



# Chapter 16

## Summary of the EIA

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March 2018

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# 16 Summary of the EIA

## 16.1 Introduction

1. This chapter of the EIA Report presents a tabulated summary of the outcomes of the technical assessments that are presented within Chapters 7 to 15 (Table 16-1). Each potential impact source, pathway and receptor is described, along with the findings of the assessment in terms of the significance of the effect, any mitigation requirements and the residual effect once the mitigation is implemented. The cumulative significance is also summarised.
2. With the application of identified mitigation measures to the potential significant effects that have been identified, the majority of the effects will be reduced to a level not significant level in EIA terms. However, some significant residual effects do remain for seascape, landscape and visual impact, as well as cumulative impacts relating to shipping and navigation and cultural heritage.
3. The significant effects relating to seascape, landscape and visual will be sought to be reduced during the post-consent design development stage, through consideration of appropriate final layout and siting design.
4. With regards to shipping and navigation, there are significant cumulative residual impacts relating to collision and allision risks for all vessel types. NnGOWL will engage with MCA and NLB to explore further mitigation, where required, to manage navigational risk.
5. For cultural heritage, a residual significant cumulative impact remains on the setting of the Isle of May Priory Scheduled Monument. As per effects on seascape, landscape and visual, a reduction in this effect will be sought during the post-consent design development stage, through consideration of appropriate final layout and siting design.

Table 16-1: Summary of the potential impacts and likely significant effects as detailed within each technical assessment.

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
<b>Fish and Shellfish</b>					
<b>Construction</b>					
<b>Disturbance or injury as a result of particle motion arising from pile driving</b>	Group 1,2,3 and 4 fish species	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	All shellfish species	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
<b>Disturbance from noise and particle motion arising from the HDD pipe site works</b>	All fish and shellfish	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
<b>Operation</b>					
<b>Disturbance resulting from particle motion arising from turbine operation</b>	All fish and shellfish	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
<b>Marine Mammals</b>					
<b>Construction</b>					
<b>Pile driving noise</b>	Harbour porpoise	Minor, adverse (Not significant)	Use of MMOs, PAM systems, ADDs and soft-start procedures will be considered and agreed with MS-LOT, to further mitigate any risk of residual effect.	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	White-beaked dolphin	Negligible, adverse (Not significant)		Negligible, adverse (Not significant)	Minor, adverse (Not significant)
	Bottle nose dolphin	Minor, adverse (Not significant)		Minor, adverse (Not significant)	Major, adverse (Not significant)

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
	Minke whale	Minor, adverse (Not significant)		Minor, adverse (Not significant)	Moderate, adverse (Not significant)
	Grey seal	Negligible, adverse (Not significant)		Negligible, adverse (Not significant)	Major, adverse (Not significant)
	Harbour seal	Minor, adverse (Not significant)		Minor, adverse (Not significant)	Minor, adverse (Not significant)
<b>Drilling noise</b>	All receptors	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Negligible, adverse (Not significant)
<b>Noise from pre-construction geophysical survey work</b>	All receptors	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Not considered cumulatively.
<b>Disturbance from noise and particle motion from the HDD site pipe works</b>	All receptors	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Not considered cumulatively.
<b>Operation</b>					
<b>Aircraft and helicopter disturbance</b>	All receptors	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Not considered cumulatively.
<b>Ornithology</b>					
<b>Construction (and decommissioning)</b>					
<b>Impacts of installation of Export cables</b>	All receptors	Minor, adverse	Embedded mitigation	Minor, adverse	Not considered cumulatively
<b>Direct impacts of construction activities</b>	All receptors	Negligible	Embedded mitigation	Negligible	Not considered cumulatively

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
<b>Indirect impacts of construction activities</b>	All receptors	Minor, adverse	Embedded mitigation	Minor, adverse	Not considered cumulatively
<b>Operation</b>					
<b>Displacement and barrier impacts</b>	Puffin	Minor, adverse	Embedded mitigation	Minor, adverse	Minor, adverse
	All other species considered:	Negligible, adverse		Negligible, adverse	Negligible, adverse
<b>Collision impacts</b>	Gannet	Minor, adverse	Embedded mitigation, Collision reduction technologies will be explored post-consent in consultation with FTRAG,	Minor, adverse	<p><b>Scenario 1</b> (Project, in combination with Inch Cape and Seagreen 2017) – Gannet and Kittiwake: Minor, adverse All other species considered: negligible, adverse.</p> <p><b>Scenario 2</b> (Project, in combination with the Inch Cape and Seagreen 2014) – Moderate effects predicted for kittiwake collisions in the non-breeding season, and by association, throughout the year<sup>1</sup>. Gannet: Minor, adverse All other species considered: negligible, adverse.</p>
	Kittiwake	Minor, adverse		Minor, adverse	
	All other species considered:	Negligible, adverse		Negligible, adverse	

<sup>1</sup> It is considered highly unlikely that Inch Cape and Seagreen A & B will be built to the maximum extent of their consented envelopes, therefore the outcome of this assessment is considered to be highly precautionary and unrealistic.

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
<b>Commercial Fisheries</b>					
<b>Construction</b>					
<b>Wind Farm Area construction activities and physical presence of constructed Offshore Wind Farm leading to reduction in access to, or exclusion from established fishing grounds.</b>	Potters	Moderate, adverse (Significant)	With respect to any justifiable disturbance payment, the procedures as outlined in the FLOWW guidance documents (2014 and 2015), will be followed wherever possible.	Minor, adverse (Not significant)	Initially moderate, adverse (Significant)  Following mitigation: minor, adverse (not significant)
	Demersal trawl	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Initially moderate, adverse (Significant)  Following mitigation: minor, adverse (not significant)
	Scallop dredge	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	All others	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Minor, adverse (Not significant)
<b>Offshore Export Cable construction activities leading to reduction in access to, or exclusion from, established fishing grounds.</b>	Potters & other dredge	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Initially moderate, adverse (Significant)  Following mitigation: minor, adverse (not significant)
	Demersal trawl	Moderate, adverse (Significant)	With respect to any justifiable disturbance payment, the procedures as outlined in the FLOWW	Minor, adverse (Not significant)	Minor, adverse (Not significant)

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
			guidance documents (2014 and 2015), will be followed wherever possible.		
	Scallop dredge	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Negligible to Minor, adverse (Not significant)
<b>Displacement from Neart na Gaoithe Wind Farm Area leading to gear conflict and increased fishing pressure on adjacent grounds.</b>	Potters and demersal trawl	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Initially moderate, adverse (Significant)  Following mitigation: minor, adverse (not significant)
	All others	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Minor, adverse (Not significant)
<b>Displacement from the Offshore Export Cable Corridor leading to gear conflict and increased fishing pressure on adjacent grounds.</b>	Potters	Moderate, adverse (Significant)	With respect to any justifiable disturbance payment, the procedures as outlined in the FLOWW guidance documents (2014 and 2015), will be followed wherever possible.	Minor, adverse (Not significant)	Initially moderate, adverse (Significant)  Following mitigation: minor, adverse (not significant)
	Demersal trawl	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Initially moderate, adverse (Significant)  Following mitigation: minor, adverse (not significant)
	All others	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Minor adverse



Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
Wind Farm Area and Offshore Export Cable construction activities leading to displacement or disruption of commercially important fish and shellfish resources.	Potters and demersal trawl	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Not considered cumulatively as impacts likely to be highly localised and temporary as per Chapter 7: Fish and Shellfish Ecology.
	All others	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Not considered cumulatively as impacts likely to be highly localised and temporary as per Chapter 7: Fish and Shellfish Ecology.
Wind Farm Area and Offshore Export Cable construction activities leading to additional steaming to alternative fishing grounds for vessels that would otherwise be fishing within the Wind Farm Area and Offshore Export Cable Corridor.	All receptors	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Minor, adverse (Not significant)
Increased vessel traffic within fishing grounds as a result of changes to shipping routes and construction vessel traffic from Wind Farm Area and Offshore Export Cable Corridor leading to	Potters	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	All other gear	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Negligible, adverse (Not significant)

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
interference with fishing activity.					
<b>Operation and Maintenance (and Decommissioning)</b>					
Physical presence of Wind Farm Area leading to reduction in access to, or exclusion from established fishing grounds.	Potters	Moderate, adverse (Significant)	With respect to any justifiable disturbance payment, the procedures as outlined in the FLOWW guidance documents (2014 and 2015), will be followed wherever possible.	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	Demersal trawl & scallop dredge	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor or negligible, adverse (Not significant)
	All others	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Minor or negligible, adverse (Not significant)
Physical presence of Offshore Export Cable leading to reduction in access to, or exclusion from established fishing grounds.	Demersal trawl	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	All others	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Minor or negligible, adverse (Not significant)
Displacement from Neart na Gaoithe Wind Farm Area leading to gear conflict and increased fishing pressure on adjacent grounds.	Potters and demersal trawl	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	All others	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Minor or negligible, adverse (Not significant)
Displacement from the Offshore Export Cable Corridor leading	All receptors	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Negligible, adverse (Not significant)

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
to gear conflict and increased fishing pressure on adjacent grounds.					
Physical presence of Wind Farm Area leading to gear snagging.	All receptors	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Not considered cumulatively
Physical presence of the Offshore Export Cable leading to gear snagging	All receptors	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Not considered cumulatively
Physical presence of Wind Farm Area and Offshore Export Cable leading to additional steaming to alternative fishing grounds for vessels that would otherwise be fishing within these areas	All receptors	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Negligible, adverse (Not significant)
Increased vessel traffic within fishing grounds as a result of changes to shipping routes and maintenance vessel traffic from Wind Farm Area and Offshore Export Cable leading to	All receptors	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Negligible, adverse (Not significant)

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
interference with fishing activity.					
<b>Shipping and Navigation</b>					
<b>Construction</b>					
All impacts relevant to the construction phase have been scoped out of this EIA Report during the Scoping stage					
<b>Operation</b>					
Physical presence of Offshore Wind Farm structures leading to a loss of navigable sea room and deviations around structures resulting in an increased collision risk (vessel-to-vessel)	Commercial vessels Fishing vessels Recreational vessels	Minor, adverse (Not significant)	To be considered in consultation with MCA and NLB.  May include additional aids to navigation to assist with navigation and additional means of communication to assist third parties.	Minor, adverse (Not significant)	Moderate, adverse (Significant)
Physical presence of Offshore Wind Farm structures leading to a loss of navigable sea room and deviations around structures resulting in an increased allision risk (vessel-to-structure)	Commercial vessels Fishing vessels Recreational vessels	Minor, adverse (Not significant)	To be considered in consultation with MCA and NLB.  May include additional aids to navigation to assist with navigation and additional means of communication to assist third parties.	Minor, adverse (Not significant)	Moderate, adverse (Significant)

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
<b>Military and Civil Aviation</b>					
<b>Operation</b>					
<b>Wind turbines causing permanent interference as a result of reflected turbine signals</b>	Leuchars PSR, Leuchars PAR, RRH Brizlee Wood and RRH Buchan ADRs	Major, adverse (Significant)	Regulator approved TMZ and associated radar RAG blanking for the Leuchars PSR RDDS until an enduring mitigation solution is established  Removal of wind turbine infrastructure including overlap from rotation of turbine blades from the Leuchars PAR Safeguarded Area  NAIZ (subject to stakeholder approval) for the Brizlee Wood and Buchan ADR systems. If this mitigation solution is not suitable NnGOWL will consult with MoD regarding other technical mitigation solutions prior to construction.	Minor, adverse (Not significant)	Initially major, adverse (Significant) <sup>2</sup>  Following mitigation: minor, adverse (not significant)
<b>Effects on Activities carried out in military PEXA</b>	All receptors	Major (significant)	Removal of wind turbine induced clutter through NAIZ mitigation on the ADRs. If this mitigation solution is not applicable a technical mitigation	Minor (not significant)	Not considered cumulatively

<sup>2</sup> The cumulative assessment relates to Leuchars PSR, Brizlee Wood ADR and RRH Buchan ADR only. Effects on Leuchars PAR were not considered cumulatively.

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
			solution will be agreed with the MOD before construction.		
<b>Use of helicopters for O&amp;M of the Wind Farm Area</b>	All receptors	Minor (not significant)	N/A	Minor (not significant)	Not considered cumulatively
<b>Archaeology and Cultural Heritage</b>					
<b>Construction</b>					
All potential impacts during construction have been scoped out of the EIA Report during the Scoping stage.					
<b>Operation</b>					
<b>Presence Offshore Wind Farm, Met Masts and OSP(s) on the setting of onshore cultural heritage and archaeology receptors</b>	Tentsmuir coastal defences	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	Crail Airfield	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	Crail Airfield pillbox	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	St Andrews Castle	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	St Andrews Cathedral	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	Isle of May Old Lighthouse	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	Isle of May Priory	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Moderate, adverse (Significant)

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
	Dunbar Castle	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	Tantallon Castle	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	North Berwick Law	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	Doon Hill Forts	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	St Andrews Harbour	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	Bell Rock Lighthouse	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	Arbroath Signal Tower	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	Minor, adverse (Not significant)
	Dunbar Battery	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Negligible, adverse (Not significant)
	St Andrews Links	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Negligible, adverse (Not significant)
	Cambo Estate	Negligible, adverse (Not significant)	N/A	Negligible, adverse (Not significant)	Negligible, adverse (Not significant)
<b>Seascape, Landscape and Visual Amenity</b>					
<b>Construction</b>					
<b>Impact of landfall construction activities</b>	Thorntonloch Beach	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	N/A

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
on landscape receptors					
Impact of landfall construction activities on visual receptors	Thorntonloch Beach	Minor, adverse (Not significant)	N/A	Minor, adverse (Not significant)	N/A
<b>Operation</b>					
Impact of offshore wind farm on coastal character	East Fife and south-east Angus	Moderate, adverse (Significant)	None identified	Moderate, adverse (Significant)	Moderate, adverse (significant) in east Fife and south-east Angus, minor or negligible, adverse (not significant) all other receptors.  Mitigation will rely on post-consent design processes
	All other receptors	Negligible to Minor, adverse (Not significant)	N/A	Negligible to Minor, adverse (Not significant)	
Impact of offshore wind farm on landscape character	All receptors	Negligible to Minor, adverse (Not significant)	N/A	Negligible to Minor, adverse (Not significant)	None
Impact of offshore wind farm on visual amenity	Within 22 km	Major, adverse (Significant)	None identified – will rely on post-consent design processes	Major, adverse (Significant)	Up to major, adverse (significant) where both Neart na Gaoithe and Inch Cape can be viewed at close range. Negligible or Minor, adverse (not significant) elsewhere.
	Within 35 km	Moderate, adverse (Significant)	None identified – will rely on post-consent design processes	Moderate, adverse (Significant)	
	Beyond 35 km	Negligible to Minor, adverse (Not significant)	N/A	Negligible to Minor, adverse (Not significant)	Mitigation will rely on post-consent design processes



Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
<b>Impact of aviation and navigation lighting on coastal character</b>	Eastern Fife coast	Moderate, adverse (Significant)	None identified - – will rely on post-consent design processes	Moderate, adverse (Significant)	Moderate, adverse (significant) in east Fife and south-east Angus, minor or negligible, adverse (not significant) all other receptors.  Mitigation will rely on post-consent design processes
	All other receptors	Negligible to Minor, adverse (Not significant)	N/A	Negligible to Minor, adverse (Not significant)	
<b>Impact of aviation and navigation lighting on landscape character</b>	All receptors	Negligible to Minor, adverse (Not significant)	N/A	Negligible to Minor, adverse (Not significant)	None
<b>Impact of aviation and navigation lighting on visual amenity</b>	Within 30 km	Moderate, adverse (Significant)	None identified	Moderate, adverse (Significant)	Up to major, adverse (significant) where both Neart na Gaoithe and Inch Cape can be viewed at close range. Negligible or Minor, adverse (not significant) elsewhere.  Mitigation will rely on post-consent design processes
	Beyond 30 km	Negligible to Minor, adverse (Not significant)	N/A	Negligible to Minor, adverse (Not significant)	
<b>Socioeconomics</b>					
<b>Construction</b>					
<b>Impact of construction activity on direct and indirect employment creation in the construction supply chain</b>	Scotland	Moderate, beneficial (Significant)	Not required as beneficial effect	Moderate, beneficial (Significant)	Not possible to quantify, however would be positive
	Local study area	Moderate, beneficial (Significant)	Not required as beneficial effect	Moderate, beneficial (Significant)	

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
<b>Impact of construction activity on direct and indirect GVA creation in the construction supply chain</b>	Scotland	Minor, beneficial (Significant)	Not required as beneficial effect	Minor, beneficial (Significant)	Not possible to quantify, however would be positive
	Local study area	Minor, beneficial (Significant)	Not required as beneficial effect	Minor, beneficial (Significant)	
<b>Operation</b>					
<b>Impact of operation activity on direct and indirect employment creation in the construction supply chain</b>	Scotland	Minor, beneficial (Significant)	Not required as beneficial effect	Minor, beneficial (Significant)	Not possible to quantify, however would be positive
	Local study area	Moderate, beneficial (Significant)	Not required as beneficial effect	Moderate, beneficial (Significant)	
<b>Impact of operation activity on direct and indirect GVA creation in the construction supply chain</b>	Scotland	Minor, beneficial (Significant)	Not required as beneficial effect	Minor, beneficial (Significant)	Not possible to quantify, however would be positive
	Local study area	Minor, beneficial (Significant)	Not required as beneficial effect	Minor, beneficial (Significant)	
<b>Decommissioning</b>					
<b>Impact of decommissioning activity on direct and indirect employment creation in the construction supply chain</b>	Scotland	Minor, beneficial (Significant)	Not required as beneficial effect	Minor, beneficial (Significant)	Not possible to quantify, however would be positive
	Local study area	Minor, beneficial (Significant)	Not required as beneficial effect	Minor, beneficial (Significant)	
<b>Impact of decommissioning activity on direct and indirect GVA creation</b>	Scotland	Minor, beneficial (Significant)	Not required as beneficial effect	Minor, beneficial (Significant)	Not possible to quantify, however would be positive
	Local study area	Minor, beneficial (Significant)	Not required as beneficial effect	Minor, beneficial (Significant)	

Potential Impact	Receptor	Significance of Effect	Mitigation Measures	Residual Effect	Cumulative Effect
in the construction supply chain					