	No adverse impact to General Aviation access is anticipated as a	No adverse impact to General Aviation access is anticipated as a	No adverse impact to General Aviation access is anticipated as a
		Qualitative	General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under extant operational arrangements.	General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under extant operational arrangements.	consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to	consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to		Letters of Agreement pertaining to General Aviation access will be	consequence of this ACP. All Visual Reference Points and existing Letters e of Agreement pertaining to General Aviation access will be reviewed and n updated (where applicable) prior to implementation to ensure their	Letters of Agreement pertaining to General Aviation access will be		ers consequence of this ACP. All Visual Reference Points and existing and Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation
			and operational distinguishes.	and the operation of differents.		ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.			n updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.			
					as part of stage 3 activities.	TO SERVICE AS PAIR OF STARRE 3 ACTIVITIES.	oc. revieweu as part of stage 3 activities.	requirements will be reviewed as part of Stage 3 activities.	por port of stage 3 activities.	www.sc.revieweu as part of Stage 3 activities.	יישק איים sage a activities.	ue revieweu as part ui stage s activities.
General Aviation /	Economic impact from	Initial Options Appraisal:	No increase to effective capacity anticipated for	No increase to effective capacity anticipated for	The introduction of PBN is expected to deliver benefits by increasing	The introduction of PBN is expected to deliver benefits by increasing	The introduction of PBN is expected to deliver benefits by increasing	The introduction of PBN is expected to deliver benefits by	The introduction of PBN is expected to deliver benefits by increasing	The introduction of PBN is expected to deliver benefits by increasing	The introduction of PBN is expected to deliver benefits by increasing	The introduction of PBN is expected to deliver benefits by increasin
	increased effective capacity	Qualitative	continued use of extant procedures, therefore no economic benefit for General Aviation/airlines.	continued use of extant procedures, therefore no economic benefit for General Aviation/airlines.	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			increasing airspace capacity which in turn will lead to more	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	airspace capacity which in turn will lead to more predictable flight	airspace capacity which in turn will lead to more predictable flight pat and fewer delays (both in the air or on the ground). This is expected to	ths airspace capacity which in turn will lead to more predictable flight
			,		expected to facilitate economic benefit by potentially increasing the	expected to facilitate economic benefit by potentially increasing the	expected to facilitate economic benefit by potentially increasing the	ground). This is expected to facilitate economic benefit by	facilitate economic benefit by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing	expected to facilitate economic benefit by potentially increasing the	facilitate economic benefit by potentially increasing the frequency of	expected to facilitate economic benefit by potentially increasing the
					and increasing cargo tonnage carried.	and increasing cargo tonnage carried.	and increasing cargo tonnage carried.	increasing passenger numbers and increasing cargo tonnage carried.	cargo tonnage carried.	and increasing cargo tonnage carried.	cargo tonnage carried.	and increasing cargo tonnage carried.
Seneral Aviation / commercial airlines	ruel burn	Initial Options Appraisal: Qualitative			overall amount of fuel burnt. There is no requirement within Stage 2	overall amount of fuel burnt. There is no requirement within Stage 2	overall amount of fuel burnt. There is no requirement within Stage 2	the overall amount of fuel burnt. There is no requirement within		overall amount of fuel burnt. There is no requirement within Stage 2	Option 11A L supports continuous descent approaches, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 (of overall amount of fuel burnt. There is no requirement within Stage
			and periods of level flight in the approach phase. In the	and periods of level flight in the approach phase. In the	Stage 3. Therefore, to enable a comparison, the logic applied is that	Stage 3. Therefore, to enable a comparison, the logic applied is that	Stage 3. Therefore, to enable a comparison, the logic applied is that	conducted in Stage 3. Therefore, to enable a comparison, the	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	Stage 3. Therefore, to enable a comparison, the logic applied is that	Stage 3. Therefore, to enable a comparison, the logic applied is that the	ne Stage 3. Therefore, to enable a comparison, the logic applied is tha
			length is 54.13km (29.23nm) long. Meanwhile, the	length is 58.51km (31.59nm) long. Meanwhile, the	option, it is 62.79km (33.90nm) long. When compared to the MIRSI	option, it is 63.92km (34.51nm) long. When compared to the MIRSI	option, it is 56.85km (30.69nm) long. When compared to the ROSUN	burnt. With regards to this option, it is 57.61km (31.11nm) long.	shorter the track length, the less fuel is burnt. With regards to this option, it is 65.00km (35.10nm) long. When compared to the MIRSI 'do	option, it is 65.92km (35.60nm) long. When compared to the MIRSI	option, it is 57.16km (30.87nm) long. When compared to the MIRSI	
			rvinSi 23L 'do nothing' track is 86.15km (46.52nm) in length.	length.		assumed that it will require a smaller amount of fuel burn, therefore,	assumed that it will require a larger amount of fuel burn, therefore,	7A R is shorter and at this stage it is assumed that it will require a	nothing' scenario, Option 8A L is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore, this option is	assumed that it will require a smaller amount of fuel burn, therefore,	that it will require a smaller amount of fuel burn, therefore, this option	
					this option is deemed to be beneficial in terms of fuel burn. More in- depth analysis will be carried out in Stage 3 to confirm.	this option is deemed to be beneficial in terms of fuel burn. More in- depth analysis will be carried out in Stage 3 to confirm.	this option is deemed to be a dis-benefit in terms of fuel burn. More in depth analysis will be carried out in Stage 3 to confirm.	be beneficial in terms of fuel burn. More in-depth analysis will be	deemed to be beneficial in terms of fuel burn. More in-depth analysis wil be carried out in Stage 3 to confirm.	I this option is deemed to be beneficial in terms of fuel burn. More in- depth analysis will be carried out in Stage 3 to confirm.	deemed to be beneficial in terms of fuel burn. More in-depth analysis be carried out in Stage 3 to confirm.	will this option is deemed to be beneficial in terms of fuel burn. More is depth analysis will be carried out in Stage 3 to confirm.
								carried out in Stage 3 to confirm.				
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative			It is anticipated that no extra Pilot/Crew training will be required to n enable pilots to fly the new PBN procedures as PBN has become a	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a		It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a
			existing simulator exercises.	existing simulator exercises.	common navigation standard across the world.	common navigation standard across the world.	common navigation standard across the world.	become a common navigation standard across the world.	common navigation standard across the world.	common navigation standard across the world.	common navigation standard across the world.	common navigation standard across the world.
Commercial airlines	Other costs	Initial Options Appraisal:	It is not proportionate for MAN to assess potential		Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight		Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight
		Qualitative	associated with maintaining legacy systems to continu	e associated with maintaining legacy systems to continue	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not
			variables (e.g., aircraft types, on-board system	variables (e.g., aircraft types, on-board system	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlin of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.
			capability etc.) to consider these effectively.	capability etc.) to consider these effectively.	I							
		Initial Options Appraisal:	No additional infrastructure is required at MAN to	No additional infrastructure is required at MAN to	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options relate	There are no expected additional infrastructure costs. All options	There are no expected additional infrastructure costs. All options relai	te There are no expected additional infrastructure costs. All options
Nirport / Air	Infrastructure costs						relate to the implementation of PBN and no additional infrastructure		to the implementation of PBN and no additional infrastructure is	relate to the implementation of PBN and no additional infrastructure		relate to the implementation of PBN and no additional infrastructu
Nirport / Air navigation service provider	Infrastructure costs	Qualitative	maintain extant conventional procedures; however, maintaining accessibility to current ground-based	maintain extant conventional procedures; however, maintaining accessibility to current ground-based	is anticipated to be required as the introduction of PBN reduces the	is anticipated to be required as the introduction of PBN reduces the	is anticipated to be required as the introduction of PBN reduces the		anticipated to be required as the introduction of PBN reduces the	is anticipated to be required as the introduction of PBN reduces the		is anticipated to be required as the introduction of PBN reduces the
	Infrastructure costs									is anticipated to be required as the introduction of PBN reduces the	anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigati aids are no longer needed.	is anticipated to be required as the introduction of PBN reduces the
	Infrastructure costs		maintaining accessibility to current ground-based equipment (operated by NERL) may become prohibitively expensive should a CAP1781 RNAV	maintaining accessibility to current ground-based equipment (operated by NERL) may become	is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based	is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based	is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based	PBN reduces the reliance on ground infrastructure, in particular	anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation	is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based	reliance on ground infrastructure, in particular ground-based navigati	is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based

Airport / Air	Operational costs	Initial Options Appraisal:	No change to operational costs is attributable to	No change to operational costs is attributable to	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This existing	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This existing	ATC at MAN is contracted out to a third-party organisation. This
navigation service		Qualitative	maintaining the existing procedures.	maintaining the existing procedures.	existing commercial contract between MAN and their chosen ANSP is	existing commercial contract between MAN and their chosen ANSP is	existing commercial contract between MAN and their chosen ANSP is	existing commercial contract between MAN and their chosen	commercial contract between MAN and their chosen ANSP is considered	existing commercial contract between MAN and their chosen ANSP is	commercial contract between MAN and their chosen ANSP is considered	existing commercial contract between MAN and their chosen ANSP is
provider		4			considered to be an ongoing cost. Some operational costs are	considered to be an ongoing cost. Some operational costs are	considered to be an ongoing cost. Some operational costs are		to be an ongoing cost. Some operational costs are anticipated with	considered to be an ongoing cost. Some operational costs are	to be an ongoing cost. Some operational costs are anticipated with	considered to be an ongoing cost. Some operational costs are
		4			anticipated with respect to the implementation of new procedures	anticipated with respect to the implementation of new procedures		are anticipated with respect to the implementation of new	respect to the implementation of new procedures and training of	anticipated with respect to the implementation of new procedures	respect to the implementation of new procedures and training of	anticipated with respect to the implementation of new procedures
		4							controllers; however, these cannot be identified at this stage of the ACP		controllers; however, these cannot be identified at this stage of the ACP	
		4			stage of the ACP process.	stage of the ACP process.	stage of the ACP process.	identified at this stage of the ACP process.	process.	stage of the ACP process.	process.	stage of the ACP process.
		4										
		4										
Airport / Air	Deployment costs	Initial Options Appraisal:	No deployment costs applicable to extant procedures	No deployment costs applicable to extant procedures	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This			ATC at MAN is contracted out to a third-party organisation. This existing		ATC at MAN is contracted out to a third-party organisation. This existing	
navigation service		Qualitative			considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are	existing commercial contract between MAN and their chosen	commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with	considered to be an ongoing cost. Some deployment costs are	commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with	considered to be an ongoing cost. Some deployment costs are
provider		4				anticipated with respect to the implementation of new procedures		are anticipated with respect to the implementation of new	respect to the implementation of new procedures and training of	anticipated with respect to the implementation of new procedures	respect to the implementation of new procedures and training of	anticipated with respect to the implementation of new procedures
		4							controllers: however, these cannot be identified at this stage of the ACP			
		4			stage of the ACP process.	stage of the ACP process.	stage of the ACP process.	identified at this stage of the ACP process.	nrnress	stage of the ACP process.	nrocess	stage of the ACP process.
		4									F	
		4										
Safety Assessment	Safety Assessment	Initial Options Appraisal:	The 'do nothing' scenario assumes that current	The 'do nothing' scenario assumes that current					The only hazard that was identified was a potential conflict with MAN		The only hazard that was identified was a potential conflict with MAN	The only hazard that was identified was a potential conflict with MAN
		Qualitative	operations at MAN are safe including use of the extant		proposed SIDs that could cause a possible loss of horizontal/vertical			MAN proposed SIDs that could cause a possible loss of	proposed SIDs that could cause a possible loss of horizontal/vertical	proposed SIDs that could cause a possible loss of horizontal/vertical	proposed SIDs that could cause a possible loss of horizontal/vertical	proposed SIDs that could cause a possible loss of horizontal/vertical
		4	conventional procedures. Following the removal of	conventional procedures. Following the removal of			separation, causing an increase in ATCO workload. This hazard can be		separation, causing an increase in ATCO workload. This hazard can be	separation, causing an increase in ATCO workload. This hazard can be		separation, causing an increase in ATCO workload. This hazard can be
		4			mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be	workload. This hazard can be mitigated through the design	mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be
		1	SIDs, aircraft arriving at MAN would continuously require radar vectoring (should CAP1781 or a	SIDs, aircraft arriving at MAN would continuously require radar vectoring (should CAP1781 or a	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.		f conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.
		1	commercial agreement to maintain the existing	commercial agreement to maintain the existing	exact nature or all nazarus and iniugations.	exact nature or all nazarus and integations.	exact nature or an nazarus and mingadoris.	and mitigations.	nature of all nazarus and militigations.	exact flature of all flazarus and fillingations.	nature of all nazarus and mitigations.	exact nature or air nazarus and mitigations.
		4	navigational aid not be implemented), resulting in a	navigational aid not be implemented), resulting in a				and mogations.				
		4	potential increase in ATCO workload.	potential increase in ATCO workload.								
		4		ľ								
		4										
		Summary of Analysis					When compared to the 'do nothing' scenario, Option 7A L performs:					When compared to the 'do nothing' scenario, Option 11A R performs:
		r	viable option as it does not provide a sustainable	viable option as it does not provide a sustainable			- better in terms of Noise impact, Greenhouse Gases and Fuel Burn,		- better in terms of Noise impact, Air Quality, Greenhouse Gases, Fuel	- better in terms of Noise impact, Air Quality, Greenhouse Gases, Fuel		- better in terms of Noise impact, Air Quality, Greenhouse Gases, Fuel
		r	solution in terms of airspace modernisation and is	solution in terms of airspace modernisation and is		Burn, Capacity and resilience and Economic impact from increased effective capacity.	Tranquillity, Capacity and resilience and Economic impact from increased effective capacity.	- worse in terms of Air Quality better in terms of Noise impact. Greenhouse Gases. Fuel Burn.	Burn, Tranquillity, Capacity and resilience and Economic impact from increased effective capacity.	Burn, Capacity and resilience and Economic impact from increased effective capacity.	Tranquility, Fuel Burn, Capacity and resilience and Economic impact from increased effective capacity.	Burn, Capacity and resilience and Economic impact from increased effective capacity.
		r		unviable following the removal of the DVOR beacons in					- equal/neutral in terms of the remaining criteria because there is no	- equal/neutral in terms of the remaining criteria because there is no		- equal/neutral in terms of the remaining criteria because there is no
		r	on capacity and resilience. The existing arrival	on capacity and resilience. The existing arrival	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.	effective capacity.	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.
		r	arrangements do not enable continuous descent	arrangements do not enable continuous descent				- equal/neutral in terms of the remaining criteria because there is				
		,	approaches from 7,000ft, which could lead to a greater	approaches from 7,000ft, which could lead to a greater	At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety	no change when compared to today's operation.	At this time, it is not possible to fully determine the safety implications of	At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety implications of	At this time, it is not possible to fully determine the safety
		,	volume of fuel burn, emissions and noise at lower	volume of fuel burn, emissions and noise at lower			implications of this specific option. The change sponsor has identified				this specific option. The change sponsor has identified that there may be	
		,	levels. In terms of Tranquillity, Biodiversity, General	levels. In terms of Tranquillity, Biodiversity, General	that there may be some possible conflicts with some routes operated	that there may be some possible conflicts with some routes operated	that there may be some possible conflicts with some routes operated	At this time, it is not possible to fully determine the safety	some possible conflicts with some routes operated by adjacent airports,	that there may be some possible conflicts with some routes operated	some possible conflicts with some routes operated by adjacent airports,	
		,	Aviation access and economic impact, the 'do nothing				by adjacent airports, but the exact nature of these conflicts is unclear	implications of this specific option. The change sponsor has	but the exact nature of these conflicts is unclear at this stage. Further	by adjacent airports, but the exact nature of these conflicts is unclear		by adjacent airports, but the exact nature of these conflicts is unclear
		r	baseline' provides minimal/no change to today's	baseline' provides minimal/no change to today's				identified that there may be some possible conflicts with some	analysis and engagement is required in Stage 3 and 4 of the CAP1616	at this stage. Further analysis and engagement is required in Stage 3		at this stage. Further analysis and engagement is required in Stage 3
		,	operations. Furthermore, there are very limited costs			and 4 of the CAP1616 process to determine this. Furthermore, this option has been assessed in isolation rather than a	and 4 of the CAP1616 process to determine this.	routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and	process to determine this.	and 4 of the CAP1616 process to determine this.	process to determine this.	and 4 of the CAP1616 process to determine this.
		r	incurred as a result of this scenario. From a safety	incurred as a result of this scenario. From a safety	Furthermore, this option has been assessed in isolation rather than as	a set of design options as part of a wider system/runway pair.			Furthermore, this option has been assessed in isolation rather than as a	Eurthormore, this aption has been accorded in isolation rather than as	Eurthormore, this action has been accorded in isolation rather than as a	Eurthormore, this option has been assessed in isolation rather than as
		r		are safe. Following the removal of the DVORs, it is	Additional analysis will be required in Stage 3 to determine the	Additional analysis will be required in Stage 3 to determine the	a set of design options as part of a wider system/runway pair.	to determine this.	set of design options as part of a wider system/runway pair. Additional		set of design options as part of a wider system/runway pair. Additional	
		r			cumulative impact of this option when compared to all the other	cumulative impact of this option when compared to all the other	Additional analysis will be required in Stage 3 to determine the	to occurrence and	analysis will be required in Stage 3 to determine the cumulative impact		analysis will be required in Stage 3 to determine the cumulative impact	
		,	to the enduring requirement for radar vectoring.	to the enduring requirement for radar vectoring.	options.	options.	cumulative impact of this option when compared to all the other	Furthermore, this option has been assessed in isolation rather	of this option when compared to all the other options.	cumulative impact of this option when compared to all the other	of this option when compared to all the other options.	cumulative impact of this option when compared to all the other
		,			l'		options.	than as a set of design options as part of a wider system/runway		options.		options.
		,			Based on performance in the IOA, Option 1A L has been deemed as			pair. Additional analysis will be required in Stage 3 to determine	Based on performance in the IOA, Option 8A L has been deemed as the		Based on performance in the IOA, Option 11A L has been deemed as the	
		,				the Rejected, as it overflies the greater population when compared to		the cumulative impact of this option when compared to all the	Acceptable option, as it overflies the third fewest population when	Based on performance in the IOA, Option 8A R has been deemed as	Favourable option, as it overflies the second fewest population when	Based on performance in the IOA, Option 11A R has been deemed as
		,			other design options (originating from the IAF).	other design options (originating from the IAF).	the Preferred option, as it overflies the fewest population when	other options.	compared to other design options (originating from the IAF).	the Acceptable option, as it overflies the third fewest population when	compared to other design options (originating from the IAF).	the Favourable option, as it overflies the second fewest population
		,					compared to other design options (originating from the IAF).	L		compared to other design options (originating from the IAF).		when compared to other design options (originating from the IAF).
		,						Based on performance in the IOA, Option 7A R has been deemed				
		,			I			as the Preferred option, as it overflies the fewest population wher compared to other design options (originating from the IAF).				
		,			I			compared to dater design options (originating north the IAP).				
						L	L	I.		I.		

Arrival Envelope: Runway 23 South 3,000ft (Baseline DAYNE)

	DAVIE Hold. A modal track has been derived to provide an accurate representation of what occurs today. The for northing is cenario for arrivation consists of modal tracks that have been generate based upon current operations where most arrivals are radar vectored from the Hold. In addition to the modal tracks, a polygon has also been created that represents an area where current to precarious and approaches to MAIA are discipled upon the control of the product of the control of th		From this location the route splits and heads north-east, just to the west of Whaley Bridge and then overhead Glossops. Both routes then turn has left to establish in aircraft on final approach at 3,000ff for either Runnay 213 cm. 2578. Runnay 23R. These gradients on the FAF is 3.78%/2.17" for Runnay 23R. and 3.63%/2.08" for Runnay 23R. These gradients are within the optimum range for low noise approaches and within the acceptable range for CDAs defined within ICAO guidance. Onte		runways. From this location the route splits and heads north-east, to the west of Whaley Bridge and then overhead Glossop. Both routes then turn left to establish aircraft on final approach at 3,000ft for either Runway 23L or 23R.		98 and is designed to facilitate a CDA profile to all runways. OF from this location the route splits and heads north-east, just to the west of Whaley Bridge and then overhead Glossop. Both routes then turn left to establish aircraft on final approach at 3,000 ft or either flurmay 28 Lor 238. The descent gradent to the FAT is 1.467,237 *For flurmay 28 Lor at 358,726. For Runway 28.78. These gradients are within the optimum range for low noise approaches and within the acceptable range for CDAs defined within ICAO guidance.		and is designed to facilitate a CDA profile to all runways. If from this location the route splits and heads north-east between Macclesfield and Buxton, overhead Whaley Bridge and Glossop. Both routes then turn left to establish aircraft on final approach at 3,000ft for either Runway 23.0 or 23.8. The descent gradent to the FAE is 33.95/1.91* for Runway 23.4 and 3.21%/1.94* for Runway 23.8 and 3.21%/1.94* for Runway 23.8 and 3.21%/1.94* for Runway 23.8. Option 98 for Runway 23L was rejected at the DPE stage and has therefore not been assessed.		
Group	Impact Noise impact on health and	Level of Analysis Initial Options Appraisal:	Runway 23L Runway 23R For comparison purposes within the IOA, for Runway For comparison purposes within the IOA, for Runway	Runway 23L NOT ASSESSED	Runway 23R In terms of potential noise impact, Option 1B R overflies	Runway 23L In terms of potential noise impact, Option 68 Loverflies		Runway 23L y In terms of potential noise impact, Option 8B L overflies approximately	Runway 23R In terms of potential noise impact, Option 8B R overflies	Runway 23L NOT ASSESSED	Runway 23R In terms of potential noise impact, Option 9B R overflies
	quality of life	Qualitative	231, Southerly arrivals are compared to the DAN'S do nothing 'scenario. In terms of potential noise impact, the DAN'S do nothing 'scenario. In terms of potential noise impact, the DAN'S do nothing 'scenario overflies' approximately 147,700 people and approximately approximately 151,500 people and approximately 371,550 residential buildings.		buildings. When compared to the 'do nothing' scenario, this option overflies fewer people and residential buildings and as such is seen as beneficial.	buildings. When compared to the 'do nothing' scenario, this option so overfiles fewer people and residential buildings and as such is seen as beneficial.	70,800 people and approximately 34,150 residential buildings. When compared to the fivo nothing' scenario, this option overlines lewer people and residential buildings and as such is seen as beneficial.	73,900 people and approximately 83,700 residential buildings. When compared to the do nothing's scenario, this option overfiles fewer people and residential buildings and as such is seen as beneficial.	approximately 68,700 people and approximately 33,100 residential buildings. When compared to the 'on conting' scenario, this option overflies fewer people and residential buildings and as such is seen as beneficial.		approximately 61,600 people and approximately 29,300 residential buildings. When compared to the 'on onthing' scenario, this option overflies fewer 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 estant procedures involves overflight above 1,000ft, other than the areas in the immediate vicinity of final approach to MANI. For safety reasons, aircraft are required to establish as afe and stable flight profile during the final approach phases of flight. In terms of ADMAS, the DANNE 231 do nothing' scenario overflies 3 AQMAS. Overflight of these AQMA occurs when the aircraft is above 1,000ft.	hs	para 874, due to mixing and dispersion, the limpact on air quality above 1,000ft is not fillely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000ft, however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the	para 874, due to mixing and dispersion, the impact on air quality elabore 1,000 fits in onc likely to be significant. There are areas within the wimmediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the	para B7.4, due to mixing and dispersion, the impact on air quality above. 10,00th is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000th; however, for safety reasons, this is unavoidable, as aircraft an required to establish a safe and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to the do nothing scenario, this option to deemed to be equally beneficial as it overflies the same number of AQMAs.	immediate area surrounding the airport that may be overflown below 6_100fth; however, for safety reason, this is unavoidable as aircart are required to establish a safe and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to the 'do nothing' scream', this option is deemed to be equally beneficial as it overflies the same number of AQMAs.	para B74, due to mixing and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000ft, however, for safely reason, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to the do nothing secarario, this option is deemed to be equally beneficial as it overfiles the same number of AQMAs.		Option 98 Roverflies three AOMAK, having said that, as per CAP1616, para 873, due to minigar and dispersion, the impact on air quality above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below 1,000ft; however, for safety reasons, this is unavoidable, as aircraft are required to sclabible as afed and stable flight profile during the final approach phases of flight. Therefore, overall, when compared to the 40 not high scenario, this option is deemed to be equally beneficial as it overflies the same number of AQMAs.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current arrival operations of not enable continuous descent approaches be to all runways at MAM from 7,000ft. It must be noted that the eact 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 CAP1616 process, there is no requirement for a change sponsor to conduct quantitative help burn or emissions analysis; this will be conducted in Stage 3. In order to make a comparison, track inleage is used as a provy using the theory that the shorter the track mileage, the less greenhouse gases are emitted. With regards to the 'do nothing' scenario track lengths, the DAYNE 231. 'do nothing' scenario track is 62.74km (33.88mm) long.	ge s s		be required to manage aircraft separation distances. The track mileage of option field B. Li S. O.B.Mr. (27. O/Anm.). When compared to the 'do nothing' scenario, Option 68 L is shorter and is s therefore expected to emit less greenhouse gases and this option is deemed to be of benefit. More in-depth analysis at Stage 3 is required		to manage aircraft separation distances. The track mileage of Option 8B L is 54.00km (29.15nm). When compare to the 'do nothing' scenario, Option 8B L is shorter and is therefore	approach operations. An element of tactical radar vectoring may still be required to manage aircraft separation distances. If the track mileage of Option 88R s 55.18km (28.80nm). When compared to the 'do nothing' scenario, Option 88R is longer and is therefore expected to emit more greenhouse gases and this option is		Option 98 R has been designed to support continuous descent approach operations. An element of tractical radar vectoring may still be required to manage aircraft separation distances. The track mileage of Option 98 R is 0.23 Mm (33.69m). When compared to the 'do nothing' scenario, Option 98 R is longer and is therefore expected to emit more greenboure gases and this option is deemed to be of 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 relance upon ground- based anyigational aids, resilience could be significantly affected, following the removal of the DVOR in December 2022.		The introduction of PBN routes is expected to deliver benefits by increasing airpapece 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 undated ground-based navigational aid will significantly increase operational resilience through the introduction of PBN.	The introduction of PBN routes is expected to delive benefits by increasing airpasec 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 undated ground-based navigational aid will significantly increase operational resilience through the introduction of PBN.	The introduction of PBN routes is expected to deliver benefits by increasing intrace 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 awagetional aid will significantly increase operational resilience through the introduction of PBN.	The introduction of PBN routes is expected to deliver benefits by increasing singueze apacity which subequently leads to more oil, predictable flight paths and fewer delays (both in air or on the ground). Per eduction of the relance on outdated ground-based may always onal air will significantly increase operational resilience through the introduction of PBN.	ground). The reduction of the reliance on outdated ground-based		The introduction of PBN routes is expected to deliver benefits by increasing airspace papicy which subsequently leads to more predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on undated ground-based navigational aid will significantly increase operational resilience through the introduction of PBN.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP1616, Appendix B, para B76, Change sponsors are required to consider Tranquillity with specific reference to AON8s and National Parks only, unless other areas have been demtified through community engagement. No additional specific areas were identified by community engagement. The DAYNE do nothing scenario overflies no AON8s and one National Park.		comparable to the 'do nothing' scenario and assessed as neutral.	This option overfiles no AONBs and one National Park. It is therefore comparable to the 'do nothing' scenario and assessed as neutral.	comparable to the 'do nothing' scenario and assessed as neutral.	This option overfiles no ADNBs and one National Park. It is therefore comparable to the 'do nothing' scenario and assessed as neutral.	This option overfiles no AONis and one National Park. It is therefore comparable to the 'do nothing' scenario and assessed as neutral.		This option overfiles no AONBs and one National Park. It is therefore comparable to the 'do nothing' scenario and assessed as neutral.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	The change sponsor has mapped the designated Sites of Special Scientific Interest (2551), Special Protection Areas (FPAI), Special Areas of Conservation (SACs) and RAMSAR sites, a site defined on the DFERA MAGIC Map (ARMSAR sites, as identified on the DFERA MAGIC Map (CAP1616, Appendix B, para BPA, states that because of dispersion and mining, there is unlikely to be an impact on local air quality from aircraft above 1,0001t. Grathermore, CAP1616, Appendix B, para BPA, states that because of dispersion and mining, there is unlikely to be an impact an individuely six settly do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by Subject Matter Experts.	e d d p.p. of ct.	DEFRA MAGIC Map. CAP1616, Appendix B, para 874, states that because of dispersion and miling. Here is unlikely to be an impact on local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para 880, states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsar acknowledge that any potential impact to the designated sites:	Scientific Interest (SSSB), Special Protection Areas (SPA6), Special Areas of Consensation (SACs) and RAMARS after, as identified on the DEFRA MAGIC Map. CAP1516, Appendix B, para B74, states that no because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1000ff. Furthermore, CAP1516, Appendix B, para B80, states that in general, airspace change proposal will not have an impact on biodiversity as they do not	Scientific Interest (SSSIs), Special Protection Areas (\$PAs), Special Area (Oronecation) (AOC) and RAMASKI site, as identified on the DEFRA MAGIC Map. CAP1516, Appendix B, para B74, States that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000h. Furthermore, CAP1616, Appendix B, para B80, states that in general, airspace change proposal will not have an impact no biodiversity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sides around MAN will be assessed	Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on local air unality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix para B80, states that in general, airspace change proposal will not have	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the DEFRA MAGIC Map. CAPELGE, Appendix B, para B74, States that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1,000fr. Furthermore, CAPELGE, Appendix B, para 880, states that I perend; aircpace Capendix B, para 880, states that I perend; aircpace that proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change gonosor		The change sponsor has mapped the designated Sites of Special Scientific Interest (SSIS), Special Protection Areas (SPA), Special Areas of Conservation (SAC3) and RAMSAR sites, as identified on the DEFRA MAGIG Map. CAP1E16, Appendit & para 874. States that because of dispersion and mixing, there is unlikely to be an impact on local air quality from aircraft above 1000ff. Furthermore, CAP1616, Appendix B, para 880, states that in general, airspace change proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any potential impact to the designated sites around MAN 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. Any General Aviation users of airspace in the vicinity of MAN will maintain their current level of access under extant operational arrangements.		ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aukidan access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	ensure their continued validity. Airspace classification requirements wi be reviewed as part of Stage 3 activities.	of Agreement pertaining to General Aviation access will be reviewed an updated (where applicable) prior to implementation to ensure their ill continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.	reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.		No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.
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 procedure, therefore no economic benefit for General Aviation/airlines.		and increasing cargo tonnage carried.	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 by potentially increasing the is frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	and increasing cargo tonnage carried.	airspace capacity which in turn will lead to more predictable flight path and fewer delays (both in the air on the ground). This is expected to facilitate economic benefit by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the		The introduction of PBM 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 by potentially increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried.
General Aviation / commercial airlines	fuel burn	Initial Options Appraisal: Qualitative	The existing MAM procedures for arrivals do not support continuous decret approaches. Fuel burn is expected to be greater due to tactical ATC intervention and periods of level elight in the approach phase. In the case of the DAYNE 23L'do nothing' scenario the track length is 62.74km (33.88nm) long. The existing MAM procedures for arrivals do not support continuous decret 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 DAYNE 23R'do nothing' scenario the track length is 62.74km (33.88nm) long.	ne	overall amount of fuel burnt. There is no requirement within Stage 2 of the CAP1616 process to quantify the 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 the option, it is 57.80km (31.21.mm) long. When compared to the '60 nothing' scenario, optional 8 is longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of a dis-benefit in terms of fixed burn. More in-depth analysis will be carried out in Stage 3 to confirm.	in of the CAP1516 process to quantify fuel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that is the shorter the trade length, the less fuel is burnt. With regards to this option, it is 50 (Silmi (27 J Alann) long. When compared to the 'do did nothing' scenario, Option 68 L is shorter and at this stage it is n assumed that it will require a smaller amount of fuel burn, therefore, this option is deemed to be beenfall in terms of fuel burn. More indepth analysis will be carried out in Stage 3 to confirm.	overall amount of fuel burnt. There is no requirement within Stage 2 or the CAP1615 process to quantify feel burn, this will be conducted in Stage 3. Therefore, to enable a comparison, the logic applied is that this shorter the track feeight, the less fails burnt. With regards to this option, it is Option 68 R is 12.128 m (27.57mm). When compared to the option, it is Option 68 R is 12.128 m (27.57mm). When compared to the onothing "scenario, Option 68 R is longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore, the option is deemed to be of disk-bendint in terms of fuel burn. More indepth analysis will be carried out in Stage 3 to confirm.	flowerall amount of fuel burn. There is no requirement within Stage 2 of the CAP1E16 process to quantify fuel burn, this will be conducted in es Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less bile burnt. With regards to this e option, it is \$4.00m [29:15mm] long. When compared to the 'do nothing' scream', option 88 it is formed and at this stage it is assumed sis that it will require a smaller amount of fuel burn, therefore, this option demed to be beneficial in terms of fuel burn. More in-depth analysis we be carried out in Stage 3 to confirm.	of the CAP1616 process to quantify fuel burn, this will be conducted to Stage 3. Therefore, to enable a comparison, the logic applied is that the shorter the track length, the less fluid is burnt. With regards to the topolon, it is SS. Bism (28 80mn) long. When compared to the 'do nothing' scenario, Option 88 R is longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.		Option 98 R supports continuous descent approaches, reducing the overall amount of the 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 C3 39m (13.56mm) long. When compared to the 'do nothing' scenario, Option 98 R is longer and at this stage it is assumed that it will require a larger amount of fueb burn, therefore, this option is deemed to be of dis-benefit in terms of fueb burn. More in-depth analysis will be carried out in Stage 3 to confirm.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	Standard training would be applicable for existing procedures which would be practised by crews through existing simulator exercises. Standard training would be applicable for existing procedures which would be practised by crews through existing simulator exercises.		It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.		It is anticipated that no extra Pilot/Crew training will be required to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.
Commercial airlines		Initial Options Appraisal: Qualitative	It is not proportionate for MAN to assess potential of other costs for commercial arises—there may be costs associated with maintaining legacy systems to continue hydrogenometrolar advigation but there are too many variables (e.g., alroraft types, on-board system capability etc.) to consider these effectively.		Other costs to commercial airlines may include updates to Flight Management Systems (FMS), naugiption distalances and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	Other costs to commercial airlines may include updates to flight Management Systems (FMS), nauligno distalates and operating procedures, increased pilot hive costs versus training etc. It is not proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navalgation distabases and operating procedures, increased plicit hire costs versus training etc. It is not proportionate for MMN to assess the 'other costs' to commercial airlines of flying PBN procedures.	Other costs to commercial airlines may include updates to Flight Management Systems (FMS), avaignt on databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for MMA to assess the 'other costs' to commercial airlines of flying PBN procedures.	airlines of flying PBN procedures.		Other costs to commercial airlines may include updates to Flight Management Systems (FMS), navelgion databases and operating procedures, increased pilot hire costs versus training etc. It is not proportionate for MMA to assess the 'other costs' to commercial airlines of flying PBN procedures.
Airport / Air navigation service provider	Infrastructure costs	initial Options Appraisal: Qualitative	No additional infrastructure is required at MAN to maintain extant conventional procedure; however, maintaining accessibility to current ground-based equipment (operated by NREI) may become prohibitively expensive should a CAP1781 RNAV substitution not be implemented prior to the proposed removal date. No additional infrastructure is required at MAN to No additional infrastructure is required infrastructure in the No. Additional infrastructure is required infrastructure in the No. Additional infrastructure infrastructure in the No. Additional infrastructure inf		relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	e relate to the implementation of PBN and no additional infrastructure is anticipated to be required as it brittouction of PBN reduces the relance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	to the implementation of PINs and no additional infrastructure is anticipated to be required as the introduction of PIN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	e There are no expected additional infrastructure costs. All options relate to the implementation of PRN and odditional infrastructure is anticipated to be required as the introduction of PRN reduces the anticipated to be required as the introduction of PRN reduces the relance on ground infrastructure, in particular ground-based navigation aids are no longer needed.	relate to the implementation of PBN and no additional infrastructure is anticipated to be required at the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation aids are no longer needed.		There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure is anticipated to be required as the introduction of PBN reduces the relaince on ground infrastructure, in particular ground-based navigation aids are no longer needed.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	No change to operational costs is attributable to maintaining the existing procedures. Mo change to operational costs is attributable to maintaining the existing procedures.		existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures	ATC at MAN is contracted out to a third-party organisation. This is existing commercial contract between MAN and their chosen MAYS is existing commercial contract between MAN and their chosen MAYS is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures is and training of controllers, however, these cannot be identified at this stage of the ACP process.	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures and	to be an ongoing cost. Some operational costs are anticipated with	s existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with respect to the implementation of new procedures		ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chosen AMSP is considered to be an onegoing cost. Some operational costs are anticipated with respect to the iniplementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process.

IAF 8 - OPTION 6B

IAF 10 - OPTION 8B

IAF 7 - OPTION 9B

IAF TURKY - OPTION 1B

Airport / Air navigation service provider Safety Assessment Safety A	· a	Qualitative Initial Options Appraisal:	The 'do nothing' scenario assumes that current operations at MAN are safe including use of the extant	No deployment costs applicable to extant procedures The 'do nothing' scenario assumes that current operations at MAN are safe including use of the extant conventional procedures. Following the removal of	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process. The only hazard that was identified was a potential conflict with MAN proposed SIDs that could cause a possible loss of rhorizontal/vertical	existing commercial contract between MAN and their chosen ANS) is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process. The only hazard that was identified was a potential conflict with MAN proposed SIDs that could cause a possible loss of horizontal/vertical	existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers, however, these cannot be identified at this stage of the ACP process. The only hazard that was identified was a potential conflict with MAN	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their chorea. NAS is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process. The only hazard that was identified was a potential conflict with MAN proposed 50s that could cause a possible loss of horizontal/vertical separation, causing an incresse in ATCD ovarious. This hazard can be	sexisting commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some deployment costs are anticipated with respect to the implementation of new procedures	ATC at MAN is contracted out to a third-party organisation. This existing commercial contract between MAN and their choices mANP Is considered to be an ongoing cost. Some deployment crosts are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this stage of the ACP process. The only lazard that was identified was a potential conflict with MAN proposed Slot that could cause a possible loss of horizontal/veritical separation, custing an increase in ATCO workload. This hazard can be
1			SIDs, aircraft arriving at MAN would continuously	ground-based navigational aids supporting the existing SIDs, aircraft arriving at MAN would continuously require repart rections (should CAP1781 or a commercial agreement to maintain the existing		mitigated through the design process. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.		mitigated through the design process. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	mitigated through the design process. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.	mitigated through the design process. Further assessment will be conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact nature of all hazards and mitigations.
			navigational aid not be implemented), resulting in a	navigational aid not be implemented), resulting in a						
			viable option as it does not provide a sustainable solution in terms of airspace modernisation and is unviable following the removal of the DVOR beacons in December 2021, which would have a significant impact on capacity and resilience. The existing arrival arrangements do not enable continuous descent approaches from 7,000ft, which could lead to a greater volume of fuel burn, emissions and notice at lower levels. In terms of Tranquillity, Blodiversity, General Aviation 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 AMA operations are safe. Following the removal of the DVDRs, it is acknowledged that ATCO workload may increase due	Aviation 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 MAN operations are safe. Following the removal of the DVORs, it is	change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP156 process to determine this. Furthermore, this option has been assessed in loadston rather than as a set of design options as part of a wider system/runway pair. Additional analysis will be 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 18 R has been deemed as the Favourable option, as it overfiles second fewest population when	- better in terms of Noise impact, Greenhouse Gases, Fuel Burn, Capacity, and realisence and Economic impact from increased effective capacity. - equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports, but the eacht anture of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAPIGS process to determine this. Furthermore, this option has been assessed in isolation rather than as a set of design options as part of a wider system/runway pair. Additional analysis will be 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 68 L has been deemed as	- better in terms of Noise impact. - worse in terms of Greenhouse Gause, Fuel Burn, Capacity and resilience and Economic impact from increased effective capacity, - equal/heutral in terms of the remaining citeria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific opinion. The change spoors has identified that there may be some possible conflicts with some routes operated by adjacent alports, but the exact nature of these conflicts is unders at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP3616 process to determine the. Furthermore, this option has been assessed in isolation rather than as a set of design options as part of a wider system/rumway pair. Additional analysis will be required in Stage 3 to determine the cumulative impact of this option when compared to all the other options.	better in terms of Noise impact, Greenhouse Gases, Fael Burn, Capand and resilience and Goronnic impact from increased effective apacity. - equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routices operated by algorite an algorite and process one possible conflicts with some routices operated by algorite an algorite analysis and engagement is required in Stage 3 and 4 of the CNP1656 process to determine this. Furthermore, big option has been assessed in isolation rather than as a set of design options as part of a wider system/rumany pair. Additional analysis will be regulated in Stage 3 to determine the cumulative in Stage 3 to determine the cumulative of the source of the specific options. The specific of the specific option is a part of a wider system/rumany pair. Additional analysis will be regulated in Stage 3 to determine the cumulative in specific options. Based on performance in the IOA, Option 88 L has been deemed as the referred polyton, as it overfiles the fevers populsation when compared to	worse in terms of Greenhouse Gases, Fuel Burn, Capacity and resilience and Economic impact from increased effective capacity, - equal/neutral in terms of the remaining criteria because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sportsor has identified that there may be some possible conflicts with some routes operated by adjacent alignority, but the each rature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAPISGS process to determine this. Furthermore, this option has been assessed in isolation rather than as a set of design options as part of a wider system/runway pair. Additional analysis will be required in Stage 3 to determine the cumulative impact of this option when compared to all the other options.	When compared to the 'do nothing' scenario, Option 98 R performs: -worse in terms of Genehouse Gase, Fue Burn, Capacity and resilience and Economic impact from increased effective capacity, -equal/hourful in lemss of the remaining cirrier because there is no change when compared to today's operation. At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent alproist, but the exact nature of these conflicts unclear at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAPIS in process to determine this. Furthermore, this option has been assessed in isolation rather than as a set of design options as part of a wider system/furway pair. Additional analysis will be 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 98 R has been deemed as the Preferred golons, all towelfies the fewest population when compared to other design options (originating from the IAP).

Arrival Er	Arrival Envelope: Runway 23 South 3,500ft (Baseline DAYNE)											
	'DO NOTHING' BASELINE For arrivals from the south, the 'do nothing' scenario in terms of today's operation is based around the existing			Y - OPTION 1A	IAF 8 - O		IAF 10 - 0		IAF 7 - OP			
			DAYNE Hold. A modal track has been derived to provide	le an accurate representation of what occurs today. The		vest of Whaley Bridge and then overhead Glossop. Both routes then tur	m to all runways.		9A and is designed to facilitate a CDA profile to all runways.		and is designed to facilitate a CDA profile to all runways. t From this location the route splits and heads north-east between Maccle:	
			operations where most arrivals are radar vectored from	n the Hold. In addition to the modal tracks, a polygon ha	The descent gradient to the FAF is 3.15%/1.80° for Runway 23L and range for low noise approaches and within the acceptable range for	3.02%/1.73° for Runway 23R. These gradients are within the optimum		y 23L or 23R.	to establish aircraft on final approach at 3,500ft for either Runway 23L of The descent gradient to the FAF is 3.42%/1.96° for Runway 23L and 3.28	23R.	then turn left to establish aircraft on final approach at 3,500ft for either F The descent gradient to the FAF is 2.78%/1.59° for Runway 23L and 2.69°	Runway 23L or 23R.
			to radar vectoring and potentially may affect people on	n the ground. The overflight analysis conducted on this Noise and Track Keeping data from an altitude of 7,000f		-	optimum range for low noise approaches and within the acceptable	range for CDAs defined within ICAO guidance.	range for low noise approaches and within the acceptable range for CDA	s defined within ICAO guidance.	range for low noise approaches but just within the acceptable range for C	DAs defined within ICAO guidance.
				opriate. All data is based on current aircraft performance					Option 8A for Runway 23L was rejected at the DPE stage and has therefore	re not been assessed.		
			track.									
Group	Impact	Level of Analysis	Runway 23L	Runway 23R	Runway 23L	Runway 23R	Runway 23L	Runway 23R	Runway 23L NOT ASSESSED	Runway 23R	Runway 23L	Runway 23R
Communities	Noise impact on health and quality of life	Qualitative	23L, Southerly arrivals are compared to the DAYNE 'do	23R, Southerly arrivals are compared to the DAYNE 'do	In terms of potential noise impact, Option 1A L overflies approximately 55,800 people and approximately 26,850 residential		In terms of potential noise impact, Option 6A L overflies approximately 60,900 people and approximately 29,750 residential buildings. When compared to the 'do nothing' scenario, this option	In terms of potential noise impact, Option 6A R overflies approximately 53,500 people and approximately 25,250			In terms of potential noise impact, Option 9A L overfiles approximately 48,800 people and approximately 24,150 residential buildings. When compared to the 'do nothing' scenario, this option overfiles fewer people	approximately 46,900 people and approximately 21,700 residential
			the DAYNE 'do nothing' scenario overflies approximately 147,700 people and approximately	the DAYNE 'do nothing' scenario overfiles approximately 135,900 people and approximately			overflies fewer people and residential buildings and as such is seen a honeficial			overflies fewer people and residential buildings and as such is seen as beneficial.		overflies fewer people and residential buildings and as such is seen as beneficial.
			71,650 residential buildings.	66,350 residential buildings.	Delicine.	DETERMINE.	J. C.	bollings and as soon is seen as believed.		School State of the State of th		SCIENCIA.
Communities	Air Quality	Initial Options Appraisal: Qualitative	No change to air quality is predicted in maintaining baseline conditions, the majority of the extant	baseline conditions, the majority of the extant	para B74, due to mixing and dispersion, the impact on air quality	para B74, due to mixing and dispersion, the impact on air quality	16, Option 6A L overflies three AQMAs, having said that, as per CAP1616 para B74, due to mixing and dispersion, the impact on air quality	CAP1616, para B74, due to mixing and dispersion, the impact on		para B74, due to mixing and dispersion, the impact on air quality	, Option 9A L overflies three AQMAs, having said that, as per CAP1616, para B74, due to mixing and dispersion, the impact on air quality above	para B74, due to mixing and dispersion, the impact on air quality
			procedures involves overflight above 1,000ft, other than the areas in the immediate vicinity or final	procedures involves overflight above 1,000ft, other than the areas in the immediate vicinity or final	immediate area surrounding the airport that may be overflown belo	w immediate area surrounding the airport that may be overflown belo	above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below	w areas within the immediate area surrounding the airport that may	У		immediate area surrounding the airport that may be overflown below	above 1,000ft is not likely to be significant. There are areas within the immediate area surrounding the airport that may be overflown below
			approach to MAN. For safety reasons, aircraft are required to establish a safe and stable flight profile	approach to MAN. For safety reasons, aircraft are required to establish a safe and stable flight profile	are required to establish a safe and stable flight profile during the	are required to establish a safe and stable flight profile during the	1,000ft; however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the	unavoidable, as aircraft are required to establish a safe and stable		are required to establish a safe and stable flight profile during the	1,000ft; however, for safety reasons, this is unavoidable, as aircraft are required to establish a safe and stable flight profile during the final	are required to establish a safe and stable flight profile during the
			during the final approach phases of flight. In terms of AQMAs, the DAYNE 23L'do nothing'	during the final approach phases of flight. In terms of AQMAs, the DAYNE 23R 'do nothing'	the 'do nothing' scenario, this option is deemed to be equally	the 'do nothing' scenario, this option is deemed to be equally	final approach phases of flight. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be equally	overall, when compared to the 'do nothing' scenario, this option is	is	the 'do nothing' scenario, this option is deemed to be equally	approach phases of flight. Therefore, overall, when compared to the 'do nothing' scenario, this option is deemed to be equally beneficial as it	the 'do nothing' scenario, this option is deemed to be equally
			scenario overflies 3 AQMAs. Overflight of these AQMAs occurs when the aircraft is above 1,000ft.	occurs when the aircraft is above 1,000ft.	As beneficial as it overflies the same number of AQMAs.	beneficial as it overfiles the same number of AQMAs.	beneficial as it overflies the same number of AQMAs.	deemed to be equally beneficial as it overflies the same number of AQMAs.		beneficial as it overflies the same number of AQMAs.	overfiles the same number of AQMAs.	beneficial as it overflies the same number of AQMAs.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	Current arrival operations do not enable continuous descent approaches to all runways at MAN from	Current arrival operations do not enable continuous descent approaches to all runways at MAN from	Option 1A L has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still	Option 1A R has been designed to support continuous descent	Option 6A L has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still	Option 6A R has been designed to support continuous descent approach operations. An element of tactical radar vectoring may		Option 8A R has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still	Option 9A L has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still be required	Option 9A R has been designed to support continuous descent approach operations. An element of tactical radar vectoring may still
			7,000ft. It must be noted that the exact track length	7,000ft. It must be noted that the exact track length		be required to manage aircraft separation distances. The track mileage of Option 1A R is 62.38km (33.68nm). When	be required to manage aircraft separation distances. The track mileage of Option 6A L is 54.62km (29.49nm). When	still be required to manage aircraft separation distances. The track mileage of Option 6A R is 55.83km (30.14nm). When		be required to manage aircraft separation distances. The track mileage of Option 8A R is 59.78km (32.28nm). When	to manage aircraft separation distances. The track mileage of Option 9A L is 65.76km (35.51nm). When	be required to manage aircraft separation distances. The track mileage of Option 9A R is 66.97km (36.16nm). When
				radar vectoring. Existing procedures do not support optimal aircraft performance and therefore are	compared to the 'do nothing' scenario, Option 1A L is shorter and is	compared to the 'do nothing' scenario, Option 1A R is longer and is		compared to the 'do nothing' scenario, Option 6A R is longer and		compared to the 'do nothing' scenario, Option 8A R is longer and is	compared to the 'do nothing' scenario, Option 9A L is longer and is therefore expected to emit more greenhouse gases and this option is	compared to the 'do nothing' scenario, Option 9A R is longer and is therefore expected to emit more greenhouse gases and this option is
			predicted to have a greater environmental impact	predicted to have a greater environmental impact		ed deemed to be of dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released	deemed to be of benefit. More in-depth analysis at Stage 3 is require			deemed to be of dis-benefit. More in-depth analysis at Stage 3 is	deemed to be of dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.	deemed to be of dis-benefit. More in-depth analysis at Stage 3 is required to confirm the exact volumes of greenhouse gases released.
			CAP1616 process, there is no requirement for a change	e CAP1616 process, there is no requirement for a chang sponsor to conduct quantitative fuel burn or emissions				gases released.				
			analysis; this will be conducted in Stage 3. In order to	analysis; this will be conducted in Stage 3. In order to make a comparison, track mileage is used as a proxy								
				using the theory that the shorter the track mileage, the less greenhouse gases are emitted.	e							
			With regards to the 'do nothing' scenario track lengths,	With regards to the 'do nothing' scenario track lengths the DAYNE 23R 'do nothing' scenario track is 41.04km								
			(33.88nm) long.	(22.16nm) long.								
Wider Society	Capacity and resilience	Initial Options Appraisal:			It The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more		The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more	The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which subsequently leads to more
		Qualitative	based navigational aids, resilience could be significantly		predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground-based	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground-based	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground-based	predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground-based		predictable flight paths and fewer delays (both in air or on the ground). The reduction of the reliance on outdated ground-based		predictable flight paths and fewer delays (both in air or on the
			December 2022.	December 2022.	navigational aid will significantly increase operational resilience through the introduction of PBN.	navigational aid will significantly increase operational resilience through the introduction of PBN.	navigational aid will significantly increase operational resilience through the introduction of PBN.	navigational aid will significantly increase operational resilience through the introduction of PBN.		navigational aid will significantly increase operational resilience through the introduction of PBN.	will significantly increase operational resilience through the introduction	
											UI PBN.	
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	As per CAP1616, Appendix B, para B76, change sponsors are required to consider Tranquillity with	As per CAP1616, Appendix B, para B76, change sponsors are required to consider Tranquillity with	This option overflies no AONBs and one National Park. It is therefore comparable to the 'do nothing' scenario and assessed as neutral.	 This option overflies no AONBs and one National Park. It is therefore comparable to the 'do nothing' scenario and assessed as neutral. 	This option overflies no AONBs and one National Park. It is therefore comparable to the 'do nothing' scenario and assessed as neutral.	therefore comparable to the 'do nothing' scenario and assessed		This option overflies no AONBs and one National Park. It is therefore comparable to the 'do nothing' scenario and assessed as neutral.	This option overflies no AONBs and one National Park. It is therefore comparable to the 'do nothing' scenario and assessed as neutral.	This option overflies no AONBs and one National Park. It is therefore comparable to the 'do nothing' scenario and assessed as neutral.
			specific reference to AONBs and National Parks only, unless other areas have been identified through	specific reference to AONBs and National Parks only, unless other areas have been identified through				as neutral.				
			community engagement. No additional specific areas were identified by community engagement.	were identified by community engagement.								
			and one National Park.	The DAYNE 'do nothing' scenario overflies no AONBs and one National Park.								
Milder Carles	Diadhanair.	Initial Outlant Association	The above are seen to a second about declarated Cities	The shares are seen because of the declarate of files.	The shares are supplied to the state of the	The shares were because of the declarate of the of County	The change sponsor has mapped the designated Sites of Special	The change sponsor has mapped the designated Sites of Special		The above and the design and the office of County	The short service has been added as the second Character and Character a	The above of the second day of the set of th
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	of Special Scientific Interest (SSSIs), Special Protection	of Special Scientific Interest (SSSIs), Special Protection	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Consequence (SACs) and BAMSAB sites as identified on the	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Consequence (SACs) and RAMSAB sites as identified on the	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites. as identified on the	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special		The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites, as identified on the	The change sponsor has mapped the designated Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites as identified on the DEFRA	Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and RAMSAR sites as identified on the
			RAMSAR sites, as identified on the DEFRA MAGIC Map.	RAMSAR sites, as identified on the DEFRA MAGIC Map	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that		the DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states		DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact or	MAGIC Map. CAP1616, Appendix B, para B74, states that because of	DEFRA MAGIC Map. CAP1616, Appendix B, para B74, states that because of dispersion and mixing, there is unlikely to be an impact on
			dispersion and mixing, there is unlikely to be an impact	dispersion and mixing, there is unlikely to be an impac			local air quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B. para B80. states that in general, airspace change				quality from aircraft above 1,000ft. Furthermore, CAP1616, Appendix B, para B80. states that in general, airspace change proposal will not have	local air quality from aircraft above 1,000ft. Furthermore, CAP1616,
			Furthermore, CAP1616, Appendix B, para B80, states	Furthermore, CAP1616, Appendix B, para B80, states	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	proposal will not have an impact on biodiversity as they do not	proposal will not have an impact on biodiversity as they do not	general, airspace change proposal will not have an impact on		proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor	an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor acknowledges that any	proposal will not have an impact on biodiversity as they do not involve ground-based infrastructure. However, the change sponsor
			an impact on biodiversity as they do not involve ground	 an impact on biodiversity as they do not involve groun 	d- acknowledges that any potential impact to the designated sites	acknowledges that any potential impact to the designated sites		However, the change sponsor acknowledges that any potential		acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by Subjec	potential impact to the designated sites around MAN will be assessed in	acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage 3 of the ACP process by Subject
			acknowledges that any potential impact to the	acknowledges that any potential impact to the designated sites around MAN will be assessed in Stage	Matter Experts.	Matter Experts.	Matter Experts.	Stage 3 of the ACP process by Subject Matter Experts.		Matter Experts.	a stage 3 of the ACF process by Subject Matter Experts.	Matter Experts.
				3 of the ACP process by Subject Matter Experts.								
General Aviation	Access	Initial Options Appraisal: Qualitative	No change to existing airspace arrangements. Any General Aviation users of airspace in the vicinity of	No change to existing airspace arrangements. Any General Aviation users of airspace in the vicinity of		No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing		No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing	No adverse impact to General Aviation access is anticipated as a consequence of this ACP. All Visual Reference Points and existing Letters	No adverse impact to General Aviation access is anticipated as a
		Qualitative			Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to	Letters of Agreement pertaining to General Aviation access will be	Letters of Agreement pertaining to General Aviation access will be	Letters of Agreement pertaining to General Aviation access will be	e	Letters of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to	of Agreement pertaining to General Aviation access will be reviewed and updated (where applicable) prior to implementation to ensure their	
			extent operational arrangements.	Country of the state of the sta			ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.			ensure their continued validity. Airspace classification requirements will be reviewed as part of Stage 3 activities.		
	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	No increase to effective capacity anticipated for continued use of extant procedures, therefore no	No increase to effective capacity anticipated for continued use of extant procedures, therefore no	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight	The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more			The introduction of PBN is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths	
			economic benefit for General Aviation/airlines.	economic benefit for General Aviation/airlines.	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the	paths and fewer delays (both in the air or on the ground). This is	paths and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the	predictable flight paths and fewer delays (both in the air or on the		paths and fewer delays (both in the air or on the ground). This is	and fewer delays (both in the air or on the ground). This is expected to facilitate economic benefit by potentially increasing the frequency of air	paths and fewer delays (both in the air or on the ground). This is
							ers frequency of air transport movements, increasing passenger number and increasing cargo tonnage carried.				transport movements, increasing passenger numbers and increasing cargo tonnage carried.	
								carried.			<u> </u>	
General Aviation / commercial airline		Initial Options Appraisal: Qualitative	The existing MAN procedures for arrivals do not support continuous descent approaches. Fuel burn is		overall amount of fuel burnt. There is no requirement within Stage 2	overall amount of fuel burnt. There is no requirement within Stage 2	Option 6A L supports continuous descent approaches, reducing the overall amount of fuel burnt. There is no requirement within Stage 2	the overall amount of fuel burnt. There is no requirement within		Option 8A R supports continuous descent approaches, reducing the overall amount of fuel burnt. There is no requirement within Stage 2	Option 9A L supports continuous descent approaches, reducing the overall amount of fuel burnt. There is no requirement within Stage 2 of	Option 9A R supports continuous descent approaches, reducing the overall amount of fuel burnt. There is no requirement within Stage 2
			and periods of level flight in the approach phase. In the	and periods of level flight in the approach phase. In th	e Stage 3. Therefore, to enable a comparison, the logic applied is that	Stage 3. Therefore, to enable a comparison, the logic applied is that	I in of the CAP1616 process to quantify fuel burn, this will be conducted Stage 3. Therefore, to enable a comparison, the logic applied is that	conducted in Stage 3. Therefore, to enable a comparison, the		Stage 3. Therefore, to enable a comparison, the logic applied is that	Stage 3. Therefore, to enable a comparison, the logic applied is that the	
			case of the DAYNE 23L 'do nothing' scenario the track length is 62.74km (33.88nm) long.	case of the DAYNE 23R 'do nothing' scenario the track length is 41.04km (22.16nm) long.	the shorter the track length, the less fuel is burnt. With regards to th option, it is 61.17km (33.03nm) long. When compared to the 'do	its the shorter the track length, the less fuel is burnt. With regards to the option, it is 62.38km (33.68nm) long. When compared to the 'do	the shorter the track length, the less fuel is burnt. With regards to thi option, it is 54.62km (29.49nm) long. When compared to the 'do	Is logic applied is that the shorter the track length, the less fuel is burnt. With regards to this option, it is 55.83km (30.14nm) long.		the shorter the track length, the less fuel is burnt. With regards to thi option, it is 59.78km (32.28nm) long. When compared to the 'do	shorter the track length, the less fuel is burnt. With regards to this option, it is 65.76km (35.51nm) long. When compared to the 'do	the shorter the track length, the less fuel is burnt. With regards to this option, it is 66.97km (36.16nm) long. When compared to the 'do
						that it will require a larger amount of fuel burn, therefore, this option	nothing' scenario, Option 6A L is shorter and at this stage it is assumed that it will require a smaller amount of fuel burn, therefore,			that it will require a larger amount of fuel burn, therefore, this option	nothing' scenario, Option 9A L is longer and at this stage it is assumed that it will require a larger amount of fuel burn, therefore, this option is	
					this option is deemed to be beneficial in terms of fuel burn. More in- depth analysis will be carried out in Stage 3 to confirm.	 Is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm. 	this option is deemed to be beneficial in terms of fuel burn. More in- depth analysis will be carried out in Stage 3 to confirm.	benefit in terms of fuel burn. More in-depth analysis will be	-	is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.	is deemed to be of dis-benefit in terms of fuel burn. More in-depth analysis will be carried out in Stage 3 to confirm.
								carried out in Stage 3 to confirm.				
Commercial airlin	es Training costs	Initial Options Appraisal:				It is anticipated that no extra Pilot/Crew training will be required to	It is anticipated that no extra Pilot/Crew training will be required to	It is anticipated that no extra Pilot/Crew training will be required			It is anticipated that no extra Pilot/Crew training will be required to	It is anticipated that no extra Pilot/Crew training will be required to
		Qualitative	procedures which would be practised by crews through existing simulator exercises.	h procedures which would be practised by crews throug existing simulator exercises.	h enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	to enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.		enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.	enable pilots to fly the new PBN procedures as PBN has become a common navigation standard across the world.
Commercial airlin	es Other costs	Initial Options Appraisal:	It is not proportionate for MAN to assess potential	It is not proportionate for MAN to assess potential	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight		Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight	Other costs to commercial airlines may include updates to Flight
		Qualitative	other costs for commercial airlines - there may be costs	other costs for commercial airlines - there may be cost	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	5	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not	Management Systems (FMS), navigation databases and operating procedures, increased pilot hire costs versus training etc. It is not
					proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.		proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	proportionate for MAN to assess the 'other costs' to commercial airlines of flying PBN procedures.	
			capability etc.) to consider these effectively.	capability etc.) to consider these effectively.								
•	Lefendar :	Initial Carlo	No additional lefer	No additional lefter			-	The second of th		***************************************		
Airport / Air navigation service	Infrastructure costs	Initial Options Appraisal: Qualitative	maintain extant conventional procedures; however,	No additional infrastructure is required at MAN to maintain extant conventional procedures; however,			e relate to the implementation of PBN and no additional infrastructure			There are no expected additional infrastructure costs. All options relate to the implementation of PBN and no additional infrastructure		relate to the implementation of PBN and no additional infrastructure
provider			maintaining accessibility to current ground-based equipment (operated by NERL) may become	maintaining accessibility to current ground-based equipment (operated by NERL) may become	is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based	reliance on ground infrastructure, in particular ground-based	reliance on ground infrastructure, in particular ground-based	Infrastructure is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular		is anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based	anticipated to be required as the introduction of PBN reduces the reliance on ground infrastructure, in particular ground-based navigation	
			prohibitively expensive should a CAP1781 RNAV substitution not be implemented prior to the proposed		navigation aids are no longer needed.	navigation aids are no longer needed.	navigation aids are no longer needed.	ground-based navigation alds are no longer needed.		navigation aids are no longer needed.	aids are no longer needed.	navigation aids are no longer needed.
			removal date.	removal date.								
Airport / Air	Operational costs	Initial Options Appraisal:	No change to operational costs is attributable to	No change to operational costs is attributable to	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This		ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This existing	ATC at MAN is contracted out to a third-party organisation. This
navigation service provider		Qualitative	maintaining the existing procedures.	maintaining the existing procedures.			is existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are	s existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs	5		commercial contracted but to a unimparty or gainsation. This existing commercial contract between MAN and their chosen ANSP is considered to be an ongoing cost. Some operational costs are anticipated with	
					anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at the	anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at the	anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at th	are anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be		anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at thi		anticipated with respect to the implementation of new procedures and training of controllers; however, these cannot be identified at this
					stage of the ACP process.	stage of the ACP process.	stage of the ACP process.	identified at this stage of the ACP process.		stage of the ACP process.	process.	stage of the ACP process.
						1		1		1	I	

Airport / Air	Deployment costs	Initial Options Appraisal:	No deployment costs applicable to extant procedures	No deployment costs applicable to extant procedures	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This		ATC at MAN is contracted out to a third-party organisation. This	ATC at MAN is contracted out to a third-party organisation. This existing	ATC at MAN is contracted out to a third-party organisation. This
navigation service	4	Qualitative			existing commercial contract between MAN and their chosen ANSP is	existing commercial contract between MAN and their chosen ANSP is	existing commercial contract between MAN and their chosen ANSP is	existing commercial contract between MAN and their chosen		existing commercial contract between MAN and their chosen ANSP is	commercial contract between MAN and their chosen ANSP is considered	existing commercial contract between MAN and their chosen ANSP is
provider	4				considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	considered to be an ongoing cost. Some deployment costs are	ANSP is considered to be an ongoing cost. Some deployment costs	5	considered to be an ongoing cost. Some deployment costs are	to be an ongoing cost. Some deployment costs are anticipated with	considered to be an ongoing cost. Some deployment costs are
	4	4			anticipated with respect to the implementation of new procedures	anticipated with respect to the implementation of new procedures	anticipated with respect to the implementation of new procedures	are anticipated with respect to the implementation of new		anticipated with respect to the implementation of new procedures	respect to the implementation of new procedures and training of	anticipated with respect to the implementation of new procedures
	4	4			and training of controllers; however, these cannot be identified at this	and training of controllers; however, these cannot be identified at this	and training of controllers; however, these cannot be identified at this	procedures and training of controllers; however, these cannot be		and training of controllers; however, these cannot be identified at this	controllers; however, these cannot be identified at this stage of the ACP	and training of controllers; however, these cannot be identified at this
	4	4			stage of the ACP process.	stage of the ACP process.	stage of the ACP process.	identified at this stage of the ACP process.		stage of the ACP process.	process.	stage of the ACP process.
	4											
	1											
	0.51.4	4	- 11 11 1									
Safety Assessment	Sarety Assessment	Initial Options Appraisal:				The only hazard that was identified was a potential conflict with MAN						The only hazard that was identified was a potential conflict with MAN
	4	Quantative	operations at MAN are safe including use of the extant			proposed SIDs that could cause a possible loss of horizontal/vertical					proposed SIDs that could cause a possible loss of horizontal/vertical	proposed SIDs that could cause a possible loss of horizontal/vertical
	4		conventional procedures. Following the removal of			e separation, causing an increase in ATCO workload. This hazard can be					separation, causing an increase in ATCO workload. This hazard can be	separation, causing an increase in ATCO workload. This hazard can be
	4	4			mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be	workload. This hazard can be mitigated through the design		mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be	mitigated through the design process. Further assessment will be
	4	4		SIDs, aircraft arriving at MAN would continuously	conducted at Stage 3 and 4 of the CAP1616 process to confirm the	conducted at Stage 3 and 4 of the CAP1616 process to confirm the	conducted at Stage 3 and 4 of the CAP1616 process to confirm the	process. Further assessment will be conducted at Stage 3 and 4 of		conducted at Stage 3 and 4 of the CAP1616 process to confirm the	conducted at Stage 3 and 4 of the CAP1616 process to confirm the exact	
	1				exact nature of all hazards and mitigations.	exact nature of all hazards and mitigations.	exact nature of all hazards and mitigations.	the CAP1616 process to confirm the exact nature of all hazards and mitigations.		exact nature of all hazards and mitigations.	nature of all hazards and mitigations.	exact nature of all hazards and mitigations.
	4	4	commercial agreement to maintain the existing navigational aid not be implemented), resulting in a	commercial agreement to maintain the existing navigational aid not be implemented), resulting in a				and midgations.				
	4	4	potential increase in ATCO workload.	potential increase in ATCO workload.	I							
	4		potential increase in Arco Workload.	potential increase in ATCO Workload.								
	4	4										
		4				 						
		Summary of Analysis				When compared to the 'do nothing' scenario, Option 1A R performs:		When compared to the 'do nothing' scenario, Option 6A R				When compared to the 'do nothing' scenario, Option 9A R performs:
			viable option as it does not provide a sustainable	viable option as it does not provide a sustainable	- better in terms of Noise impact, Greenhouse Gases, Fuel Burn,	- better in terms of Noise impact.	- better in terms of Noise impact, Greenhouse Gases, Fuel Burn,	pertorms:		- better in terms of Noise impact.	- better in terms of Noise impact.	- better in terms of Noise impact.
					Capacity and resilience, and Economic impact from increased	- worse in terms of Greenhouse Gases, Fuel Burn, Capacity and	Capacity and resilience, and Economic impact from increased	- better in terms of Noise impact.		- worse in terms of Greenhouse Gases, Fuel Burn, Capacity and	- worse in terms of Greenhouse Gases, Fuel Burn, Capacity and	- worse in terms of Greenhouse Gases, Fuel Burn, Capacity and
				unviable following the removal of the DVOR beacons in			effective capacity.	- worse in terms of Greenhouse Gases, Fuel Burn, Capacity and		resilience, and Economic impact from increased effective capacity.	resilience, and Economic impact from increased effective capacity.	resilience, and Economic impact from increased effective capacity.
						- equal/neutral in terms of the remaining criteria because there is no		resilience, and Economic impact from increased effective		- equal/neutral in terms of the remaining criteria because there is no		- equal/neutral in terms of the remaining criteria because there is no
				on capacity and resilience. The existing arrival	change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.	сараску.		change when compared to today's operation.	change when compared to today's operation.	change when compared to today's operation.
			arrangements do not enable continuous descent	arrangements do not enable continuous descent	Assistantian in terms of the second s	Assistant to the second to the first second to the second	As able since in least a could be to fall and a could be set of	- equal/neutral in terms of the remaining criteria because there is		Anable des de la contractible de felle descendentales de f	Asset Laborator is to construct the section of the descendence of the section of	Asabi silan is in one annullate as fully described as fully
					At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety implications of this specific option. The change sponsor has identified	At this time, it is not possible to fully determine the safety	no change when compared to today's operation.		At this time, it is not possible to fully determine the safety	At this time, it is not possible to fully determine the safety implications of	
						that there may be some possible conflicts with some routes operated		As ab least to the control of the description of the control of th			this specific option. The change sponsor has identified that there may be some possible conflicts with some routes operated by adjacent airports,	
						by adjacent airports, but the exact nature of these conflicts is unclear					some possible conflicts with some routes operated by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further	by adjacent airports, but the exact nature of these conflicts is unclear
						by adjacent airports, but the exact nature of these conflicts is unclear at this stage. Further analysis and engagement is required in Stage 3					analysis and engagement is required in Stage 3 and 4 of the CAP1616	
				operations. Furthermore, there are very limited costs		art this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this.	art this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this.	routes operated by adjacent airports, but the exact nature of		at this stage. Further analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this.	analysis and engagement is required in Stage 3 and 4 of the CAP1616 process to determine this.	and 4 of the CAP1616 process to determine this.
			incurred as a result of this scenario. From a safety	incurred as a result of this scenario. From a safety	and 4 or the CAPIDIO process to determine this.	and 4 or the OP 1010 process to determine this.	and 4 or the CAP TOTO process to determine this.	these conflicts is unclear at this stage. Further analysis and		und + or the CAP 2020 process to determine this.	process to determine this.	and 4 or the CAP 1010 process to determine this.
					Furthermore, this ontion has been accorded in irolation cather than	Furthermore, this option has been assessed in isolation rather than as	Furthermore, this notion has been accorded in irolation rather than a			Furthermore, this ontion has been accorded in isolation sather than a	Furthermore, this option has been assessed in isolation rather than as a	Furthermore, this ontion has been asserted in irolation rather than an
					a set of design options as part of a wider system/runway pair.	a set of design options as part of a wider system/runway pair.	a set of design options as part of a wider system/runway pair.	to determine this.		a set of design options as part of a wider system/runway pair.	set of design options as part of a wider system/runway pair. Additional	
1					Additional analysis will be required in Stage 3 to determine the	Additional analysis will be required in Stage 3 to determine the	Additional analysis will be required in Stage 3 to determine the	To occurrence and		Additional analysis will be required in Stage 3 to determine the	analysis will be required in Stage 3 to determine the cumulative impact	
				to the enduring requirement for radar vectoring.	cumulative impact of this option when compared to all the other	cumulative impact of this option when compared to all the other	cumulative impact of this option when compared to all the other	Furthermore, this option has been assessed in isolation rather		cumulative impact of this option when compared to all the other	of this option when compared to all the other options.	cumulative impact of this option when compared to all the other
			The same and a requirement for radial vectoring.	The time and the second sector line.	ontions	ontions	ontions	than as a set of design options as part of a wider system/runway		ontions		ontions
1								pair. Additional analysis will be required in Stage 3 to determine			Based on performance in the IOA. Option 9A L has been deemed as the	
					Based on performance in the IOA. Option 1A L has been deemed as	Based on performance in the IOA. Option 1A R has been deemed as	Based on performance in the IOA. Option 6A L has been deemed as			Based on performance in the IOA. Option 8A R has been deemed as	Preferred option, as it overflies the fewest population when compared to	Based on performance in the IOA. Option 9A R has been deemed as
					the Favourable option, as it overflies the second fewest population		the Acceptable option, as it overflies the third fewest population when			the Rejected, as it overflies the greater population when compared to		the Preferred option, as it overflies the fewest population when
1						when compared to other design options (originating from the IAF).				other design options (originating from the IAF).		compared to other design options (originating from the IAF).
					The same and the s	Company of the second s	(originating from the but).	Based on performance in the IOA. Option 6A R has been deemed				and the same of th
					I			as the Acceptable option, as it overflies the third fewest				
								population when compared to other design options (originating				
								from the IAF).				