

13 EFFECTS ON SPECIAL AREAS OF CONSERVATION AND SPECIAL PROTECTION AREAS

13.1 INTRODUCTION

To comply with the Habitats Directive (Article 6.2) it is the obligation of Member States to ensure within Natura sites (SPA and SAC) that appropriate steps are taken to avoid deterioration of habitats, and habitats of species, as well as significant disturbance of species. As part of this process, new plans and projects require to be assessed with respect to a Natura site's conservation objectives, to determine if it might adversely affect the integrity of the site. Article 2.2 of the Habitats Directive requires that measures taken should be designed to maintain or restore natural habitats and species at Favourable Conservation Status (FCS). Article 3.1 indicates that the network of Natura sites should enable FCS to be maintained or restored. Achieving the obligations of Article 6.2 an individual site will thus contribute to the fulfilment of the wider aims of Articles 2.2 and 3.1 to achieve FCS for Annex I Habitats and Annex II Species (SNH guidance Document, 2000).

The consideration as to whether a proposed project or development may affect a Natura 2000 site has two important stages. The first is an appraisal as to whether the proposal is "likely to have a significant effect on the site", and the second is a consideration as to whether the proposal will adversely affect the integrity of the site. Guidance notes (SNH, 2000) define a likely significant effect as "any effect that may reasonably be predicted as a consequence of a proposal that may affect the qualifying interests, but excluding trivial or inconsequential effects". This test of significance is a coarse filter intended to identify which proposed plans and projects require further assessment, and it is distinct from the subsequent appropriate assessment of adverse effects on the integrity of a site. Guidance notes stress that the importance of the international conservation interest of the site should be at the forefront of decision-making.

The environmental assessment has indicated that some of the activities associated with the installation and operation of the WTGs at the Demonstrator site might affect some of the qualifying features of SACs and SPAs in the Moray Firth, and thus their integrity. The proposed Demonstrator Project is therefore likely to have a significant effect on one or more of these sites. Drawing on information and assessments presented in other parts of the ES, this section, therefore, concentrates on the second stage described above, and examines whether the proposed project might affect the conservation objectives of any of these sites.

The section is laid out as follows:

- *a summary of the method and definitions used to assess the implications of the Demonstrator Project on the integrity of each site*
- *a table listing the SACs and SPAs in the Moray Firth, indicating which of the activities or operations associated with the Demonstrator site might give rise to significant effects, and indicating which of the qualifying interest(s) of the site might be affected*
- *an assessment of whether the potential effects of the Demonstrator Project on the qualifying interest(s) for each site might result in an adverse effect on the integrity of the site.*

13.2 METHOD AND DEFINITIONS USED TO ASSESS IMPLICATIONS FOR EACH SITE'S INTEGRITY

13.2.1 DEFINITIONS OF KEY TERMS

The conservation objectives of a site are defined as “the reasons for which the site was classified”, and the integrity of a site is “the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or levels of populations of species for which it was classified” (SE Circular 6/95, as amended). The integrity of the site only applies to the qualifying features, and is directly linked to the conservation objectives for the site. This means that there is also a direct link to the obligation in Article 6.2 to avoid deterioration to natural habitats and significant disturbance of species. If the conservation objectives are met, then the integrity of the site will be maintained and deterioration of habitat or habitat of species or significant disturbance of species avoided (SNH Guidance document, 2000).

13.2.2 METHOD

From the above guidance it is clear that if the conservation objectives for which a Natura site was classified can be met, then the integrity of the site will not be adversely affected. Talisman has, therefore, undertaken a review of the conservation objectives of each of the Natura sites in the Moray Firth that could reasonably be expected to be potentially exposed to adverse effects from the Demonstrator Project, in order to determine if the integrity of any site might be affected.

SNH Guidance (2000) offers checklists with which to consider potential impacts on the integrity of a site, and these are summarised in Table 13.1.

Table 13.1 Checklist of elements for construction of conservation objectives and consideration of impact upon integrity (SNH, 2000).

Annex I Habitats Conservation Objectives: To avoid deterioration of the qualifying habitat(s) thus ensuring the integrity of the site is maintained and the site makes an appropriate contribution to achieving FCS for each of the qualifying features.

To ensure for the qualifying habitat(s) that the following are maintained in the long term:

- *extent of the habitat on site*
- *distribution of the habitat within the site*
- *structure and function of the habitat*
- *processes supporting the habitat*
- *distribution of typical species of the habitat*
- *viability of typical species as components of the habitat*
- *no significant disturbance of typical species of the habitat*

Annex II Species Conservation Objectives: To avoid deterioration of the qualifying habitat(s) thus ensuring the integrity of the site is maintained and the site makes an appropriate contribution to achieving FCS for each of the qualifying features.

To ensure for the qualifying habitat(s) that the following are maintained in the long term:

- *population of the species (including range of genetic types where relevant) as a viable component of the site*
- *distribution of species within site*
- *distribution and extent of habitats supporting the species*
- *structure, function and supporting process of habitats supporting the species*
- *no significant disturbance of species distribution and viability of species' host species (where relevant)*
- *structure, function and supporting processes of habitats supporting the species' host species (where relevant)*

Bird Species Conservation Objectives: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained.

To ensure for the qualifying species that the following are maintained in the long term:

- *population of the species as a viable component of the site*
- *distribution of the species within the site*
- *distribution and extent of habitats supporting the species*
- *structure, function and supporting process of habitats supporting the species*
- *no significant disturbance of the species*

The potential effects of the Demonstrator Project on the qualifying features of SACs and SPAs in the Moray Firth were assessed in light of this guidance. The results of this assessment are presented in a series of tables, one for each SAC and SPA. For each SAC and SPA Talisman has:

- *prepared a table identifying if the project would affect any of the measures by which the integrity of the species or feature is judged*
- *highlighted any aspect of the project that might cause such an effect*
- *summarised the mitigation measures that would be put in place.*

13.3 OVERALL CONCLUSION

On the basis of the quantitative assessments of potential impact presented in Sections 7-12 of the environmental statement, and bearing in mind the range of mitigation measures that will be enacted by Talisman, Talisman conclude that the installation and operation of the propose WTGs at the Demonstrator site in the Beatrice field will not affect the viability or integrity of any SAC or SPA in the Moray Firth.

Assessment of potential impacts on conservation objectives of Moray Firth SAC, with regards to effects on integrity of Annex II species

Conservation objective of site: To maintain and protect the Moray Firth to ensure that conditions for a healthy dolphin population are in place. The management of activities or developments in the area is paramount and must consider the well-being of the dolphins and the condition of their habitat when they carry out work (summary from <http://www.anglersnet.co.uk/sacn/release04.htm>; <http://www.jncc.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0019808>)

1. Overview

Qualifying species	Potential effects on measures used to judge implications for integrity of the species				
	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary qualifying species					
Bottlenose dolphin	None	None	None	None	Very localised and temporary
Other qualifying species present					
There are no Annex II qualifying species present that are not a primary reason for site selection					

2. Potential effect

Underwater noise from piling (two hours per pile, eight piles) may disturb any bottlenose dolphins within about 2km of the site (Section 9). Levels that might cause temporary changes to hearing ability would only be found within 1km of site.

3. Mitigation measures

Talisman is investigating physical means to reduce piling source noise. Talisman will adhere to JNCC guidance for underwater noise from seismic operations (Section 9), including use of MMOs, soft-starts, and passive acoustic monitoring.

4. Conclusion

The viability and integrity of the bottlenose dolphin in the Moray Firth will not be adversely affected by the proposed piling operations, which will be of very short duration. Significantly elevated noise levels will not reach the boundary of the Moray Firth SAC. From best available information, the numbers of individual bottlenose dolphin frequenting the area of the Demonstrator Project, and that might thus be exposed to noise levels that cause an avoidance reaction (swimming away) will be low (Section 4).

Assessment of potential impacts on conservation objectives of Moray Firth SAC, with regards to effects on integrity of Annex I habitats

Conservation objective of site: To protect the habitat structure, function and biological components of the sublittoral sandbanks in the Moray Firth.

1. Overview

Qualifying habitats	Potential effects on measures used to judge implications for integrity of the species						
	On extent of site	On distribution of habitats	On structure and function of habitat	On supporting processes	Distribution of typical species	Viability of typical species as components of habitat	Disturbance of species
Primary							
There are no Annex I habitats that are a primary reason for selection of this site							
Other qualifying habitats present							
Sandbanks	None	None	None	None	None	None	None

2. Potential effect

The Demonstrator Project may cause some very localised and temporary disturbance to clean sandy sediments at the Demonstrator site, but any affected benthic communities will quickly recover.

3. Mitigation measures

No additional mitigation measures are required.

4. Conclusion

The Demonstrator Project will not affect nearshore sandbanks in the Moray Firth.

Assessment of potential impacts on conservation objectives of Dornoch Firth and Morrich More SAC, with regards to effects on integrity of Annex II species

Conservation objective of site: To protect the only east coast estuarine population of otters and the common seal population. The Dornoch Firth is the most northerly large estuary in Britain and supports a significant proportion of the Inner Moray Firth population of the common seal.

1. Overview

Qualifying species	Potential effects on measures used to judge implications for integrity of the species				
	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary					
Otter	None	None	None	None	None
Common seal	None	None	None	None	Very localised and temporary
Other qualifying species present					
There are no Annex II qualifying species present that are not a primary reason for site selection					

2. Potential effect

Underwater noise from piling may disturb some individual seals within 7km of the site and result in an avoidance reaction. Piling operations will be of short duration (two to eight hours per pile, eight piles in total).

3. Mitigation measures

Talisman will adopt JNCC guidelines for minimising effects of noise. Measures to reduce source noise level are being investigated. Marine mammal observers will be present through operations. Visual and passive acoustic monitoring will be used to detect presence of cetaceans and seals. Soft-start techniques will be used. Piling will only start during daylight hours.

4. Conclusion

The viability and integrity of the common seal population in the Moray Firth will not be adversely affected by the proposed piling operations, which will be of very short duration. Significantly elevated noise levels will not reach the boundary of the Moray Firth SAC. From best available information, the numbers of individual common seal frequenting the area of the Demonstrator Project, and that might thus be exposed to noise levels that cause an avoidance reaction (swimming away) will be low (Section 4).

Assessment of potential impacts on conservation objectives of Dornoch Firth and Morrich More SAC, with regards to effects on integrity of Annex I habitats

Conservation objective of site: To protect and sustain the habitat structure, function and biological components of the habitats identified in the table below. The Dornoch Firth is a complex estuarine system, encompassing extensive sandflats and mudflats. The adjacent Morrich More contains an extensive range of dune ecosystems.

1. Overview

Qualifying habitats	Potential effects on measures used to judge implications for integrity of the species						
	On extent of site	On distribution of habitats	On structure and function of habitat	On supporting processes	Distribution of typical species	Viability of typical species as components of habitat	Disturbance of species
Primary							
Estuaries	None	None	None	None	None	None	None
Mudflats and sandflats	None	None	None	None	None	None	None
<i>Salicornia</i> and other colonising annuals	None	None	None	None	None	None	None
Atlantic salt meadows	None	None	None	None	None	None	None
Embryonic shifting dunes	None	None	None	None	None	None	None
White dunes	None	None	None	None	None	None	None
Grey dunes	None	None	None	None	None	None	None
Decalcified fixed dunes	None	None	None	None	None	None	None
Atlantic decalcified fixed dunes	None	None	None	None	None	None	None
Humid dune slacks	None	None	None	None	None	None	None
Coastal dunes with <i>Juniperus spp.</i>	None	None	None	None	None	None	None
Other qualifying habitats present							
Sandbanks	None	None	None	None	None	None	None
Reefs	None	None	None	None	None	None	None

2. Potential effect

The Demonstrator Project may cause some very localised and temporary disturbance to clean sandy sediments at the Demonstrator site, but any affected benthic communities will quickly recover. The Demonstrator Project will not affect nearshore or coastal sandbanks in the Moray Firth.

3. Mitigation measures

No additional mitigation measures are required.

4. Conclusion

The integrity of the SAC will not be affected. The project will not affect any of these coastal habitats. There are no reefs of *Modiolus modiolus* at the site (Section 4).

Assessment of potential impacts on conservation objectives of Berriedale and Langley Waters SAC, with regards to effects on integrity of Annex II species

Conservation objective of site: To protect and sustain the small, but high-quality salmon *Salmo salar* populations. The rivers have two separate catchments, but share a short length of river just before they meet the sea. Both rivers are oligotrophic, draining the southern edge of the Caithness and Sutherland peatlands, and show only limited ecological variation along their length. Whilst they are comparatively small rivers and support only a small proportion of the Scottish salmon resource, their long history of low management intervention means that they score highly for naturalness. Recent records indicate that the full range of Atlantic salmon life-history types return to the river, with grilse, spring and summer salmon all being caught.

1. Overview

	Potential effects on measures used to judge implications for integrity of the species				
Qualifying species	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary					
Atlantic salmon	None	None	None	None	None
Other qualifying species present					
There are no Annex II qualifying species present that are not a primary reason for site selection					

2. Potential effect

Underwater noise from piling may cause localised disturbance to salmon within about 2km of the site but this will be temporary.

3. Mitigation measures

Talisman is investigating physical measures that could be used to further reduce the source noise level from piling operations.

4. Conclusion

The integrity of the SAC will not be affected.

Assessment of potential impacts on conservation objectives of River Spey SAC, with regards to effects on integrity of Annex II species

Conservation objective of site: To protect the river system from pollution and other adverse impact on the river ecosystem to safeguard the populations of important species. The River Spey supports an outstanding freshwater pearl mussel population. In parts of the River Spey, extremely dense mussel colonies are supported, and the total population is estimated at several million. The population also shows evidence of recent recruitment and a high proportion of juveniles, and therefore the population is considered to be of great international significance. Due to its good water quality, clean gravels and marginal silts and unhindered migration route to the sea the River Spey also supports the sea lamprey *Petromyzon marinus*. The River Spey also supports one of the largest Atlantic salmon *Salmo salar* populations in Scotland, with little evidence of modification by non-native stocks in addition to one of the most important otter *Lutra lutra* sites in Scotland.

1. Overview

Qualifying species	Potential effects on measures used to judge implications for integrity of the species				
	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary					
Freshwater pearl mussel	None	None	None	None	None
Sea lamprey	None	None	None	None	None
Atlantic salmon	None	None	None	None	None
Otter	None	None	None	None	None
Other qualifying species present					
There are no Annex II qualifying species present that are not a primary reason for site selection					

2. Potential effect

Underwater noise from piling may cause localised disturbance to salmon within about 2km of the site but this will be temporary.

3. Mitigation measures

Talisman is investigating physical measures that could be used to further reduce the source noise level from piling operations.

4. Conclusion

The integrity of the SAC will not be affected.

Assessment of potential impacts on conservation objectives of River Oykel SAC, with regards to effects on integrity of Annex II species

Conservation objective of site: To protect the river system from pollution and other adverse impact on the river ecosystem to safeguard the populations of freshwater pearl mussel and Atlantic salmon. The Oykel River supports an excellent, high-quality freshwater pearl mussel population with high densities recorded at some locations, including a bed numbering several thousand individuals. Surveys have also recorded high percentages of juveniles within the population, indicating that there has been recent successful recruitment. There is also evidence of unsurveyed pearl mussel populations in deep water that may increase the conservation importance of the river.

1. Overview

Qualifying species	Potential effects on measures used to judge implications for integrity of the species				
	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary					
Freshwater pearl mussel	None	None	None	None	None
Other qualifying species present					
Atlantic salmon	None	None	None	None	None

2. Potential effect

Underwater noise from piling may cause localised disturbance to salmon within about 2km of the site but this will be temporary.

3. Mitigation measures

Talisman is investigating physical measures that could be used to further reduce the source noise level from piling operations.

4. Conclusion

The integrity of the SAC will not be affected.

Assessment of potential impacts on conservation objectives of River Moriston SAC, with regards to effects on integrity of Annex II species

Conservation objective of site: To protect the river system from pollution and other adverse impact on the river ecosystem to safeguard the populations of freshwater pearl mussel and Atlantic salmon. The River Moriston supports a functional freshwater pearl mussel population. Pearl mussels are present from downstream of a hydro-electric dam to the confluence with Loch Ness. Due to illegal pearl-fishing the population is not abundant but survey results show that 40% of the population is composed of juveniles. This is the highest percentage recorded in any Scottish pearl mussel population and indicates that recent successful recruitment has taken place.

1. Overview

Qualifying species	Potential effects on measures used to judge implications for integrity of the species				
	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary					
Freshwater pearl mussel	None	None	None	None	None
Other qualifying species present					
Atlantic salmon	None	None	None	None	None

2. Potential effect

Underwater noise from piling may cause localised disturbance to salmon within about 2km of the site but this will be temporary.

3. Mitigation measures

Talisman is investigating physical measures that could be used to further reduce the source noise level from piling operations.

4. Conclusion

The integrity of the SAC will not be affected.

Assessment of potential impacts on conservation objectives of East Caithness Cliffs SPA, with regards to effects on integrity of bird species

Conservation objective of site: To protect the supporting populations of bird species of European importance listed on Annex I of the Bird Directive:

1. Overview

Qualifying bird species (numbers of birds)	Potential effects on measures used to judge implications for integrity of the species				
	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary qualification					
Peregrine falcon (6 pairs)	None	None	None	None	None
Guillemot (71,509 pairs)	None	None	None	None	None
Herring gull (9,370 pairs)	None	None	None	None	None
Kittiwake (31,930 pairs)	None	None	None	None	None
Razorbill (9,259 pairs)	None	None	None	None	None
Shag (2,345 pairs)	None	None	None	None	None
Assemblage qualification: a seabird assemblage of international importance including, in addition to the above species					
Fulmar (15,000)	None	None	None	None	None
Great black-backed gull (850)	None	None	None	None	None
Cormorant (144)	None	None	None	None	None
Puffin (1,750)	None	None	None	None	None

2. Potential effect

The WTGs may present a collision risk for some species that are observed at the Demonstrator site (Section 4). Collision risk has been assessed (Section 10) using conservation assumptions. With the exception of great black-backed gulls, additional mortality from the WTGs using a value of 95% avoidance would result in a < 1% increase in the level of natural mortality. The estimated potential increase in mortality for great black-backed gulls (about 2.5% of natural levels of mortality) may be elevated due to the presence in November and December of birds that were not from the local population. Great black-backed gulls are widely dispersed in the North Sea and Moray Firth, and individuals observed at the Demonstrator site will almost certainly have come from other sites, as well as from East Caithness cliffs.

3. Mitigation measures

There are no additional mitigation measures that can be enacted.

4. Conclusion

The integrity of the SPA will not be affected by the siting and operation of the WTGs at the Demonstrator site.

Assessment of potential impacts on conservation objectives of Dornoch Firth and Loch Fleet SPA, with regards to effects on integrity of bird species

Conservation objective of site: To protect the supporting populations of bird species of European importance listed on Annex I of the Bird Directive:

1. Overview

Qualifying bird species (numbers of birds)	Potential effects on measures used to judge implications for integrity of the species				
	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary qualification					
Osprey (10 pairs)	None	None	None	None	None
Bar-tailed godwit (1,300)	None	None	None	None	None
Greylag goose (2,079)	None	None	None	None	None
Wigeon (15,304)	None	None	None	None	None
Assemblage qualification: a wetland of international importance including, in addition to the above species					
Curlew (1,368)	None	None	None	None	None
Dunlin (4,462)	None	None	None	None	None
Oystercatcher (3,270)	None	None	None	None	None
Teal (1,462)	None	None	None	None	None

2. Potential effect

Only low numbers of greylag goose, dunlin and teal were observed at the Demonstrator site, but they were not observed flying at the height of the blades. The risk of additional mortalities from collision for all these species is therefore very small. All the other species were not observed at the Demonstrator site during a year-long monitoring programme in 2005.

3. Mitigation measures

There are no additional mitigation measures that can be enacted.

4. Conclusion

The integrity of the SPA will not be affected by the siting and operation of the WTGs at the Demonstrator site.

Assessment of potential impacts on conservation objectives of Loch Eye SPA, with regards to effects on integrity of bird species

Conservation objective of site: To protect the supporting populations of bird species of European importance listed on Annex I of the Bird Directive:

1. Overview

Qualifying bird species (numbers of birds)	Potential effects on measures used to judge implications for integrity of the species				
	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary qualification					
Whooper swan (213)	None	None	None	None	None
Greylag goose (11,321)	None	None	None	None	None
Assemblage qualification: No assemblage qualification					

2. Potential effect

Low numbers of greylag goose and whooper swan were observed at the Demonstrator site, but they were not observed flying at the height of the blades. The risk of additional mortalities from collision for both these species is therefore very small.

3. Mitigation measures

There is no additional mitigation measures that can be enacted.

4. Conclusion

The integrity of the SPA will not be affected by the siting and operation of the WTGs at the Demonstrator site.

Assessment of potential impacts on conservation objectives of Cromarty Firth SPA, with regards to effects on integrity of bird species

Conservation objective of site: To protect the supporting populations of bird species of European importance listed on Annex I of the Bird Directive:

1. Overview

Qualifying bird species (numbers of birds)	Potential effects on measures used to judge implications for integrity of the species				
	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary qualification					
Common tern (294 pairs)	None	None	None	None	None
Osprey (1 pair)	None	None	None	None	None
Bar-tailed godwit (1,420)	None	None	None	None	None
Whooper swan (55)	None	None	None	None	None
Greylag goose (1,777)	None	None	None	None	None
Assemblage qualification: a wetland of international importance including, in addition to the above species					
Wigeon (10,476)	None	None	None	None	None
Redshank (1,324)	None	None	None	None	None
Red breasted merganser (194)	None	None	None	None	None
Scaup (302)	None	None	None	None	None
Curlew (1,475)	None	None	None	None	None
Dunlin (3,384)	None	None	None	None	None
Knot (3,078)	None	None	None	None	None
Oystercatcher (2,509)	None	None	None	None	None
Pintail (226)	None	None	None	None	None

2. Potential effect

Tern sp., whooper swan, greylag goose, and dunlin were observed in low or very low numbers at the Demonstrator site, but none was observed flying at the height of the blades. The additional mortalities from collisions for tern sp. is estimated to represent about 0.7% of natural mortality rates (Section 10). The risk to other species from collision will be very small.

3. Mitigation measures

There are no additional mitigation measures that can be enacted.

4. Conclusion

The integrity of the SPA will not be affected by the siting and operation of the WTGs at the Demonstrator site.

Assessment of potential impacts on conservation objectives of Inner Moray Firth SPA, with regards to effects on integrity of bird species

Conservation objective of site: To protect the supporting populations of bird species of European importance listed on Annex I of the Bird Directive:

1. Overview

Qualifying bird species (numbers of birds)	Potential effects on measures used to judge implications for integrity of the species				
	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary qualification					
Common tern (310 pairs)	None	None	None	None	None
Osprey (4 pair)	None	None	None	None	None
Bar-tailed godwit (1,155)	None	None	None	None	None
Greylag goose (1,731)	None	None	None	None	None
Red breasted merganser (1,731)	None	None	None	None	None
Redshank (1,811)	None	None	None	None	None
Scaup (97)	None	None	None	None	None
Assemblage qualification: a wetland of international importance including, in addition to the above species					
Wigeon (6,800)	None	None	None	None	None
Oystercatcher (3,063)	None	None	None	None	None
Curlew (1,337)	None	None	None	None	None
Teal (1,849)	None	None	None	None	None
Goosander (397)	None	None	None	None	None
Goldeneye (199)	None	None	None	None	None
Cormorant (418)	None	None	None	None	None

2. Potential effect

Tern sp., greylag goose, teal, and cormorant were observed in low or very low numbers at the Demonstrator site, but only teal was observed flying at the height of the blades. The additional mortalities from collisions for tern sp. is estimated to represent about 0.7% of natural mortality rates (Section 10). The risk to other species from collision will be very small.

3. Mitigation measures

There are no additional mitigation measures that can be enacted.

4. Conclusion

The integrity of the SPA will not be affected by the siting and operation of the WTGs at the Demonstrator site.

Assessment of potential impacts on conservation objectives of Moray and Nairn Coast SPA, with regards to effects on integrity of bird species

Conservation objective of site: To protect the supporting populations of bird species of European importance listed on Annex I of the Bird Directive:

1. Overview

Qualifying bird species (numbers of birds)	Potential effects on measures used to judge implications for integrity of the species				
	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary qualification					
Osprey (7 pairs)	None	None	None	None	None
Bar-tailed godwit (1,156)	None	None	None	None	None
Greylag goose (2,679)	None	None	None	None	None
Pink-footed goose (139)	None	None	None	None	None
Redshank (1,690)	None	None	None	None	None
Assemblage qualification: a wetland of international importance including, in addition to the above species					
Wigeon (2,600)	None	None	None	None	None
Red-breasted merganser (216)	None	None	None	None	None
Oystercatcher (2,171)	None	None	None	None	None
Dunlin (2,689)	None	None	None	None	None
Velvet scoter (133)	None	None	None	None	None
Common scoter (531)	None	None	None	None	None
Long-tailed duck (277)	None	None	None	None	None

2. Potential effect

Greylag goose and dunlin were observed in very low numbers at the Demonstrator site, but they were not observed flying at the height of the blades. The risk to these species from collision will be very small.

3. Mitigation measures

There are no additional mitigation measures that can be enacted.

4. Conclusion

The integrity of the SPA will not be affected by the siting and operation of the WTGs at the Demonstrator site.

Assessment of potential impacts on conservation objectives of Loch Spynie SPA, with regards to effects on integrity of bird species

Conservation objective of site: To protect the supporting populations of bird species of European importance listed on Annex I of the Bird Directive:

1. Overview

	Potential effects on measures used to judge implications for integrity of the species				
Qualifying bird species (numbers of birds)	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary qualification					
Greylag goose (3,360)	None	None	None	None	None
Assemblage qualification: No assemblage qualification					

2. Potential effect

Very low numbers of greylag goose were observed at the Demonstrator site, and individuals were not observed flying at the height of the blades. The potential for additional mortalities due to collision will therefore be very small.

3. Mitigation measures

There is no additional mitigation measures that can be enacted.

4. Conclusion

The integrity of the SPA will not be affected by the siting and operation of the WTGs at the Demonstrator site.

Assessment of potential impacts on conservation objectives of Troup, Pennan and Lion's Head SPA, with regards to effects on integrity of bird species

Conservation objective of site: To protect the supporting populations of bird species of European importance listed on Annex I of the Bird Directive:

1. Overview

Qualifying bird species (numbers of birds)	Potential effects on measures used to judge implications for integrity of the species				
	On viability of species	On distribution of species	On supporting habitats	On supporting processes	Disturbance of species
Primary qualification					
Kittiwake (31,660)	None	None	None	None	None
Fulmar (4,400)	None	None	None	None	None
Guillemot (29,902)	None	None	None	None	None
Herring gull (4,200)	None	None	None	None	None
Razorbill (3,216)	None	None	None	None	None
Assemblage qualification: a seabird assemblage of international importance including all the above species					

2. Potential effect

With the exception of razorbill and guillemot, all these species were observed at the Demonstrator site. However, only herring gull and kittiwake were observed flying at the height of the blades. It was estimated that the additional mortality for herring gull from collisions would be about 0.3% of the natural mortality (Section 10). Herring gulls are widely dispersed in the North Sea and Moray Firth, and individuals observed at the Demonstrator site will almost certainly have come from other sites, as well as from Troup, Pennan and Lion's Head. The additional mortality for kittiwake from collisions would be about 0.2% of the natural mortality rate (Section 10). For the other species, the potential for additional mortalities due to collision will be very small.

3. Mitigation measures

There are no additional mitigation measures that can be enacted.

4. Conclusion

The integrity of the SPA will not be affected by the siting and operation of the WTGs at the Demonstrator site.

