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Title of Airspace Change Proposal	Neart na Gaoithe and Inch Cape Offshore Wind Farms Transponder Mandatory Zone (TMZ)
Change Sponsor	Neart na Gaoithe Offshore Wind Limited & Inch Cape Offshore Limited – assisted by Osprey Consulting Services Ltd
SARG Project Leader	[REDACTED]
Case Study commencement date	08/10/2015
Case Study report as at	28/10/2015 (and updated on 02/03/2016)
Report Reference	SARG/ERCD/AG/Neart na Gaoithe and Inch Cape

Instructions

In providing a response for each question, please ensure that the 'Status' column is completed using the following options:

- **Yes**
- **No**
- **Partially**
- **N/A**

To aid the SARG Project Leader's efficient Project Management it may be useful that each question is also highlighted accordingly to illustrate what is resolved (Green), **not resolved** (Amber) or **not compliant** (Red) as part of the SARG Project Leader's efficient project management.

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1.	Introduction	
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This report describes the environmental considerations relevant to the proposal for the implementation of a single Transponder Mandatory Zone (TMZ) over the planned Neart na Gaoithe and Inch Cape offshore windfarms, which is proposed in order to maintain safe air traffic operations in the presence of offshore Wind Turbine Generators (WTGs). Neart na Gaoithe will be located in the Outer Firth of Forth, approximately 15.5 km from Fife Ness, with Inch Cape located approximately 15 km off the Angus coastline. This airspace change proposal (ACP) has been submitted by Osprey Consulting Services (OCS) on behalf of Neart na Gaoithe Offshore Wind Limited (NNGOWL) and Inch Cape Offshore Limited (ICOL)

This assessment is based upon information presented in the proposal document entitled “Neart na Gaoithe and Inch Cape Wind farms, Airspace Change Proposal” (5th October 2015), plus associated consultation material and any subsequent information received as the result of queries raised with the sponsor following submission of the ACP.

Update: In January 2016 a modified proposal was agreed by the sponsors (represented by OCS) and the key stakeholder, the MOD. This changed the proposal from a single TMZ encompassing both windfarms, to two individual TMZs (one for each windfarm) and removal of the 2nm buffer. The text of the original report has been updated throughout where necessary by adding any new relevant information whilst retaining the original text.

2.	Guidance to the CAA	Status
2.1	Is the proposal consistent with Government policy and/or guidance from Government to the CAA?	Yes

Guidance issued to the Civil Aviation Authority sets¹ out a framework for the environmental objectives that the CAA must consider when assessing airspace change proposals. In addition to these objectives, there may be other legitimate operational objectives, such as the overriding need to maintain an acceptable level of air safety, the desire for sustainable development or to enhance the overall efficiency of the UK airspace network, which need to be considered alongside these environmental objectives. The Government looks to the CAA to determine the most appropriate balance between these competing characteristics.

¹ DfT, Guidance to the Civil Aviation Authority on Environmental Objectives Relating to the Exercise of its Air Navigation Functions, January 2014

² National Parks and Access to the Countryside Act 1949, National Parks (Scotland) Act 2000, and “Duties on relevant authorities to have regard to the purposes of National Parks, Areas of Outstanding Natural Beauty (AONBs) and the Norfolk and Suffolk Broads Guidance Note”, DEFRA 2005.

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Flights over National Parks and AONBs are not prohibited by legislation² as a general prohibition against over-flights would be impractical. Government policy focuses on minimising the over-flight of more densely populated areas below 7,000 feet (amsl), but balances this with CO₂ emissions between 4,000 and 7,000 feet (amsl). However, where it is practical to avoid over-flight of National Parks and AONBs below 7,000 feet (amsl), the Guidance asks that the CAA encourages this.

3.	Rationale for the Proposed Change	Status
3.1	Does the rationale for the ACP include environmental reasons?	No

No – the rationale for the TMZ does not include environmental reasons.

The sponsors' overall aim of the Neart na Gaoithe and Inch Cape (NNG and IC) TMZ is to maintain the safety, effectiveness and efficiency of the airspace surrounding the offshore wind farms, by mitigating the effects of the WTGs on Primary Surveillance Radar (PSR)-based Air Traffic Services (ATS) operations at Leuchars. Leuchars ATC operates under regulatory oversight of the Military Aviation Authority (MAA), providing essential ATS to military and civil aircraft to a range of 40 NM from the airfield, including the sites intended for the NNG and IC windfarms. The WTGs at NNG and IC could generate false radar returns (also known as “clutter”) displayed on the radar screen, which could adversely impact the situational awareness of air traffic controllers.

Therefore NNG Offshore Wind Limited (NNGOWL), IC Offshore Limited (ICOL) and the Ministry of Defence (MOD) have worked together to propose a TMZ over NNG and IC, which will enable the NNG and IC Wind Farms WTGs to be constructed and operated without affecting Leuchars flying operations.

Update: the design is now for two TMZs with a smaller combined area (138 nm²) than the original single TMZ (359 nm²).

4.	Nature of the Proposed Change	Status
4.1	Is it clear how the proposed change will operate, and therefore what the likely environmental impacts will be?	Yes

Yes the nature of the proposed change is described clearly. This will be a single TMZ, but proposed by two windfarm developers. The TMZ will be implemented in two phases to match the construction start dates for each windfarm (April 2017 for NNG, and April 2018 for IC).

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The establishment of the TMZ is one element of a two-part mitigation package aimed at negating the impact of the radar clutter from the NNG and IC WTGs upon the Leuchars PSR. The two parts are:

- Element 1: Establishment of a TMZ
- Element 2: Blanking (i.e. suppression) of the PSR returns on the radar screens at Leuchars

The proposed TMZ around the NNG and IC windfarms will be up to Flight Level (FL) 100 (10,000ft). It is to be active during the Leuchars Lower Airspace Radar Service (LARS) provision times, which are 24 hours per day seven days a week.

A potential drawback of establishing a TMZ is that non-transponding aircraft may choose to take an alternative route in order to ‘bypass’ the TMZ, resulting in a change in traffic patterns and ATC workload in this area. It is possible that some General Aviation (GA) operators might elect to route on or closer to shore to avoid the TMZ requirements rather than routing offshore through the TMZ as they might have done otherwise (e.g. because flying through that airspace offers a more direct route).

Notwithstanding the requirement to be equipped and using a transponder within a TMZ, provision exists for conditional access by non-equipped aircraft by prior arrangement, establishing two-way radio contact, with the appropriate Air Traffic Service Unit (ATSU), which in this case Leuchars ATC.

Two individual surveys of one week duration were conducted and eight months of statistics provided by Leuchars. Both of the one-week surveys showed no general aviation (GA) aircraft were seen to transit the proposed area of the TMZ. “Furthermore, feedback gained from the controlling staff at Leuchars indicated that the incidence of GA or non-SSR equipped aircraft operating in the location of the proposed TMZ is extremely remote. This is supported by the statistics of non-SSR equipped aircraft provided by Leuchars over a four-month period in which less than 3% of aircraft provided with an ATS were non-SSR equipped, none operating in the location of the proposed TMZ.”³

Therefore, it is anticipated that there will be little, if any, traffic displacement due to the proposed TMZ inhibiting GA flight operations.

Accepting that, the sponsors anticipate that the environmental impact of the NNG and IC TMZ will be neutral within the three main categories of noise, CO₂ emissions and local air quality. Further consideration of each category will be outlined later in this report.

³ Neart na Gaoithe and Inch Cape Wind farms, Airspace Change Proposal

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Update: The key elements of the revised proposal that are relevant for this report are:

- The 2nm buffer is removed, as is the linkage of both windfarms within a single TMZ.
- Two separate TMZs (NNG and IC) are introduced whose perimeters are delineated by each WTG footprint and a 1nm buffer zone in the eastern “shadow area” of each TMZ.
- As per the original proposal, the top level of each TMZ will be FL100 and the operating hours will be H24.
- Each TMZ will be implemented separately in line with the erection of WTGs at each site.

4.2	Have alternative options been considered, and have the environmental impact of each alternative been assessed?	Partially
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Yes a number of alternative technical options have been considered (including “Do Nothing”).

However these options were not assessed for their environmental impacts as the safety and efficiency of the airspace was the primary focus of the proposal. That being said the environmental impacts for the proposal and the difference of impact between the options should be negligible.

Update: in effect, the revised proposal for two TMZs represents a further option.

5.	Noise	Status
5.1	Has the noise impact been adequately assessed?	Yes

Due to the offshore location of the windfarms and the negligible (if any) anticipated traffic displacement due to a TMZ, there is anticipated to be negligible (if any) negative noise impact. Given that it is not possible to assess quantitatively the potential impact as any assumptions about GA traffic patterns and the occurrence of any re-routing would be too theoretical to support any findings, the use of a qualitative assessment by the sponsors is reasonable for this proposal.

5.2	Has the noise impact been adequately presented in the consultation and the submitted proposal?	Yes
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Yes – as noted in 5.1 above the likely noise impact will be negligible (if any) and this is explained in both documents.

6.	Emissions	Status
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6.1	Has the impact on CO₂ emissions been adequately assessed?	Yes
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The sponsors state that this proposal will not change the trajectories of flights as there will be access procedures even for aircraft which are not transponder equipped. Due to the insignificant effects (if any) of the proposal the analysis of exhaust emissions and fuel burn, has not been undertaken. Only aircraft without a working transponder and with no radio will be required to route around the TMZ. The frequency of this occurring is expected to be rare, if at all. Hence there will be no measurable impact on exhaust emissions and fuel burn.

The sponsors acknowledged that whilst it is possible that some GA operators might elect to route on or closer to shore to avoid the TMZ requirements rather than routing offshore through the TMZ. Based on the scale of any likely impact in terms of longer routes (minimal, if at all), the consideration of the impact on CO₂ emissions for this proposal is reasonable.

6.2	Has the impact on CO₂ emissions impact been adequately presented in the consultation and the submitted proposal?	Yes
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Yes – the likelihood of negligible (if any) negative impact in CO₂ emissions is explained.

7.	Local Air Quality	Status
7.1	Has the impact on Local Air Quality been adequately assessed?	Yes

The sponsors recognise for a number of reasons, this proposal is very unlikely to have any impact on local air quality:

- The proposed TMZ lies offshore;
- The anticipated impact upon traffic patterns is minimal (if any):
- Any traffic affected will be light aircraft (that have relatively low emissions);
- There is no Air Quality Management Areas in the vicinity.

7.2	Has the impact on Local Air Quality been adequately presented in the consultation and the submitted proposal?	Yes
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Yes - the expectation of no impact on LAQ is explained in both documents.

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8.	Tranquillity	Status
8.1	Has the impact on tranquillity been adequately considered?	Yes

Based upon the expectation that this change will have minimal (if any) changes on traffic patterns and the fact that the proposal does not affect any National Parks or Areas of Outstanding Natural Beauty (AONBs), as there are no NPs or AONBs near the proposed TMZ, the potential impact on tranquillity has been adequately considered by the sponsors as minimal (if any) impact on.

8.2	Has the impact on tranquillity been adequately presented in the consultation and the submitted proposal?	Yes
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Yes – tranquillity has been briefly considered in both documents, the sponsors anticipate that it is unlikely that both tranquillity and visual intrusion will be impacted by any GA displacement and, in the worst case, the number of aircraft negatively affected are not likely to increase significantly upon implementation.

9.	Visual Intrusion	Status
9.1	Has the impact of visual intrusion been adequately considered?	Yes

Based upon the expectation that this change will have minimal (if any) changes on traffic patterns and the fact that the proposal does not affect any National Parks or AONBs, the potential impact on visual intrusion has been adequately considered by the sponsor.

9.2	Has the impact of visual intrusion been adequately presented in the consultation and the submitted proposal?	Yes
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Yes – visual intrusion has been adequately considered in both documents.

10.	Biodiversity	Status
10.1	Has the impact upon biodiversity been adequately considered?	Yes

Yes – Though there is no evidence to suggest the effect on the Isle of May has been considered, which is in relatively close proximity to the proposed TMZ area. The Isle of May is a nature reserve and a designated Site of Special Scientific Interest and a European Special Protection Area for

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breeding seabirds. However due to the anticipation that there will be negligible (if any) change to traffic displacement, there is unlikely to be a negative biodiversity impact, based on the anticipated impacts of this proposal, there is unlikely to be any impact specifically upon biodiversity.

Update: the reduction in area resulting from two TMZs means that the distance between the Isle of May and the closest point of the TMZs is increased. This will, if anything, reduce further the likelihood of any biodiversity impact that might have arisen from re-routing aircraft.

10.2	Has the impact upon biodiversity been adequately presented in the consultation and the submitted proposal?	Yes
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Yes – whilst there is no specific mention of biodiversity in the documents, this is not unreasonable considering that there is unlikely to be any impacts on biodiversity.

11.	Continuous Descent Approaches	Status
11.1	Has the implementation of, or greater use of, CDAs been considered?	No

Consideration of CDAs is not relevant for this proposal.

12.	Impacts Upon National Parks and/or AONBs	Status
12.1	Does the proposed change have an impact upon any National Parks or Areas of Outstanding Natural Beauty (AONBs)?	No

The statutory purposes of National Parks are to conserve and enhance their natural beauty, wildlife, and cultural heritage and to promote opportunities for the understanding and enjoyment of their special qualities by the public. The statutory purpose of AONBs is to conserve and enhance the natural beauty of their area. In exercising or performing any functions in relation to, or so as to affect, land in National Parks and AONBs, the CAA is required to have regard to these statutory purposes under s.19 and Schedule 2 of the Civil Aviation Act 1982. This duty was re-stated in the revised Air Navigation Guidance issued in 2014.

This duty was also reiterated in the Aviation Policy Framework (March 2013) which stated “the CAA has legal duties to have regard to the purposes of National Parks and Areas of Outstanding Natural Beauty and must therefore take these into account when assessing airspace changes.”

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Whilst recognising this duty it is also true that flights over National Parks and AONBs are not prohibited by this legislation as a general prohibition against over-flights would be impractical.

In the case of this proposal there are no National Parks or AONBs near the proposed TMZ, therefore there is no anticipated impacts upon either.

13.	Traffic Forecasts	Status
13.1	Have traffic forecasts been provided, are they reasonable, and have these been used to reflect the future impact of the proposal?	No

The proposal is not expected to have any impact on traffic numbers and for that reason it is unnecessary to present traffic forecasts in this instance. This omission is reasonable based upon the nature of this proposal.

14.	Consultation	Status
14.1	If undertaken, has evidence of non-aviation stakeholder consultation been provided?	Yes

Yes, the consultation did include non-aviation stakeholders. The consultation was available on Inch Cape Offshore Limited's (ICOL) website and was accessible by any interested parties. The sponsors' aim for the consultation was primarily to seek industry comment on the proposal and to refine this accordingly prior to submission to the CAA.

The NNG and IC TMZ consultation invitations were circulated to a total of 62 stakeholder consultee organisations or individuals; of these two emails were returned as undelivered. The list of consultees comprised:

- 37 Aviation "National Organisations" (CAA National Air Traffic Management Advisory committee (NATMAC) list);
- 11 Aviation organisations;
- 10 Local aerodromes; and
- 4 Non-Aviation organisations.

Non-aviation stakeholders for consultation included environmental, heritage organisations. The general public were able to access the consultation via ICOL's website.

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14.2	Has account been taken of the results of the environmental factors raised by consultees or has evidence been provided to indicate why this has not been possible?	Yes
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No environmental factors were raised by consultees.

15.	Compliance with CAP 725	Status
15.1	Have all environmental assessment requirements specified in CAP 725 been met, where applicable?	Yes

Yes – all requirements have been met where applicable and where relevant.

16.	Other Aspects	Status
16.1	Are there any other aspects of the ACP, that have not already been addressed in this report, that may have a bearing on the environmental impact?	No

There are no other aspects to note.

17.	Recommendations	Status
17.1	Are there any recommendations for the Post-Implementation Review?	Yes

The sponsors should ensure that they monitor and record instances of non-transponder traffic being denied access to cross the TMZ are monitored and recorded, and that the reason for any such refusals is also recorded. This data will then be used in the Post Implementation Review (PIR).

18.	Government Approval	Status
18.1	Is the approval of the Secretary of State for Transport required in respect of the environmental impact of the airspace change proposal?	No

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No – For the reasons set out in this report, it is anticipated that the proposal will not result in a significant detrimental environmental impact and therefore approval from the Secretary of State is not necessary for this proposal.

19.	Conclusions	
19.1	Can an overall environmental benefit be demonstrated (or justified/supported)?	No

No overall environmental benefit is likely, and the sponsors have not set out to claim any such benefit. The key reasons for proposing this change do not include environmental ones.

Overall, the sponsors anticipate that the environmental impact of a new TMZ will be neutral, or at worst an insignificant negative impact arising from any re-routed GA traffic, within the categories of noise, CO₂ emissions and local air quality. It is not anticipated that the TMZ will reduce the environmental impact of aviation in the relevant airspace; however, the sponsor feels that it is reasonable to expect that the environmental impact of aviation will not worsen because of the change. Both tranquillity and visual intrusion are unlikely to be impacted by any GA.

Acknowledging the scale, characteristics and current activity in the area of the TMZ, the sponsors' case for a minimal (if any) environmental impact is reasonable and supported to the extent that is possible. If implemented, monitoring the occurrence of any refusals to access the TMZ will provide evidence at the post-implementation review of the scale of any environmental impacts.

Update: the revised proposal for two TMZs does not change any of the conclusions for this report. In theory, if there were to be any change in environmental impacts resulting from the revision, it would be a reduction in any negative impacts that may have resulted from re-routed aircraft. Reduction the size of the TMZ and creating two separate TMZs will, if anything, further reduce the likelihood of any aircraft re-routing.

Outstanding Issues		
Serial	Issue	Action Required

Additional Compliance Requirements (to be satisfied by Change Sponsor)

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Serial	Requirement

Environmental Assessment Sign-off/Approvals			
	Name	Signature	Date
Environmental Assessment completed by (ERCD representative)	[REDACTED]		02 March 2016
Environmental Assessment approved by (Head of ERCD)	[REDACTED]	[REDACTED]	22 March 2016