HRA Information to Inform an Appropriate Assessment: Section 36C Variation Application KINCARDINE OFFSHORE WINDFARM PROJECT

Document Category
X

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23-11-2017	07	FINAL	FINAL – PUBLIC CONSULTATION	RJW

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Detailed Change Log

Date	Rev. Status	References	Description of changes	Initials

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1. Background

The Kincardine Offshore Windfarm Environmental Statement (March 2016) and the Habitats Regulations Appraisal (HRA) (March 2016), referred to in this document as the Original ES and Original HRA respectively, were submitted on 8th April 2016 to Marine Scotland's Licensing Operations Team (MS-LOT) as part of the Marine Licence application for the works under the Marine (Scotland) Act 2010 and Marine and Coastal Access Act (2009).

In September 2016, an ES Additional Information Addendum was produced; referred to in this document as the ES Addendum. The ES Addendum included within it a HRA Additional Information Addendum (Appendix B); referred to in this document as the HRA Addendum. A summary of the documents is provided below:

Table 1-1 Summary of document series

Original Documents	Addendums	Variations
Kincardine Offshore Windfarm ES (**Original ES**)	ES Additional Information Addendum (**ES Addendum**)	**Section 36C Variation ES (Variation ES)**
Kincardine Floating Offshore Wind Demonstrator Project Habitats Appraisal - Information to Inform an Appropriate Assessment (**Original HRA**)	ES Addendum: Appendix B: HRA Additional Information Addendum (**HRA Addendum**)	**HRA – Information to Inform an Appropriate Assessment Variation (HRA Variation)**
March 2017	September 2016	November 2017

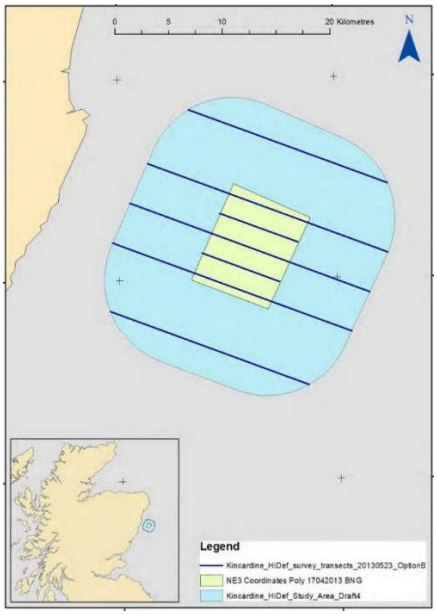
Since consent was granted, there have been a number of necessary changes to the Project. As such, this document forms part of the application for a variation of the Section 36 consent granted by the Scottish Ministers under S36C of the Electricity Act 1989.

The Project as proposed to be varied is hereinafter known as the Varied Project.

Since the applications were submitted in 2016, changes to the EIA Regulations also come into force in May 2017 transposing the 2014 amended EIA Directive 20014/52/EU into UK Law. The changes have been outlined and have been considered and assessed where necessary as part of this Variation application.

1.1. Survey Areas and Baseline Environment

Bird surveys were undertaken within NE3 survey area and the Development Area with an 8km buffer (known as Kincardine survey area). These are shown in Figure 1.1 below.



NE3 - Kincardine -

Figure 1.1 Kincardine Bird Survey Areas

The baseline environment for the Ornithology Chapter of the Original ES (Section 7.2) was amended in the ES and HRA Addendums to include additional proposed and draft Special Protected Areas (pSPA) following consultation with the RSPB. All the pSPAs were assessed in the HRA Addendum (Appendix B of ES Addendum). The findings of the Original MS LOT AA are considered against this varitation and demonstate the findings are compliant with this assessment process for the key identified issue of Kittiwake and Atlantic Puffin.

Within this HRA Variation document, no other baseline environment data has changed since the ES and HRA Addendums. This assessment will solely be based on assessing the collision risk impacts of the revised turbine models on Kittiwake from Fowlsheugh SPA and reassessment of the potential displacement impact to Atlantic Puffin from Forth Islands SPA. This approach has been discussed with MSLOT, SNH and RSPB. All other impacts to SPA bird species were ruled out as part of the Original ES, HRA and their respective addendums.

1.2. HRA CRM Estimates

Table 1-2 below summarises the results of the original collision risk model estimates for all birds present on site. Of these species, only Gannet and Kittiwake were effected by collisions. Only two of the six individual gannets effected were apportioned back to an SPA, the Forth Islands, which equated to approximately 0.002% of its Gannet population. This was considered to be negligible and is not considered any further as per the Original HRA and HRA Addendum.

Table 1-2 Collision Risk Model Estimates from the original HRA

Species (avoidance rate)	Survey Area	Option 2 (modelled)
Kittiwake (98.9%)	NE3	34
	Kincardine	32
Gannet (98.9%)	NE3	6
	Kincardine	5
Guillemot (98%)	NE3	0
	Kincardine	0
Fulmar (98%)	Kincardine	0
Herring Gull (99% and 99.5%)	Kincardine	1
Razorbill (98%)	Kincardine	0
Puffin (98%)	Kincardine	0

Source: see Table 7-5 of the Original HRA

1.3. Kincardine Appropriate Assessment Conclusions

MS-LOT undertook an Appropriate Assessment for Kincardine Offshore Windfarm Ltd as part of the application for consent under Section 36 of the Electricity Act 1989 and Application for a Marine Licence under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 in February 2017[1]. This assessment concluded that, based on the content of the following assessment the Project will not on its own or in combination with other projects adversely affect the integrity of the Fowlsheugh SPA, Buchan Ness to Colliston Coast SPA, Troup, Pennan and Lion's Head SPA or Forth Islands SPA.

The main issues raised during the consultation were the potential impacts on Black-legged Kittiwake (collision) (Foulsheugh SPA) and Atlantic Puffin (displacement) (Forth Islands SPA), with all other bird species and SPAs being discounted as not having a significant impact from the Project. These findings have therefore been used within this HRA Variation to ensure duplication of work and effort is not undertaken with all other pertinent data found within Original HRA and HRA Addendum, with only Black Legged Kittiwake and Atlantic Puffin being taken forward for review as part of the Variation application.

2. Assessment Methodology

The assessment methodology as defined by Chapter 7.3 of the Original ES remains unchanged.

This section assesses the collision risk impact of the wind turbine model scenario on Kittiwake from Fowlsheugh SPA. The turbine model scenario assessed are as follows:

- 1 x 2MW turbine followed by 6 x 164m turbines

The first turbine comprised in the development to be deployed will be a wind turbine generator and associated substructure, anchors and mooring lines with a generating capacity not exceeding 2MW ("Turbine 1"). A condition in the existing marine licence requires Third Party Certification or Verification

[1] KOWL Appropriate Assessment http://www.gov.scot/Resource/0051/00515049.pdf

(or suitable alternative as agreed, in writing, with the Licensing Authority) for all WTGs, mooring systems and WTG platform structures prior to the commencement of the works. The initial period sought for such certification / verification / suitable agreed alternative of the WTG platform substructure for Turbine 1 will be limited (expected to be three years or less). This is due to the engineering life of the substructure (ten years from initial substructure construction in 2011). At the expiry of the WTG platform substructure certification, Turbine 1 will only be re-deployed if (i) the platform structure is re-certified following inspection (and only for so long as valid certification is in place) and (ii) if MS-LOT (in consultation with SNH, HES, Aberdeen City Council and Aberdeenshire Council) is satisfied that the re-deployment at the proposed location within the Site would not give rise to new or materially different likely significant effects to those identified in the [seascape,] landscape and visual assessment of the Variation ES. Any further re-certification would follow the same process. If Turbine 1 is not re-deployed within 6 months, it will be decommissioned (in line with condition 5 of the s36 consent on Redundant turbines). It is anticipated this position will be secured by a condition in the marine licence (and if considered necessary, also in the s36 consent).

The original EIA (as reported in the Original ES) undertook a detailed assessment of all potential bird species that could be potentially impacted by the construction of the Project. This assessment identified that the two species that could be potentially impacted by the Project; Kittiwake (collision risk) and Atlantic Puffins (barrier effect). All other bird species were assessed to be at no significant risk from the Project, which was also confirmed by the Appropriate Assessment undertaken by Marine Scotland and in the advice given from SNH.

The potential effects of the single 2MW turbine on Kittiwake from Fowlsheugh SPA will be assessed and included in a summary of the combined impact including the larger turbines (see Section 3 below).

The original collision risk model for Kittiwake submitted as part of the Original ES and Original HRA submissions shall be used to assess the impacts of the revised turbine models. All parameters within this model will remain unchanged except for the parameters of the wind turbine models being assessed. The original model can be downloaded from the Marine Scotland website to enable verification of this assessment.

3. Impact Assessment

3.1. One 2MW Turbine

The 2MW turbine model is proposed to be the Vestas V80. The parameters used for the collision risk model are taken from their brochure for the turbine[2]. The key parameters are outlined below.

Operating data

Rated power 2.0MW

Cut-in wind speed 4m/s

Operational rotor speed up to 17rpm

Nominal rotor speed 15rpm

Blade dimensions

Max. chord 3.5m

Pitch 15º

Rotor

Rotor diameter 80m

Rotor Radius 40m

Hub height 66m

The results of the collision risk modelling for one 2MW turbine is outlined in Table 3-1 to Table 3-3 below for both the NE3 and Kincardine survey areas.

Table 3-1 Collision Risk Modelling Results for the NE3 and Kincardine (NE3 plus 8km buffer) survey areas

Survey Area	2MW
NE3	3*
Kincardine	3*

*Number of birds per year – using CRM Option 2 (modelled flight heights) and an avoidance rate of 98.90%

Table 3-2 Collision Risk Modelling Results by month

Turbine Size	Option	Survey Area	Month											
			Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
2 MW	Option 2	NE3	0	0	0	0	0	0	1	0	0	0	0	0
		Kincardine	0	0	0	0	0	0	1	0	0	0	0	0

[2] https://en.wind-turbine-models.com/turbines/19-vestas-v-80-onshore

Table 3-3 Bird Collision Impacts - Breeding vs non-breeding

Turbine Size	Survey Area	CRM Option	No of birds potentially impacted	
			Breeding Season	**Non-Breeding Season**
2 MW	NE3	Option 2	1	1
	Kincardine	Option 2	1	1

Kittiwake breeding Season: April – August

SNH explanatory note (2017) on seasaonal period for birds in the Scottish Marine Environment3 has been used to identify the breeding/non-breeding season for Kittiwake.

Apportionment

Given that SPA seabird breeding colonies are situated at different distances from the Kincardine Site, and that different species have different foraging ranges, a process of apportioning seabird collision impacts to each of the SPAs is required to understand the magnitude of impacts to individual SPAs.

This apportionment was carried out based on the distance of the SPA from the Project Site, the bird species' colony size and the proportion of foraging range that is out to sea (i.e. in the direction of the Kincardine site). The process of apportioning bird collision impacts to individual SPA breeding colonies within Kittiwake foraging range is shown in Table 3-4 below. This apportionment is a pre-requisite for considering the effects of the windfarm on individual SPAs where these species are qualifying interest features.

Table 3-4 Number of breeding bird collisions apportioned to SPAs and sites outside of SPAs within kittiwake foraging range

Kittiwake – 2MW – NE3							
SPA Name	**Count of Adult Birds on SPA**	**Distance from Project**	**Proportion of forage range as Sea**	**Resulting Weight for SPA**	**Proportional weight of SPA**	**Total adult collisions from each SPA**	**Percentage of SPA Population**
Fowlsheugh	18674	16	0.6	18.33	0.29	0	0.002%
Buchan Ness to Collieston Coast	25084	27	0.5	7.21	0.11	0	0.000%
Troup, Pennan and Lions Heads	29792	69	0.6	1.57	0.02	0	0.000%
Outside of SPAs						1	N/A

[3] SNH Seasonal periods for birds 2017 http://www.snh.scot/sites/default/files/2017-07/A2332152%20-%20Suggested%20seasonal%20definitions%20for%20birds%20in%20the%20Scottish%20Marine%20Environment%20-%203rd%20February%202017.pdf

Kittiwake – 2MW – Kincardine							
SPA Name	**Count of Adult Birds on SPA**	**Distance from Project**	**Proportion of forage range as Sea**	**Resulting Weight for SPA**	**Proportional weight of SPA**	**Total adult collisions from each SPA**	**Percentage of SPA Population**
Fowlsheugh	18674	16	0.6	18.33	0.29	0	0.002%
Buchan Ness to Collieston Coast	25084	27	0.5	7.21	0.11	0	0.000%
Troup, Pennan and Lions Heads	29792	69	0.6	1.57	0.02	0	0.000%
Outside of SPAs						1	N/A

3.2. Six 164m Turbines

The 164m turbine model are proposed to be have a rotor diameter of 164m and 8.4MW maximum capacity. The parameters used for the collision risk model are taken from their brochure for the turbine[4]. The key parameters are outlined below.

Operating data
Nominal rated power 8.4MW
Cut-in wind speed 4m/s
Operational rotor speed 4.8 - 12.1rpm
Nominal rotor speed 10.5rpm
Operational temperature range -10 to +25ºC
Extreme temperature range -15 to +35ºC

Blade dimensions
Length 82m
Max. chord 5.4m
Pitch 6º

Nacelle dimensions (incl. hub and coolers)
Height 8m
Length 20m
Width 7.5m

Rotor
Rotor diameter 164m
Rotor radius 82m
Hub height 104.9m

164m Impact Assessment

The results of the collision risk modelling for six 164m turbines are outlined in Table 3-9 to Table 3-11 below for both the NE3 and Kincardine survey areas. They have been compared to the original results for eight 6MW turbines outlined in the Original ES. Based on the joint SNCB guidance[5], the recommended avoidance rate that has been used for kittiwake is 98.9%.

Based on previous advice from SNH, we have used option 2 of the Band model, which used modelled flight height data.

Table 3-5 Collision Risk Modelling Results for the NE3 and Kincardine (NE3 plus 8km buffer) survey areas

Survey Area	6MW	164m (6 No.)
NE3	34*	33*
Kincardine	32*	31*

*Number of birds per year – using CRM Option 2 (modelled flight heights) and an avoidance rate of 98.90%

[4] http://www.homepages.ucl.ac.uk/~uceseug/Fluids2/Wind_Turbines/Turbines/V164-8MW.pdf
[5] Joint Response from the Statutory Nature Conservation Bodies to the Marine Scotland Science Avoidance Rate Review, Cook, A.S.C.P., Humphries, E.M., Masden, E.A., and Burton, N.H.K. 2014. The avoidance rates of collision between birds and offshore turbines. BTO research Report No 656 to Marine Scotland Science.

Table 3-6 Collision Risk Modelling Results by month

Turbine Size	Option	Survey Area	Month											
			Jan	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
6MW	Option 2	NE3	0	0	1	1	2	5	16	4	3	0	1	0
		Kincardine	1	0	1	1	4	5	7	4	4	3	1	1
164m	Option 2	NE3	1	0	1	1	2	4	15	4	3	0	1	0
		Kincardine	1	0	1	1	4	5	8	4	4	3	1	1

Table 3-7 Bird Collision Impacts - Breeding vs non-breeding

Turbine Size	Survey Area	CRM Option	No of birds potentially impacted	
			Breeding Season	**Non-Breeding Season**
6MW	NE3	Option 2	28	6
	Kincardine	Option 2	21	11
164m	NE3	Option 2	27	6
	Kincardine	Option 2	21	11

Kittiwake breeding Season: April - August

Apportionment

Given that SPA seabird breeding colonies are situated at different distances from the Project, and that different species have different foraging ranges, a process of apportioning seabird collision impacts to each of the SPAs is required to understand the magnitude of impacts to individual SPAs.

This apportionment was carried out based on the distance of the SPA from the Project, the bird species' colony size and the proportion of foraging range that is out to sea (i.e. in the direction of the Kincardine site). The process of apportioning bird collision impacts to individual SPA breeding colonies within kittiwake foraging range is shown in Table 3-12 below. This apportionment is a pre-requisite for considering the effects of the windfarm on individual SPAs where these species are qualifying interest features.

Table 3-8 Number of breeding bird collisions apportioned to SPAs and sites outside of SPAs within kittiwake foraging range. A comparison between eight 6MW and six 8MW turbine

Kittiwake – 6MW – NE3							
SPA Name	**Count of Adult Birds on SPA**	**Distance from Project**	**Proportion of forage range as Sea**	**Resulting Weight for SPA**	**Proportional weight of SPA**	**Total adult collisions from each SPA**	**Percentage of SPA Population**
Fowlsheugh	18,674	16	0.6	18.33	0.29	8	0.044%
Buchan Ness to Collieston Coast	25,084	27	0.5	7.20	0.11	3	0.013%
Troup, Pennan and Lions Heads	29,792	69	0.6	1.57	0.02	1	0.002%
Outside of SPAs						16	N/A

Kittiwake – 6MW – Kincardine							
SPA Name	**Count of Adult Birds on SPA**	**Distance from Project**	**Proportion of forage range as Sea**	**Resulting Weight for SPA**	**Proportional weight of SPA**	**Total adult collisions from each SPA**	**Percentage of SPA Population**
Fowlsheugh	18,674	16	0.6	18.33	0.29	6	0.033%
Buchan Ness to Collieston Coast	25,084	27	0.5	7.20	0.11	2	0.010%
Troup, Pennan and Lions Heads	29,792	69	0.6	1.57	0.02	1	0.002%
Outside of SPAs						12	N/A

Kittiwake – 164m – NE3							
SPA Name	Count of Adult Birds on SPA	Distance from Project	Proportion of forage range as Sea	Resulting Weight for SPA	Proportional weight of SPA	Total adult collisions from each SPA	Percentage of SPA Population
Fowlsheugh SPA	18674	16	0.6	18.33	0.29	8	0.042%
Buchan Ness to Collieston Coast SPA	25084	27	0.5	7.21	0.11	3	0.012%
Troup, Pennan and Lions Heads SPA	29792	69	0.6	1.57	0.02	1	0.002%
Outside of SPAs						16	N/A

Kittiwake – 164m – Kincardine							
SPA Name	**Count of Adult Birds on SPA**	**Distance from Project**	**Proportion of forage range as Sea**	**Resulting Weight for SPA**	**Proportional weight of SPA**	**Total adult collisions from each SPA**	**Percentage of SPA Population**
Fowlsheugh	18674	16	0.6	18.33	0.29	6	0.033%
Buchan Ness to Collieston Coast	25084	27	0.5	7.21	0.11	3	0.010%
Troup, Pennan and Lions Heads	29792	69	0.6	1.57	0.02	1	0.002%
Outside of SPAs						12	N/A

3.3. CRM Summary for All WTGs (1 x 2MW and 6 x 164m)

Sections 3.1 and 3.2 review the CRM impact for each WTG option alone. This section combines the two into a Varied Project summary and reviews it against the HRA findings to demonstrate that there is no change between the assessments.

Table 3-9 below summarises the impact assessments for the wind turbine model scenario in Section 3.1 and 3.2 above. From these results, it is possible to see that there will be no significant differences when compared to the original assessment, with no additional birds being attributed to the Fowlsheugh SPA population.

As such, it can be concluded that using a 2MW turbine inconjuction with six 164m turbines will result in no change to the impact significance levels calculated for eight 6MW turbines that are outlined in Table 7-39 and Section 7.8 of the Original ES.

Table 3-9 Summary of potential collision impacts on Kittiwake from Fowlsheugh SPA

Turbine number and model	Survey Area	Total adult collisions from Fowlsheugh SPA*
8x6MW**	NE3	8
	Kincardine	6
1x V80 + 6x164m	NE3	8
	Kincardine	6

*Using a 98.9% avoidance rate and option 2 of the Band CRM for

4. Displacement - Atlantic Puffin (Forth SPA)

The number of turbines at the development will reduce the potential to displace Atlantic Puffin as reviewed during the 2017 AA (eight turbines for original assessment and seven (one smaller and six large) for this S36 Variation HRA). Therefore, all displacement assessments are currently compliant with the Original HRA (2016) and the resulting displacement conclusions of the AA are still appropriate for this variation.

Within the AA it was noted the use of assumed displacement of 50% for puffin would be considered to be highly precautionary and that single digit percentages were more appropriate to assess displacement impact. To be conservative, a 10% has been used in the table below to outline the potential foraging area lost from the Varied Project, when compared to the original highly precautionary approach used in the Original HRA. This shows a significant drop in the predicted % loss of foraging area due to the Varied Project and a net decrease in displacement impact to Atlantic Puffins from the Forth Islands SPA.

Table 4-1 Forth Island SPA (Atlantic Puffin) displacement

Bird Species	SPA	Foraging Area (km^2)	Winfarms within foraging area – in addition to the project	Overlap between foraging area and windfarms plus 2km buffer as a % of foraging range (km^2)	Overlap between foraging area and Kincardine site plus 2km buffer as a % of foraging range	Assumed displacement of bird species	Predicted % of foraging area lost from windfarms	Predicted % of foraging area lost from Kincardine
Atlantic Puffin (Original HRA)	Forth Island	28,543	EOWDC, NNG, Blyth Offshore, Inch Cape, Seagreen	4.8% (1377)	0.2 % (49)	50%	2.4%	0.09%
Atlantic Puffin Curent HRA	Forth Island	28,543	As above	4.8% (1377)	0.2 % (49)	10%*	0.48%	0.018%

*As noted in Appropriate Assessment 2017

As the AA concluded that the potential displacement and associated mortality impact on the Forth SPA had no adversely affect the site integrity of the Forth Islands SPA with respect to Atlantic Puffin either alone or in-combination, the development therefore believes the updated scheme is compliant with this assessment and therefore no additional displacement assessments are required as part of the Section 36C variation report.

5. Non-breeding season impacts

SNH explanatory note (2017) on seasonal period for birds in the Scottish Marine Environment has been used to identify the non-breeding season for Kittiwake. As shown in **Error! Not a valid bookmark self-reference.** below, the estimated total impact to Kittiwake from Fowlsheugh SPA does not change from currently consented development and Varied Project. The addition of a 2MW has no affect these figures as it is shown to have no impacts to Kittiwake outside the breeding season (see Table 3-3 above).

Table 5-1 Non-breeding season impacts

Turbine Size	Survey Area	No of birds potentially impacted
		Non-Breeding Season
6MW	NE3	6
	Kincardine	11
1 x V80 and 6 x164m	NE3	6
	Kincardine	11

6. Mitigation/Monitoring

Based on the impact assessment in Section 3 above, it can be confirmed that no additional mitigation is required for updated WTG CRM assessment. The mitigation/monitoring measures outlined in Section 2.1 of the HRA Addendum therefore remain unchanged.

For reference, these mitigation measures were outlined as follows:

This floating offshore wind project is part of the Scottish Governments 'Survey, Deploy and Monitor' scheme, and the design of the sub-structure lends itself well to providing a platform for monitoring the effects of the turbines on seabirds. KOWL have already stated they would welcome SNH, RSPB or other parties (e.g. Masters or PhD, Universities etc.) to be transported out to the structures and use them to install bird detection equipment and carry out monitoring (all subject to agreement with KOWL). As part of the wider Friends of Floating Offshore Wind group and the wider East of Scotland Offshore Windfarm group, cumulative and collaborative monitoring will form a key part of the monitoring phase and with cross sharing of data (e.g. with the EOWDC) it will provide an enhanced understanding of the possible cumulative impacts these developments will have.

KOWL believe this would be very interesting work and could generate some important results and would be willing to support this going forward.

The refined sub-structure design (see ES Addendum - Section 1.3) will feature standing platforms at the point where the turbine is attached to the sub-structure which will allow someone to be able to easily look up at the turbine and gain a good viewpoint of potential collision impacts.

A review the effectiveness of bird collision monitoring equipment was undertaken by the Strategic Ornithological Support Services[6] that investigated various methods and systems to monitor collisions of birds with offshore windfarms. The results indicate that the potential for some of these systems to aid data collection and monitor interactions of birds with turbines is promising.

One of the recommended systems is called DTbird[7] which includes the ability to add HD cameras, noise based bird deterrents and stop the turbine if birds get within a certain distance.

The data can then be collected remotely, analysed and displayed online for anyone with access to view, which means a significant reduction in the health and safety risks associated with collecting data from the site in real time or by observers on the platforms.

This is something that KOWL have previously mentioned to RSPB (meeting with Aedan Smith at the RSPB office in Edinburgh on the 6th July 2016), where KOWL asked them which systems they would want to see on board the floating substructure and KOWL suggested they engage with SNH to identify the required monitoring tools.

KOWL consider that the implementation of mitigation measures of the sort outlined above is line with the Scottish Governments approach to 'Survey, Deploy and Monitor' schemes, and will serve to

[6] Collier, M.P, Dirksen, S, Krijgsveld, K.L. September 2011, A review of methods to monitor collisions or micro-avoidance of birds with offshore wind turbines.
(https://www.bto.org/sites/default/files/u28/downloads/Projects/Final_Report_SOSS03A_Part1.pdf)

[7] http://www.dtbird.com/index.php/

mitigate the potential impacts of the Project to the point where it will no longer act in-combination with other plans or projects.

At the same time, it is an opportunity to collect important data to inform and build on current understanding of the potential impacts that offshore wind turbines could have through their interactions with birds.

7. Cumulative Impacts

The assessment methodology as defined in Chapter 7.5 of the Original ES remains unchanged as no additionally consented projects have been added to the previous assessment process. Discussions about the approach taken regarding the cumulative impact assessment impacts of the Project have been undertaken with SNH and the RSPB (see ES Addendum (Appendix B) - HRA addendum) to mitigate these impacts.

8. Conclusions

In the assessments above MS-LOT have considered the conservation objective of "maintaining the population of the species as a viable component of the site" on the individual qualifying features of the SPAs. As the effects of KOWL project, alone and in combination with other offshore wind farms, on the populations were found to be within acceptable thresholds for all the species being considered in this assessment MS-LOT concluded that the KOWL project will not adversely affect the integrity of the SPAs with respect to the individual qualifying features.

Having determined that the KOWL project will not have a negative effect on the constitutive elements of the sites concerned, on having regard to the reasons for which the sites were designated and their associated conservation objectives, MS-LOT concludes that the proposed KOWL project will not, on its own or in combination with other offshore wind farms and Aberdeen Harbour re-development adversely affect the integrity of the Buchan Ness to Collieston Coast SPA, the Fowlsheugh SPA, the Forth Islands SPA or the Troup, Pennan and Lion's Heads SPA."

From the above assessment if is evident that these findings are still compliant and therefore the potential impact on the idenfied receptors is still appropriate.

8.1. Kittiwake

The results from the updated CRM (Table 3-9) demonstrate that predicted total adult collision from the Fowlsheugh SPA for both potential turbine options is directly comparable to the Origianl HRA and Appropraite Assessment undertaken in 2017. The conclusions from the Original Appropriate Assessment are therefore consitent and that this Scheme will have no adverse affects on the integrity on any of the identified SPA asscoated with Black Legged Kittiwakes alone or in-combination with other plans or projects.

8.2. Atlantic Puffin

As noted in the AA, the impact from collision risk is negligible for Puffin due to their flight height and the turbine Blade height. Displacement affects have been previously assessed for the eight 6MW turbine Scheme. As the updated Scheme contains the same number of turbines (one small turbine and upto seven large turbines) the conslucsion of no significant impact of the 2017 AA is therefore still valid for Atlantic Puffin from the AA.