CLASH GOUR WIND FARM ACP - INITIAL OPTIONS APPRAISAL - FULL ANALYSIS TABLE

Initial Options Appraisal Appendix A1 Issue 2

Group	Impact	Level of Analysis	Option 0 - 'Do Nothing Baseline' - Wind Farm not constructed (Current Situation)	Option 7C - RAG blanking and TMZ over the proposed wind farm array locations	Option 7D - RAG blanking and TMZ over the proposed wind farm array locations. TMZ extended to include a 2 NM buffer	Option 7E - RAG blanking over the proposed wind farm array locations. Simplified polygon TMZ 'rubber banded' around the proposed windfarm locations with no buffer	Option 7F - RAG blanking over the proposed wind farm array locations. Simplified polygon TMZ 'rubber banded' around the proposed wind farm locations extended to include a 2 NM buffer
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	In the 'Do Nothing Baseline' scenario, aircraft movements (and therefore noise) are exactly the same as they are today. In this scenario, aircraft operating in the vicinity of the proposed development site are able to fly anywhere within the realms of Glass G airspace and are not mandated to carry a transponder or communicate with ATC unless they wish to enter the Aerodrome Traffic Zone (ATZ) at Inverness or the Military Traffic Zone (MTZ) at RAF Lossiemouth. As such, aircraft noise within this scenario is the same as it is today and may be widely dispersed. However, due to the limited population density in the area, the impact of aircraft noise on local communities is likely to be minimal.	Like the Do Nothing scenario, due to the limited population density within the vicinity of the wind farm development, there is expected to be a very limited impact by light aircraft (which are not equipped with a transponder or in communication with ATC) re-routing around the proposed TMZ, simply because of the minimal number of people within the area. However, it is acknowledged that aircraft may not be as widely dispersed as they are in the baseline scenario, especially if they are not equipped with a transponder or are not in communication with ATC.	Like the Do Nothing scenario, due to the limited population density within the vicinity of the wind farm development, there is expected to be a very limited impact by light aircraft (which are not equipped with a transponder or in communication with ATC) re-routing around the proposed TMZ, simply because of the minimal number of people within the area. However, it is acknowledged that aircraft may not be as widely dispersed as they are in the baseline scenario, especially if they are not equipped with a transponder or are not in communication with ATC.	Like the Do Nothing scenario, due to the limited population density within the vicinity of the wind farm development, there is expected to be a very limited impact by light aircraft (which are not equipped with a transponder or in communication with ATC) re-routing around the proposed TMZ, simply because of the minimal number of people within the area. However, it is acknowledged that aircraft may not be as widely dispersed as they are in the baseline scenario, especially if they are not equipped with a transponder or are not in communication with ATC.	Like the Do Nothing scenario, due to the limited population density within the vicinity of the wind farm development, there is expected to be a very limited impact by light aircraft (which are not equipped with a transponder or in communication with ATC) re-routing around the proposed TMZ, simply because of the minimal number of people within the area. However, it is acknowledged that aircraft may not be as widely dispersed as they are in the baseline scenario, especially if they are not equipped with a transponder or are not in communication with ATC.
Communities	Air Quality	Initial Options Appraisal: Qualitative	In the 'Do Nothing baseline' scenario, it is unlikely that local air quality is impacted by aircraft movements. The rationale being that to avoid terrain and nearby existing operational turbines, aircraft operating in the vicinity of the Clash Gour development are likely to be above 1,000ft. As a result, there is unlikely to be an impact on local air quality due the effects of mixing and dispersion above 1,000ft as per CAP 1616, Appendix B, Para B74. It should also be noted that there are no AQMAs in the area of the proposed development.	Like the Do Nothing scenario, to avoid nearby terrain/existing turbines and the proposed turbines, it is likely that any aircraft that overfly the area within the vicinity of the proposed wind farm would be above 1,000ft. Therefore, as per CAP 1616, Appendix B, Para B74, there is unlikely to be an impact on local air quality due to the effects of mixing and dispersion. In addition, any aircraft flying within the proposed TMZ or those required to re-route to avoid the turbines would not overfly an AQMA.	Like the Do Nothing scenario, to avoid nearby terrain/existing turbines and the proposed turbines, it is likely any aircraft that overfly the area within the vicinity of the proposed wind farm would be above 1,000ft. Therefore, as per CAP 1616, Appendix B, Para B74, there is unlikely to be an impact on local air quality due to the effects of mixing and dispersion. In addition, any aircraft flying with the proposed TMZ or those required to re-route to avoid the turbines would not overfly an AQMA.	Like the Do Nothing scenario, to avoid nearby terrain/existing turbines and the proposed turbines, it is likely that any aircraft that overfly the area within the vicinity of the proposed wind farm would be above 1,000ft. Therefore, as per CAP 1616, Appendix B, Para B74, there is unlikely to be an impact on local air quality due to the effects of mixing and dispersion. In addition, any aircraft flying within the proposed TMZ or those required to re-route to avoid the turbines would not overfly an AQMA.	Like the Do Nothing scenario, to avoid nearby terrain/existing turbines and the proposed turbines, it is likely that any aircraft that overfly the area within the vicinity of the proposed wind farm would be above 1,000ft. Therefore, as per CAP 1616, Appendix B, Para B74, there is unlikely to be an impact on local air quality due to the effects of mixing and dispersion. In addition, any aircraft flying within the proposed TMZ or those required to re-route to avoid the turbines would not overfly an AQMA.
Wider Society	Greenhouse Gas impact	Initial Options Appraisal: Qualitative	In the 'Do Nothing baseline' scenario, aircraft operating in the vicinity of the proposed development are able to operate anywhere within Class G airspace. The greenhouse gas impact of the current situation is likely to be minor due to the fact that only a limited number of aircraft operate in the area.	As part of this option, it is acknowledged that some light aircraft may have to re-route around the proposed wind farm in this scenario. Within this option, re-routing would likely only be required by a very small percentage of aircraft, who do not have a transponder or who are not in communication with ATC. As a result, the majority of aircraft should not require a re-route, but it is noted that a small percentage may do so, which will lead to increased track mileage and therefore increased greenhouse gas emissions. However, due to the small scale of the proposed TMZ this is expected to be minimal when compared to the baseline scenario. It is also worth noting that a detailed Environmental Impact Assessment (EIA) has been carried out on the development as a whole as part of the development consent process. The EIA concluded that the overall development would be carbon positive, which should be considered, in balance against any adverse greenhouse gas emissions caused by the re-routing of aircraft.	As part of this option, it is acknowledged that some light aircraft may have to re-route around the proposed wind farm in this scenario. Within this option, re-routing would likely only be required by a very small percentage of aircraft, who do not have a transponder or who are not in communication with ATC. As a result, the majority of aircraft should not require a re-route, but it is noted that a small percentage may do so, which will lead to increased track mileage and therefore increased greenhouse gas emissions. However, due to the small scale of the proposed TMZ this is expected to be minimal, even when the 2 NM buffer is considered, when compared to the baseline scenario. It is also worth noting that a detailed Environmental Impact Assessment (EIA) has been carried out on the development as a whole as part of the development consent process. The EIA concluded that the overall development would be carbon positive, which should be considered, in balance against any adverse greenhouse gas emissions caused by the re-routing of aircraft.	As part of this option, it is acknowledged that some light aircraft may have to re-route around the proposed wind farm in this scenario. Within this option, re-routing would likely only be required by a very small percentage of aircraft, who do not have a transponder or who are not in communication with ATC. As a result, the majority of aircraft should not require a re-route, but it is noted that a small percentage may do so, which will lead to increased track mileage and therefore increased greenhouse gas emissions. However, due to the small scale of the proposed TMZ this is expected to be minimal, when compared to the baseline scenario. It is also worth noting that a detailed Environmental Impact Assessment (EIA) has been carried out on the development as a whole as part of the development consent process. The EIA concluded that the overall development would be carbon positive, which should be considered, in balance against any adverse greenhouse gas emissions caused by the re-routing of aircraft.	As part of this option, it is acknowledged that some light aircraft may have to re-route around the proposed wind farm in this scenario. Within this option, re-routing would likely only be required by a very small percentage of aircraft, who do not have a transponder or who are not in communication with ATC. As a result, the majority of aircraft should not require a re-route, but it is noted that a small percentage may do so, which will lead to increased track mileage and therefore increased greenhouse gas emissions. However, due to the small scale of the proposed TMZ this is expected to be minimal, even when the 2 NM buffer is considered, when compared to the baseline scenario. It is also worth noting that a detailed Environmental Impact Assessment (EIA) has been carried out on the development as a whole as part of the development consent process. The EIA concluded that the overall development would be carbon positive, which should be considered, in balance against any adverse greenhouse gas emissions caused by the re-routing of aircraft.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	As the 'Do Nothing baseline' scenario reflects the current situation, it represents no change or impact on capacity and resilience.	The introduction of a TMZ is not expected to have any impact on capacity and resilience due to the small scale of the change and nature of operations in the vicinity.	The introduction of a TMZ is not expected to have any impact on capacity and resilience due to the small scale of the change and nature of operations in the vicinity.	The introduction of a TMZ is not expected to have any impact on capacity and resilience due to the small scale of the change and nature of operations in the vicinity.	The introduction of a TMZ is not expected to have any impact on capacity and resilience due to the small scale of the change and nature of operations in the vicinity.
Wider Society	Tranquillity	Initial Options Appraisal: Qualitative	The 'Do Nothing baseline' represents the current situation in which, the proposed location of the Clash Gour wind farm is located approximately 20 NM outside the nearest National Scenic Area (NSA - equivalent to an AONB in Scotland) and approximately 3.2 NM outside the nearest National Park boundary. As such the proposed development area lies out with any NSA or NP.	Like the baseline scenario, the location of the wind farm (and proposed TMZ) is out with the boundaries of any NSA or NP. Due to the small scale of the proposed TMZ, any aircraft that may have to route around it would unlikely overfly an NSA or NP. Therefore, the impact of this option on Tranquillity is very limited.	Like the baseline scenario, the location of the wind farm (and proposed TMZ) is out with the boundaries of any NSA or NP. Due to the small scale of the proposed TMZ, any aircraft that may have to route around it would unlikely overfly an NSA or NP. Therefore, the impact of this option on Tranquillity is very limited.	Like the baseline scenario, the location of the wind farm (and proposed TMZ) is out with the boundaries of any NSA or NP. Due to the small scale of the proposed TMZ, any aircraft that may have to route around it would unlikely overfly an NSA or NP. Therefore, the impact of this option on Tranquillity is very limited.	Like the baseline scenario, the location of the wind farm (and proposed TMZ) is out with the boundaries of any NSA or NP. Due to the small scale of the proposed TMZ, any aircraft that may have to route around it would unlikely overfly an NSA or NP. Therefore, the impact of this option on Tranquillity is very limited.
Wider Society	Biodiversity	Initial Options Appraisal: Qualitative	In the 'Do Nothing baseline' scenario (the current situation), the Clash Gour wind farm does not exist and therefore has no impact on Biodiversity. The change sponsor acknowledges the presence of a Special Conservation Area (SAC) and Special Protection Areas (SPAs) in the local area but this scenario will have no impact on these as there will be no change.	It is acknowledged that the development of the proposed wind farm may have an impact on biodiversity, when assessed as a stand-alone airspace solution, this option would have a minimal impact on biodiversity. Although the wind farm is located in close proximity to the Moidach More Special Conservation Area (SAC), any impacts of aircraft overflying this designated area are expected to be minimal. The rationale being that this particular designation specifically refers to the conservation of an area of blanket bog, which is subject to negative pressures such as burning or water management issues. As the Moidach More SAC specifically refers to a ground-based eco-system, this ACP is expected to be a very minimal impact as the effects of fuel dispersion and mixing above 1,000ft are unlikely to cause on impact on local air quality in this area. No Special Protection Areas (SPAs) or European Protected species are expected to be adversely impacted by this option. Please note that any impact on biodiversity as a result of the development of the wind farm itself is subject to development consent and is outside the scope of the CAP 1616 process.	It is acknowledged that the development of the proposed wind farm may have an impact on biodiversity, when assessed as a stand-alone airspace solution, this option would have a minimal impact on biodiversity. 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General Aviation	Access	Initial Options Appraisal: Qualitative	In the 'Do Nothing baseline' scenario, there are no change to the extant airspace arrangements. GA users in the current situation are able to operate freely within Class G airspace and are not mandated to carry a transponder or be in communication with ATC, unless they wish to enter the Aerodrome Traffic Zone (ATZ) at Inverness or the Military Traffic Zone (MTZ) at RAF Lossiemouth. This scenario reflects and maintains this arrangement.	The change sponsor acknowledges that the implementation of a TMZ will have a minor impact on airspace access for some GA users. This is applicable to those GA aircraft that are not equipped with a transponder and are not in communication with ATC. For these aircraft a route around the proposed TMZ would be required, however, given the size and scale of this option, any re-routing is expected to be minimal. For those aircraft equipped with a transponder and/or in communication with ATC, this option should have a very limited impact and will not hinder their level of airspace access.	The change sponsor acknowledges that the implementation of a TMZ will have a minor impact on airspace access for some GA users. This is applicable to those GA aircraft that are not equipped with a transponder and are not in communication with ATC. For these aircraft a route around the proposed TMZ would be required, however, given the size and scale of this option, any re-routing is expected to be minimal. It is noted that additional re-routing may be required as part of this option to completely avoid the TMZ, including the 2 NM buffer. For those aircraft equipped with a transponder and/or in communication with ATC, this option should have a very limited impact and will not hinder their level of airspace access.	The change sponsor acknowledges that the implementation of a TMZ will have a minor impact on airspace access for some GA users. This is applicable to those GA aircraft that are not equipped with a transponder and are not in communication with ATC. For these aircraft a route around the proposed TMZ would be required, however, given the size and scale of this option, any re-routing is expected to be minimal. For those aircraft equipped with a transponder and/or in communication with ATC, this option should have a very limited impact and will not hinder their level of airspace access.	The change sponsor acknowledges that the implementation of a TMZ will have a minor impact on airspace access for some GA users. This is applicable to those GA aircraft that are not equipped with a transponder and are not in communication with ATC. For these aircraft a route around the proposed TMZ would be required, however, given the size and scale of this option, any re-routing is expected to be minimal. It is noted that additional re-routing may be required as part of this option to completely avoid the TMZ, including the 2 NM buffer. For those aircraft equipped with a transponder and/or in communication with ATC, this option should have a very limited impact and will not hinder their level of airspace access.
General Aviation / commercial airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	As specified in the Statement of Need, this ACP is aimed at mitigating the impacts of the proposed Clash Gour wind farm. Therefore, there will be no change to the number of air traffic movements in the area as a direct result of this ACP, which reflects the current situation.	As specified in the Statement of Need, this ACP is aimed at mitigating the impacts of the proposed Clash Gour wind farm. Therefore, there will be no change to the number of air traffic movements in the area as a direct result of this ACP, this is reflected in the baseline scenario. For those aircraft that are not equipped with a transponder or in communication with ATC, a minor re-route may be required which may lead to a minor additional fuel cost, but due to the scale of the proposed TMZ this is expected to be very minor. It should be noted that all commercial aircraft are fitted with transponders and as such there should be no impact on commercial traffic.	As specified in the Statement of Need, this ACP is aimed at mitigating the impacts of the proposed Clash Gour wind farm. Therefore, there will be no change to the number of air traffic movements in the area as a direct result of this ACP, this is reflected in the baseline scenario. For those aircraft that are not equipped with a transponder or in communication with ATC, a minor re-route may be required which may lead to a minor additional fuel cost, but due to the scale of the proposed TMZ this is expected to be very minor although it is acknowledged that complete avoidance of the TMZ, including the 2 NM buffer would incur additional minor cost. It should be noted that all commercial aircraft are fitted with transponders and as such there should be no impact on commercial traffic.	As specified in the Statement of Need, this ACP is aimed at mitigating the impacts of the proposed Clash Gour wind farm. Therefore, there will be no change to the number of air traffic movements in the area as a direct result of this ACP, this is reflected in the baseline scenario. For those aircraft that are not equipped with a transponder or in communication with ATC, a minor re-route may be required which may lead to a minor additional fuel cost, but due to the scale of the proposed TMZ this is expected to be very minor.	As specified in the Statement of Need, this ACP is aimed at mitigating the impacts of the proposed Clash Gour wind farm. Therefore, there will be no change to the number of air traffic movements in the area as a direct result of this ACP, this is reflected in the baseline scenario. For those aircraft that are not equipped with a transponder or in communication with ATC, a minor re-route may be required which may lead to a minor additional fuel cost, but due to the scale of the proposed TMZ this is expected to be very minor although it is acknowledged that complete avoidance of the TMZ, including the 2 NM buffer would incur additional minor cost. It should be noted that all commercial aircraft are fitted with transponders and as such there should be no impact on commercial traffic.
General Aviation / commercial airlines	Fuel burn	Initial Options Appraisal: Qualitative	In the 'Do Nothing baseline' scenario, there are no changes to the extant airspace arrangements and as such there is no impact on aircraft fuel burn.	The change sponsor acknowledges that the introduction of a TMZ would require some aircraft (those without a transponder and not in communication with ATC) to re-route around the TMZ, causing increased track mileage and fuel burn. However, due to the scale of the proposed TMZ, this re-route is expected to be minimal and is mainly only applicable to those aircraft which do not meet the requirements to fly within the TMZ. It should be noted that all commercial aircraft are fitted with transponders and as such there should be no impact on commercial traffic.	The change sponsor acknowledges that the introduction of a TMZ would require some aircraft (those without a transponder and not in communication with ATC) to re-route around the TMZ, causing increased track mileage and fuel burn. However, due to the scale of the proposed TMZ, this re-route is expected to be minimal and is mainly only applicable to those aircraft which do not meet the requirements to fly within the TMZ. The complete avoidance of the additional 2 NM would add further track mileage and fuel burn, but again, this is expected to be minimal due to the scale of the proposed TMZ. It should be noted that all commercial aircraft are fitted with transponders and as such there should be no impact on commercial traffic.	The change sponsor acknowledges that the introduction of a TMZ would require some aircraft (those without a transponder and not in communication with ATC) to re-route around the TMZ, causing increased track mileage and fuel burn. However, due to the scale of the proposed TMZ, this re-route is expected to be minimal and is mainly only applicable to those aircraft which do not meet the requirements to fly within the TMZ. It should be noted that all commercial aircraft are fitted with transponders and as such there should be no impact on commercial traffic.	The change sponsor acknowledges that the introduction of a TMZ would require some aircraft (those without a transponder and not in communication with ATC) to re-route around the TMZ, causing increased track mileage and fuel burn. However, due to the scale of the proposed TMZ, this re-route is expected to be minimal and is mainly only applicable to those aircraft which do not meet the requirements to fly within the TMZ. The complete avoidance of the additional 2 NM would add further track mileage and fuel burn, but again, this is expected to be minimal due to the scale of the proposed TMZ. It should be noted that all commercial aircraft are fitted with transponders and as such there should be no impact on commercial traffic.
Commercial airlines	Training costs	Initial Options Appraisal: Qualitative	As this is the 'Do Nothing baseline' scenario there are no additional training costs for commercial airlines due to the fact that there is no change to the extant airspace arrangements.	There is no anticipated training cost to commercial airlines as a result of this option, especially as there is a limited amount of commercial traffic within the vicinity of the proposed wind farm. In addition, all commercial aircraft are fitted with a transponder, therefore, there is no adverse impact on this group of airspace users.	There is no anticipated training cost to commercial airlines as a result of this option, especially as there is a limited amount of commercial traffic within the vicinity of the proposed wind farm. In addition, all commercial aircraft are fitted with a transponder, therefore, there is no adverse impact on this group of airspace users.	There is no anticipated training cost to commercial airlines as a result of this option, especially as there is a limited amount of commercial traffic within the vicinity of the proposed wind farm. In addition, all commercial aircraft are fitted with a transponder, therefore, there is no adverse impact on this group of airspace users.	There is no anticipated training cost to commercial airlines as a result of this option, especially as there is a limited amount of commercial traffic within the vicinity of the proposed wind farm. In addition, all commercial aircraft are fitted with a transponder, therefore, there is no adverse impact on this group of airspace users.
Commercial airlines	Other costs	Initial Options Appraisal: Qualitative	As this is the 'Do Nothing baseline' scenario there are no additional other costs for commercial airlines due to the fact that there is no change to the extant airspace arrangements.	There are no anticipated additional costs to commercial airlines associated with this option.	There are no anticipated additional costs to commercial airlines associated with this option.	There are no anticipated additional costs to commercial airlines associated with this option.	There are no anticipated additional costs to commercial airlines associated with this option.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	As this is the 'Do Nothing baseline' scenario there are no additional infrastructure costs for Airports/ANSPs due to the fact that there is no change to the extant airspace arrangements.	There is expected to be a possible small cost associated with software updates to accommodate for the establishment of the TMZ but these are expected to be minor.	There is expected to be a possible small cost associated with software updates to accommodate for the establishment of the TMZ but these are expected to be minor.	There is expected to be a possible small cost associated with software updates to accommodate for the establishment of the TMZ but these are expected to be minor.	There is expected to be a possible small cost associated with software updates to accommodate for the establishment of the TMZ but these are expected to be minor.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	As this is the 'Do Nothing baseline' scenario there are no additional operational costs for Airports/ANSPs due to the fact that there is no change to the extant airspace arrangements.	Any cost incurred by the controlling authority associated with the staffing and management of the proposed TMZ would be subject to commercial negotiations and likely a Letter of Agreement. At this stage of the CAP 1616 process, it is unclear how much this cost is likely to be but shall be investigated in subsequent stages of the process.	Any cost incurred by the controlling authority associated with the staffing and management of the proposed TMZ would be subject to commercial negotiations and likely a Letter of Agreement. At this stage of the CAP 1616 process, it is unclear how much this cost is likely to be but shall be investigated in subsequent stages of the process.	Any cost incurred by the controlling authority associated with the staffing and management of the proposed TMZ would be subject to commercial negotiations and likely a Letter of Agreement. At this stage of the CAP 1616 process, it is unclear how much this cost is likely to be but shall be investigated in subsequent stages of the process.	Any cost incurred by the controlling authority associated with the staffing and management of the proposed TMZ would be subject to commercial negotiations and likely a Letter of Agreement. At this stage of the CAP 1616 process, it is unclear how much this cost is likely to be but shall be investigated in subsequent stages of the process.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	As this is the 'Do Nothing baseline' scenario there are no additional deployment costs for Airports/ANSPs due to the fact that there is no change to the extant airspace arrangements.	There may be a small amount of additional controller training associated with the management of the TMZ, however, this is expected to be minimal.	There may be a small amount of additional controller training associated with the management of the TMZ, however, this is expected to be minimal.	There may be a small amount of additional controller training associated with the management of the TMZ, however, this is expected to be minimal.	There may be a small amount of additional controller training associated with the management of the TMZ, however, this is expected to be minimal.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	As the 'Do Nothing baseline' scenario includes the fact that the Clash Gour wind farm does not exist and reflects the current situation, there is no impact on aviation safety. The baseline assumption remains that the extant airspace arrangements are safe and continue to be so.	The management and integration of GA traffic (including gliders) is a potential hazard associated with this option as GA aircraft may be required to route around the proposed TMZ, which may cause ‘choke points’, however, this is mitigated by airspace design constraints and tactical management of traffic by ATC. To avoid the development of ‘choke points’ and need for tactical management, there will be clear designation and promulgation of the TMZ within the UK AIP. It is acknowledged that any tactical management may cause a slight increase in controller workload, however, due to the low traffic flows of light aircraft within the area, this is expected to be minimal. Furthermore, within Class G airspace, the pilot is ultimately responsible for collision avoidance. It is recognised that adverse weather conditions may hamper a pilot’s ability to maintain visual separation with the turbines. This is mitigated through the effective use of flight planning by pilots. Furthermore, loss of communication with non-transponding aircraft is acknowledged but is an existing hazard which is not impacted by the establishment of a TMZ, especially within Class G airspace. Having said that, the size and shape of this proposed TMZ option would add additional complexity for both pilots and controllers, leading to increased workload. A potential loss of the TMZ boundary (as displayed on the controllers display) is also acknowledged, however this is an unlikely failure mode which may have more serious consequences for factors that do not relate to the establishment of TMZ and as such is an existing hazard, which can be mitigated procedurally. It is worth noting that during stakeholder engagement, both Inverness Airport and RAF Lossiemouth agreed that a possible technical solution could be found to further mitigate any adverse impacts. However, such a solution is not currently in place. These particular stakeholders raised objections and agreed a set of suitably worded consent conditions. Adherence to these conditions may trigger both parties to remove their objections.	The management and integration of GA traffic (including gliders) is a potential hazard associated with this option as GA aircraft may be required to route around the proposed TMZ, which may cause ‘choke points’, however, this is mitigated by airspace design constraints and tactical management of traffic by ATC. To avoid the development of ‘choke points’ and need for tactical management, there will be clear designation and promulgation of the TMZ within the UK AIP. It is acknowledged that any tactical management may cause a slight increase in controller workload, however, due to the low traffic flows of light aircraft within the area, this is expected to be minimal. In the case of this option, an additional mitigation is the 2 NM buffer which will give the controller additional warning of an unauthorised aircraft entering the TMZ. Furthermore, within Class G airspace, the pilot is ultimately responsible for collision avoidance. It is recognised that adverse weather conditions may hamper a pilot’s ability to maintain visual separation with the turbines. This is mitigated through the effective use of flight planning by pilots. Furthermore, loss of communication with non-transponding aircraft is acknowledged but is an existing hazard which is not impacted by the establishment of a TMZ, especially within Class G airspace. Having said that, the size and shape of this proposed TMZ option would add additional complexity for both pilots and controllers, leading to increased workload. A potential loss of the TMZ boundary (as displayed on the controllers display) is also acknowledged, however this is an unlikely failure mode which may have more serious consequences for factors that do not relate to the establishment of TMZ and as such is an existing hazard, which can be mitigated procedurally. It is worth noting that during stakeholder engagement, both Inverness Airport and RAF Lossiemouth agreed that a possible technical solution could be found to further mitigate any adverse impacts. However, such a solution is not currently in place. These particular stakeholders raised objections and agreed a set of suitably worded consent conditions. Adherence to these conditions may trigger both parties to remove their objections.	The management and integration of GA traffic (including gliders) is a potential hazard associated with this option as GA aircraft may be required to route around the proposed TMZ, which may cause ‘choke points’, however, this is mitigated by airspace design constraints and tactical management of traffic by ATC. To avoid the development of ‘choke points’ and need for tactical management, there will be clear designation and promulgation of the TMZ within the UK AIP. It is acknowledged that any tactical management may cause a slight increase in controller workload, however, due to the low traffic flows of light aircraft within the area, this is expected to be minimal. Furthermore, within Class G airspace, the pilot is ultimately responsible for collision avoidance. It is recognised that adverse weather conditions may hamper a pilot’s ability to maintain visual separation with the turbines. This is mitigated through the effective use of flight planning by pilots. Furthermore, loss of communication with non-transponding aircraft is acknowledged but is an existing hazard which is not impacted by the establishment of a TMZ, especially within Class G airspace. The size and shape of this proposed option is simpler than some others meaning it is easier for both pilots and controllers to interpret/manage. A potential loss of the TMZ boundary (as displayed on the controllers display) is also acknowledged, however this is an unlikely failure mode which may have more serious consequences for factors that do not relate to the establishment of TMZ and as such is an existing hazard, which can be mitigated procedurally. It is worth noting that during stakeholder engagement, both Inverness Airport and RAF Lossiemouth agreed that a possible technical solution could be found to further mitigate any adverse impacts. However, such a solution is not currently in place. These particular stakeholders raised objections and agreed a set of suitably worded consent conditions. Adherence to these conditions may trigger both parties to remove their objections.	The management and integration of GA traffic (including gliders) is a potential hazard associated with this option as GA aircraft may be required to route around the proposed TMZ, which may cause ‘choke points’, however, this is mitigated by airspace design constraints and tactical management of traffic by ATC. To avoid the development of ‘choke points’ and need for tactical management, there will be clear designation and promulgation of the TMZ within the UK AIP. It is acknowledged that any tactical management may cause a slight increase in controller workload, however, due to the low traffic flows of light aircraft within the area, this is expected to be minimal. In the case of this option, an additional mitigation is the 2 NM buffer which will give the controller additional warning of an unauthorised aircraft entering the TMZ. Furthermore, within Class G airspace, the pilot is ultimately responsible for collision avoidance. It is recognised that adverse weather conditions may hamper a pilot’s ability to maintain visual separation with the turbines. This is mitigated through the effective use of flight planning by pilots. Furthermore, loss of communication with non-transponding aircraft is acknowledged but is an existing hazard which is not impacted by the establishment of a TMZ, especially within Class G airspace. The size and shape of this proposed option is simpler than some others meaning it is easier for both pilots and controllers to interpret/manage. A potential loss of the TMZ boundary (as displayed on the controllers display) is also acknowledged, however this is an unlikely failure mode which may have more serious consequences for factors that do not relate to the establishment of TMZ and as such is an existing hazard, which can be mitigated procedurally. It is worth noting that during stakeholder engagement, both Inverness Airport and RAF Lossiemouth agreed that a possible technical solution could be found to further mitigate any adverse impacts. However, such a solution is not currently in place. These particular stakeholders raised objections and agreed a set of suitably worded consent conditions. Adherence to these conditions may trigger both parties to remove their objections.
		Summary of Analysis	Option 0 (the Do Nothing baseline) provides no change the current situation and therefore the impacts of aviation activity in the area remain the same as they are today. Furthermore, it is assumed that the extant airspace arrangements are safe and remain so. Option 0 was previously rejected but has been carried forward into the IOA for comparative purposes only and as such shall not be carried forward into Stage 3 as a potential option but shall remain the baseline scenario.	From a safety perspective, Option 7C provides a radar mitigation solution suitable for managing traffic within the vicinity of the proposed wind farm. As a result of the introduction of radar blanking and a TMZ, controllers will have greater situational awareness of traffic operating in the vicinity and will not experience significant radar clutter caused by the presence of the wind farm. It is acknowledged that there may be a slight increase in controller workload, should an aircraft without a transponder and not in communication with ATC enter the TMZ, however, this is expected to be minimal. In addition, it is acknowledged that this option does present a hazard in terms of GA integration, however, this can be procedurally and tactically mitigated. With regards to environmental factors, due to the small scale of the proposed TMZ, any re-routing required by aircraft (without a transponder and not in communication with ATC) is expected to be minimal, resulting in minimal additional noise, greenhouse gas, fuel burn, access and economic impacts. It is worth noting that the development consent process for the wind farm development included a detailed Environmental Impact Assessment (EIA) which concluded that the development would be carbon positive. This must be considered in balance against the minimal environmental impacts of displaced air traffic. Furthermore, there is expected to be no or very little additional costs for commercial airlines, GA and ANSPs as a direct result of this option. It is acknowledged that there may be a minor cost associated with controller training and that a cost shall be incurred for the staffing and management of the TMZ, however, this cannot be quantified at this time. It must also be noted that the development and construction costs of the wind farm itself are outside the scope of the CAP 1616 process and as such have not been considered. Based on its performance in the IOA, Option 7C has not been carried forward on the basis that it does meet the objectives of the SoN but does not include an additional safety buffer. In addition, this option is a complicated shape which would cause unnecessary complexity for both controllers and pilots.	From a safety perspective, Option 7D provides a radar mitigation solution suitable for managing traffic within the vicinity of the proposed wind farm. As a result of the introduction of radar blanking and a TMZ, controllers will have greater situational awareness of traffic operating in the vicinity and will not experience significant radar clutter caused by the presence of the wind farm. It is acknowledged that there may be a slight increase in controller workload, should an aircraft without a transponder and not in communication with ATC enter the TMZ, however, this is expected to be minimal. In addition, it is acknowledged that this option does present a hazard in terms of GA integration, however, this can be procedurally and tactically mitigated. Furthermore, this option includes a 2 NM buffer, which provides controllers with additional warning and reaction time, should a non-participating aircraft enter the TMZ. With regards to environmental factors, due to the small scale of the proposed TMZ, any re-routing required by aircraft (without a transponder and not in communication with ATC) is expected to be minimal, resulting in minimal additional noise, greenhouse gas, fuel burn, access and economic impacts. It is worth noting that the development consent process for the wind farm development included a detailed Environmental Impact Assessment (EIA) which concluded that the development would be carbon positive. This must be considered in balance against the minimal environmental impacts of displaced air traffic. Furthermore, there is expected to be no or very little additional costs for commercial airlines, GA and ANSPs as a direct result of this option. It is acknowledged that there may be a minor cost associated with controller training and that a cost shall be incurred for the staffing and management of the TMZ, however, this cannot be quantified at this time. It must also be noted that the development and construction costs of the wind farm itself are outside the scope of the CAP 1616 process and as such have not been considered. Based on its performance in the IOA, Option 7D has not been carried forward on the basis that it does meet the objectives of the SoN but is a complicated shape which would cause unnecessary complexity for both controllers and pilots.	From a safety perspective, Option 7E provides a radar mitigation solution suitable for managing traffic within the vicinity of the proposed wind farm. As a result of the introduction of radar blanking and a TMZ, controllers will have greater situational awareness of traffic operating in the vicinity and will not experience significant radar clutter caused by the presence of the wind farm. It is acknowledged that there may be a slight increase in controller workload, should an aircraft without a transponder and not in communication with ATC enter the TMZ, however, this is expected to be minimal. In addition, it is acknowledged that this option does present a hazard in terms of GA integration, however, this can be procedurally and tactically mitigated. Option 7E also provides a simplified TMZ airspace design which reduced complexity for both controllers and pilots. With regards to environmental factors, due to the small scale of the proposed TMZ, any re-routing required by aircraft (without a transponder and not in communication with ATC) is expected to be minimal, resulting in minimal additional noise, greenhouse gas, fuel burn, access and economic impacts. It is worth noting that the development consent process for the wind farm development included a detailed Environmental Impact Assessment (EIA) which concluded that the development would be carbon positive. This must be considered in balance against the minimal environmental impacts of displaced air traffic. Furthermore, there is expected to be no or very little additional costs for commercial airlines, GA and ANSPs as a direct result of this option. It is acknowledged that there may be a minor cost associated with controller training and that a cost shall be incurred for the staffing and management of the TMZ, however, this cannot be quantified at this time. It must also be noted that the development and construction costs of the wind farm itself are outside the scope of the CAP 1616 process and as such have not been considered. Based on its performance in the IOA, Option 7E has been carried forward. This is on	From a safety perspective, Option 7F provides a radar mitigation solution suitable for managing traffic within the vicinity of the proposed wind farm. As a result of the introduction of radar blanking and a TMZ, controllers will have greater situational awareness of traffic operating in the vicinity and will not experience significant radar clutter caused by the presence of the wind farm. It is acknowledged that there may be a slight increase in controller workload, should an aircraft without a transponder and not in communication with ATC enter the TMZ, however, this is expected to be minimal. In addition, it is acknowledged that this option does present a hazard in terms of GA integration, however, this can be procedurally and tactically mitigated. Furthermore, this option includes a 2 NM buffer, which provides controllers with additional warning and reaction time, should a non-participating aircraft enter the TMZ. Option 7F also provides a simplified TMZ airspace design which reduced complexity for both controllers and pilots. With regards to environmental factors, due to the small scale of the proposed TMZ, any re-routing required by aircraft (without a transponder and not in communication with ATC) is expected to be minimal, resulting in minimal additional noise, greenhouse gas, fuel burn, access and economic impacts. It is worth noting that the development consent process for the wind farm development included a detailed Environmental Impact Assessment (EIA) which concluded that the development would be carbon positive. This must be considered in balance against the minimal environmental impacts of displaced air traffic. Furthermore, there is expected to be no or very little additional costs for commercial airlines, GA and ANSPs as a direct result of this option. It is acknowledged that there may be a minor cost associated with controller training and that a cost shall be incurred for the staffing and management of the TMZ, however, this cannot be quantified at this time. It must also be noted that the development and construction costs of the wind farm itself are outside the scope of the CAP 1616 process and as such have not been considered. Based on its performance in the IOA, Option 7F has been selected as the Preferred Option. This is on the basis that this option meets the objectives of the SoN and provides a simpler airspace solution when compared to Options 7C and 7D, leading to reduced complexity. In addition, Option 7F includes

Colour Key	Description
Preferred Option	Meets objectives, insignificant impact, and is one of the Short-Listed options and is the most favourable.
Carry Forward	Meets objectives, insignificant impact, and is one of the Short-Listed options.
Not Carried Forward	Meets objectives or has an insignificant impact but is less attractive than other options.
Reject	Fails to meet one or more objectives or has a significant impact that cannot be effectively mitigated.
Previously Rejected	Included for completeness.