

The Highland Council
Nigg Development Masterplan
Appropriate Assessment
October 2009



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Non-technical Summary

Halcrow Group Limited has prepared an Appropriate Assessment (AA), on behalf of The Highland Council, of the Nigg Development Masterplan. The Nigg Development Masterplan outlines a vision for the future development and use of a former industrial site at Nigg in the north of Scotland, at Nigg Point on the south-west coast of the Fearn Peninsula. The aim of the AA is to identify and document any potential adverse effects of the Nigg Development Masterplan on sites protected for their international nature conservation interest, referred to in this report as 'international' sites.

The site comprises an oil terminal, the Nigg Fabrication Yards and some proximal land to the east. These study areas are shown in the following plan:



The Nigg Development Masterplan outlines two principle options to bring the site back into productive industrial use, as follows: -

- Option 1 diversifies the activities at Nigg whilst building on its oil and gas heritage and industry reputation and introduces a renewable energy component.
- Option 2 the renewable energy sector is the focus for Option 2 with the majority of the site allocated for this activity.

Both options consider each of the three components of the Nigg site (oil terminal; fabrication yard; and proximal land to the east of the fabrication yard), both individually and collectively as a single unit.

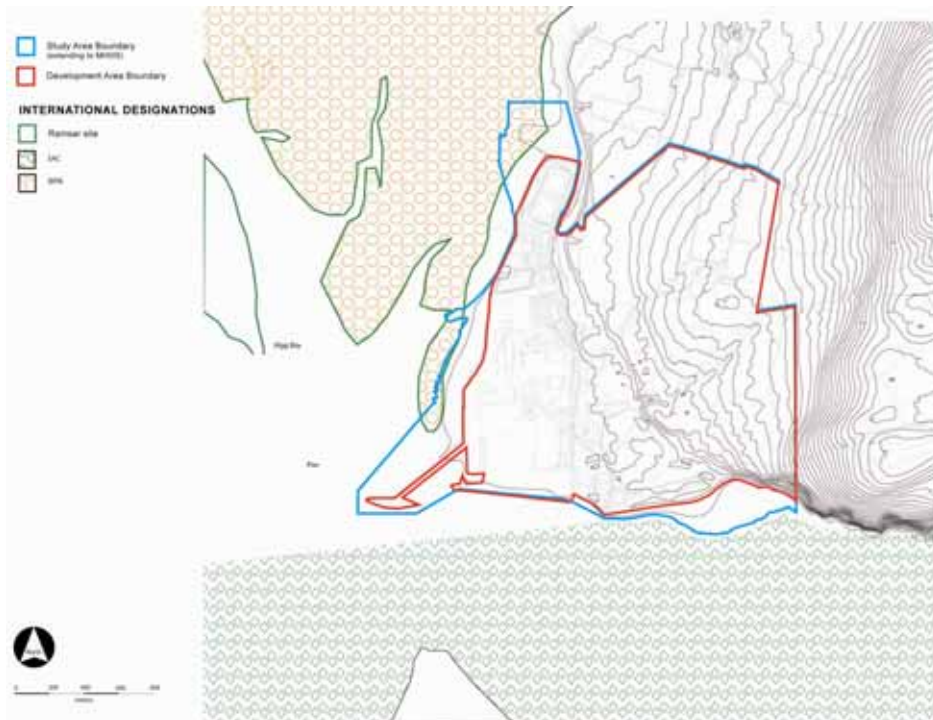
Underlying these site options are a series of development principles and objectives that apply to both of the options. Some of these principles and objectives were 'screened out' of this report as they were not seen to be applicable to the international sites. The AA report assesses both options and the development principles and objectives underlying the options in matrices and provides a summary of the results.

The AA has been carried out in accordance with the 'Habitats Regulations', which transpose the requirements of the European 'Habitats Directive' into domestic legislation. The methodology of the AA was devised using draft guidance produced by the Scottish Executive. The baseline data collected for the AA screening has been retained to ensure the background information sits alongside this final assessment.

In accordance with the SEA Scoping and initial consultations with Scottish Natural Heritage (SNH) in March and April 2009, it was decided that the international sites to be considered in this screening exercise (as they could potentially be affected by the Masterplan) should be:

- Cromarty Firth Special Protection Area (SPA)
- Cromarty Firth Ramsar
- Moray Firth Special Area of Conservation (SAC)

These sites and their relation to the development area boundary are shown in the following plan:



Where the conclusions on likely significant effects were classified as 'uncertain' in the report, this was regarded as a 'likely significant effect', as a significant effect could not be ruled out.

Summary of results

The key findings of the screening stage were that both options for development of the Nigg Yard study area, oil and gas focus with renewables secondary and renewable energy focus could potentially impact on all three international nature conservation designations. Impacts would primarily be through construction noise and vibration disturbance and vessel disturbance to Cromarty Firth's qualifying bird species and the Moray Firth SACs bottlenose dolphins.

Due to the close proximity of the development site to the international sites and the proximity of the international sites to each other, many potential impacts were found to apply to all three international sites. Exceptions to this rule are noise pollution and vessel disturbance, which are likely to affect designated species rather than habitats. Vessel disturbance to bottlenose dolphins, the species for which the Moray Firth SAC is designated, could be exacerbated by the mix of other vessel traffic that already uses the area. Noise from vessels using Nigg Yard could also be added to by construction and operational usage of the site. Noise disturbance was also found to potentially affect the qualifying bird species of Cromarty Firth SPA and Ramsar site.

One of the biggest potential risks to all qualifying features of all three international sites is pollution. This can be in the form of direct pollution from vessels using Nigg Yard or accidental pollution from the Yard itself. There are particularly high pollution risks associated with ship-to-ship oil transfer and ballast water discharge. Ballast water could also potentially introduce invasive species that could directly affect the habitats and species in the area.

Indirect pollution into the marine environment can arise from surface run-off or groundwater contamination from on-site oil storage or pollution spillage. The risks of this are potentially significant. The Flood Risk Assessment shows that the site is at risk from tidal flooding due to sea level rise but this is in the longer term than the 25 year design life of the site. The greatest risk identified by the Flood Risk Assessment was coastal surge. The area is also predicted to continue having heavy rainfall events due to climate change. Both tidal surge and heavy rainfall and storm events could potentially mobilise contaminants present on the site, either through tidal inundation or surface run-off and groundwater contamination, thereby conducting the pollutants into the marine environment.

In terms of in-combination impacts on the international sites, the principal combined impacts on the sites were found to be from general vessel traffic using the Moray and Cromarty Firths and pollution from various sources entering these areas. For example, vessel traffic in the Moray Firth can be influenced by shipping and other vessels passing to and from Inverness and other local ports. Pollution may also arise from sewerage outfalls waste and bilge and ballast water discharge from vessels, marine litter, agricultural run-off, aquaculture discharge and urban run-off.

Dredging for a new berthing area could also potentially cause a direct loss of substrate and SAC habitat and increase suspended and deposited sediment. The disposal of dredged material could lead to further habitat loss or degradation unless avoidance or mitigation measures are put in place.

Avoidance and possible mitigation measures for Masterplan

The following measures could potentially be implemented to address the key environmental impacts discussed in this report:

1. Water pollution impacts

To address any issues of residual pollution on the site, a Contamination Study will need to be conducted that covers all areas of the oil terminal and fabrication yard. A Remediation Strategy would follow this. Various targeted mitigation measures, such as use of bunds to contain potential spills, should be implemented after a full Environmental Impact Assessment (EIA) has been undertaken. Replacing old or unsuitable equipment could reduce pollution risk, as could avoiding the use of harmful chemicals wherever possible. Consultation with SEPA and use of their Pollution Prevention and Control guidelines should also be undertaken. In their consultation response to the Flood Risk Assessment for the site, SEPA request that the minimum formation level of the site be 3.62 m AOD, stipulated as a requirement in the FRA, be clearly stated in the Masterplan itself.

The following discrete types of impact have been separated to show the potential influence on water pollution:

Drainage of graving dock

The process of discharging the current water stored in the graving dock under plans to renovate the dock (under Development Principle 1: Site Content and Operations) would require obtaining a discharge licence from SEPA. Thereafter the application is put through a determination process which includes consultation with the public and other required bodies, such as the Health and Safety Executive (HSE). An application has a four months determination period. This may be extended by notice from SEPA or by agreement with the applicant in special circumstances i.e. there is a lack of information on the initial application.

Ship-to-Ship oil transfer

Ship-to-ship transfer by vessels operating out of Nigg currently complies with international regulations which are described in section 4.5. These are the:

- Marine Pollution Merchant Shipping (Ship-to-Ship Transfers) Regulations 2008, which was consulted upon from May to August, 2008. Changes to the Regulations as a result of this consultation have still not been finalised at the time of writing this report.
- International Convention for the Prevention of Pollution from Ships; MARPOL73/78.

To protect the international sites, ship to ship transfers will need to continue to comply with the environmental safety requirements of the Cromarty Firth Port Authority.

Oil pollution from the Masterplan area of Nigg Yard

An Oil Spill Contingency Plan (OSPC) should be prepared to ensure that any spillages, should they occur, are minimised in terms of their extent or severity. The Plan should be consistent with the existing Cromarty Firth Port Authority OSPC Plan and the National Contingency Plan and be approved by THC in consultation with SNH and SEPA.

Ballast water discharge

Ballast water discharge is regulated by the Maritime and Coastguard Agency. It is controlled under the International Maritime Organisation's Ballast Water Management Convention (BWMC) (International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004). At present ballast water is managed under a voluntary code to comply with the BWMC and the OSPAR Convention. However, ballast water discharge standards are being made mandatory under the BWMC. The Maritime and Coastguard Agency's Marine Guidance Note 363, 'The Control and Management of Ships' Ballast Water and Sediments', outlines the discharge standards and how they are expected to change under the BWMC and guidance on the main requirements of the convention. There are no additional local measures enforced by the Cromarty Firth Port Authority or any other body to manage ballast water. To protect the integrity of the Moray Firth SAC and the Cromarty Firth SPA/Ramsar it is important that ships continue to comply with Marine Guidance Note 363 until the BWMC is ratified.

Both ship-to-ship oil transfer and ballast water discharge are outside the scope of the Masterplan and the Highland Council as the Competent Authority to influence as they are associated with the oil terminal owned by Ithaca and the Wood Group.

2. Dredging

Dredging and its impacts on the international sites are outside the remit of the Highland Council and the Masterplan. However, it is an activity that is likely to keep taking place at Nigg Yard and it is also likely to cause direct impacts on the marine environment; it is therefore beneficial to the AA to consider its impacts on the international sites.

Dredging has the potential to cause direct damage to habitats and also mobilise pollutants present in suspended sediment. Capital and maintenance dredging are not currently subject to any licensing control in Scotland, although capital dredging is subject to EIA. However, the Scottish Marine Bill, introduced to parliament in April 2009, proposes to increase licensing requirements for dredging.

Mitigation safeguards to protect the international sites should include the following measures, in addition to retaining the current Food and Environment Protection Act (FEPA) license and following established dredging protocols;

- no disposal of dredging within 200m of an area with dolphins. Installed hydrophones will help establish dolphin positions.
- Marine Mammal Observers (MMOs) should be on board dredging boats to help avoid disturbance impacts.

- dredging should not be carried out in the May to September period, due to the increased use of the inner Moray Firth by cetaceans.
- monitor the disposal of dredged material for environmental impact (during and after operations) if the disposal license requires monitoring.
- sample the material to be dredged to ascertain its nature and possible environmental impact from dredging and disposal.
- minimise the footprint of the area affected by dredging machinery.
- monitor how disposal sites might affect dolphin and bird species and their habitats.
- develop and use guidelines about specific routes for vessels to follow to minimise impacts on cetaceans and SPA/ Ramsar bird species and their habitats.

3. Vessel disturbance

Shipping is currently regulated by the International Maritime Organisation, which now includes a formal correspondence group on shipping noise and marine mammals. Cetaceans are protected from disturbance by the Scottish Habitats Regulations and there are duties under Article 6.2 of the Habitats Directive for Ministers to take measures to avoid significant disturbance of species for which Natura sites have been designated. However, general shipping is not considered as significant disturbance, whereas powerboat racing and wildlife tourism boats can pose more of a direct threat. This may be due to the noise frequency of recreation boat engines or propellers or the direct harassment of marine mammals by some boat operators. To mitigate these impacts, the Marine Wildlife Watching Code and Dolphin Space Programme are in use in the Moray Firth.

Before Nigg Yard is fully operational it should be possible to extrapolate approximate vessel numbers and vessel types that will use the site when the site during construction and when the site is fully operational. Close consultation with the Moray Firth Partnership and SNH could help develop an avoidance and mitigation strategy to prevent impacts from vessels on marine mammals or the Cromarty Firth's qualifying bird species. However, it may be difficult to isolate which traffic is associated with the re-development of Nigg Yard and exactly how many vessels may constitute a problem to qualifying species over and above existing levels. It is outside the scope of the Masterplan to have direct influence over all vessel traffic that could potentially disturb European Protected Species but there may be indirect ways in which the impacts of traffic associated with the redeveloped site can be minimised. Traffic numbers will continue to be monitored by the Cromarty Firth Port Authority and the status of the international sites will continue to be monitored by SNH, MFP and others – liaison between all parties should ensure significant impacts are avoided.

In addition to the liaison between key interest groups a Boat Traffic Management Plan should be prepared. This Plan will carry out an assessment of the boat numbers and types using the facility. Through modelling, the Plan will determine what effect these additional boat numbers will have on vessel densities in the SAC and, if necessary, mitigation measures to manage boat traffic will be put in place.

The Plan will be approved and enforced either by THC through the planning legislation and/or through the Scottish Government Ports and Harbours Division through a Harbour Order or a Harbour Revision Order. The Masterplan has now been updated to reflect this precautionary mitigation.

4. Noise pollution

To prevent noise pollution from construction or operational use of the site a Construction Environmental Management Plan and an Operational Environmental Management Plan should be formulated, which takes into account the mitigation proposed in an EIA. This would involve obtaining information on existing and predicted noise sources, using Best Available Technology, following SEPA's PPC guidelines and complying with British Standards on noise. These management plans should also include a Noise Management Plan (including monitoring measures) for assessing noise impacts. According to SEPA's guidance on noise pollution, this may include:

- restrictions on activities/ timing or location
- noise containment, e.g. use of silencing equipment, noise bunds
- external doors fitted with self-closing mechanisms

The Noise Management Plan should address piling, construction and vibration noise. It is a current requirement to apply for consent from Marine Scotland and the CFPA for any piling or marine construction works below the High Water Mark and it will be a requirement to continue this consents process.

Mitigation measures to reduce disturbance to Natura interests to acceptable levels should be implemented prior to works commencing on the site. The Plan should be approved by THC in consultation with SNH.

The following additional mitigation can be used to mitigate noise produced by pile-driving:

Timing of works

Liaison with SNH suggested the timing of pile-driving and construction could be crucial to whether the internationally designated species are affected or not. The following months should ideally be avoided:

- May through to September (cetaceans use inner Moray Firth more during this time)
- October through to March (qualifying bird species use Cromarty Firth more during this time)

Underwater bubble curtains

The use of specialist bubble curtain equipment can inhibit sound transmission through water and therefore reduce overall sound pressure levels during pile-driving. Research has shown that a bubble curtain can effectively lower sound levels within 1km of the pile-driving and the experiment represented a success for mitigating the impacts of noise on dolphins.

5. Additional mitigation for SPA/ Ramsar bird species

The AA recommended that, as a precautionary measure, the EIA and Construction and Operational Management Plans would need to show how and when common terns, or any other SPA/Ramsar qualifying bird species, may be using the oil terminal and surrounds and devise appropriate mitigation. Periods best to avoid construction are between October and March to avoid the time when the Cromarty Firth is most used by qualifying SPA/ Ramsar bird species.

6. Bats in existing site buildings

As a precautionary measure, a survey of bats that may be using existing built structures should be carried out prior to permission being granted for planning applications and a licensed bat ecologist should devise an appropriate removal or mitigation strategy.

Summary of impacts on international sites

The following table summarises the potential impacts of the Masterplan on the Moray Firth SAC and the Cromarty Firth SPA and Ramsar site:

International Site (s) affected	Nature of effect	Conclusion of AA – adverse effect on site integrity? ✓ ✗ ?	Mitigation needed? ✓ ✗	Within current remit of Highland Council as Competent Authority to mitigate? ✓ ✗
Moray Firth SAC	Vessel disturbance to marine mammals	?	✓	✗
Cromarty Firth SPA/ Ramsar/ Moray Firth SAC	Run-off or groundwater pollution affecting marine environment	✗	✓	✓
Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Water pollution risk from drainage of graving dock	✗	✓	✓
Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Noise pollution and vibration from renovation	✗	✓	✓
Cromarty Firth SPA/ Ramsar Moray Firth SAC	Chemical, oil and litter pollution from vessels	?	✓	✗
Cromarty Firth SPA/ Ramsar Moray Firth SAC	Noise disturbance from vessels	?	✓	✗
Cromarty Firth SPA/ Ramsar Moray Firth SAC	Chemical, oil and litter pollution from vessels	?	✓	✗
European Protected Species: Bats	Possible construction noise and light disturbance to roosts Disturbance to flight lines	✗	✓	✓
Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Dredging to a depth of 10m may; <ul style="list-style-type: none"> • increase suspended sediment • mobilise pollutants 	?	✓	✗

	<ul style="list-style-type: none"> • disrupt supporting habitat/food supply for qualifying species • disposal of dredged material could also cause habitat loss/ degradation 			
Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Pollution Risk from vessels (including ship-to-ship)	?	✓	✘
Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Pollution Risk (chemical and biological) from ballast water	?	✓	✘

The Requirements for further AA

Although not all of the predicted environmental impacts associated with the Masterplan are within the remit of the Highland Council, as Competent Authority for the AA, to mitigate, the impacts are likely to be avoided if the appropriate mitigation measures listed in this report are put in place. Providing these measures are put in place there are not likely to be adverse effects on any of the Natura interests and therefore no further work will be required under the Scottish Habitats Regulations.

1 Introduction

1.1 Introduction

This report has been prepared by Halcrow Group Limited (Halcrow), on behalf of The Highland Council (THC). THC commissioned work on the Habitats Regulations Assessment of the Nigg Development Masterplan (Halcrow/Mackay Consultants, November 2008) in March 2009. As a result of finding uncertain conclusions in the 'screening' stage of this work regarding likely significant effects of the Masterplan on sites of international nature conservation interest, a full Appropriate Assessment (AA) was recommended by Scottish Natural Heritage, the statutory consultees for AA.

The purpose of this full AA Report is to provide sufficient information on the Nigg Development Masterplan, and the AA methodology, to enable the Consultation Authorities (CAs) to form a view on the impacts of the Masterplan on international sites of nature conservation interest. This report should be read in conjunction with the screening stage report, Nigg Development Masterplan AA screening, May 2009.'

This AA Report has been prepared in accordance with:

- EU Habitats Directive (Council Directive 92/43/EEC)
- EU Birds Directive (Council Directive 79/409/EEC)
- Scottish Executive Guidance on Appropriate Assessment
- EC Guidance on Appropriate Assessment
- Current best practice and guidance from Scottish Natural Heritage.

1.2 Location

The Nigg site is located in the north of Scotland at Nigg Point on the south-west coast of the Fearn Peninsula, approximately 61 kilometres (km) from Inverness. It is accessed by the B9175, which bisects the Nigg site, and joins the A9 approximately 6 km to the north. The nearest serving railway station is at Fearn, which is approximately 9.5 km from the site (see Figure 1.1).

Figure 1.1 – Location of Nigg within Inner Moray Firth



The Nigg site extends to approximately 334 hectares (ha) and is bounded to the north by the Sands of Nigg, to the west and south by the Cromarty Firth, and to the north and east by privately owned land.

Figure 1.2 shows the three main components of the Nigg site:

- Oil Terminal;
- Nigg Fabrication Yard; and
- Proximal land to the east.

Figure 1.2 – Nigg Site Areas



1.3 Background to the Nigg Development Masterplan

The Nigg site is recognised as being of national importance in the second National Planning Framework (NPF2) discussion documents¹, which describe the former fabrication yard as having “*potential as a facility for decommissioning oil and gas installations and for the manufacture and support services required by the renewable energy industry ...its deep water is an asset of strategic importance*”.

The purpose of the Masterplan for Nigg Yard is to outline a ‘vision’ and feasible options for the development of the study area of the site as a multi-user industrial facility.

Nigg Yard has been substantially vacant for the past five years. It is widely recognised that unlocking the site’s development potential would significantly contribute to the economy of the North of Scotland. The aim of the Masterplan is to maximise the site’s strategic development potential and employment opportunities over the next 15 to 20 years.

The current version of the Masterplan, due to be adopted as Supplementary Planning Guidance in October 2009 (Halcrow, October, 2009), gives consideration to developing feasible options to bring the site into use as a multi-user industrial facility. Possible uses and opportunities are explored within the draft Masterplan for each of the component parts of the site, both individually and collectively as a single unit.

1.4 Draft Contents of the Nigg Development Masterplan

The focus of the final Nigg Development Masterplan is on the Nigg complex and the proximal site identified as industrial allocations within the adopted Ross & Cromarty East Local Plan. This Plan builds upon the “*Review of Ports and Sites in the Inner Moray Firth*” previously prepared by Halcrow in 2004, and approved as supplementary planning guidance to the development plan by THC in June 2006.

The contents of the preliminary consultation draft of the Masterplan options comprise:

1. **Policy and Regulatory Context** – national, strategic and local policy and regulatory framework relevant to the Nigg site.
2. **Market Review** - a synopsis of the market assessment undertaken by Mackay Consultants
3. **Technical Assessment** – detailed technical and feasibility issues relating to infrastructure and service provision on the site, as well as the planning history and an outline of Compulsory Purchase Order (CPO) procedures.

¹ Available online at <http://www.scotland.gov.uk/Resource/Doc/208174/0055210.pdf> (Page 80, para. 274)

4. **Strategic Framework & Options** – this section contains the development principles on which the Development Masterplan is based, partly informed by a consultation workshop. Consideration is given to the options to bring the site into potential use as a multi-user industrial facility and considers the development components of the development framework.
5. **Way Forward** – provides the key findings and next steps in the Masterplan process.

1.5 Structure of the AA Report

This AA Report is structured as follows:

- Section 1: Introduction: provides background to the Nigg Development Masterplan
- Section 2: Appropriate Assessment Procedure: sets out the AA methodology and the legislative requirements
- Section 3: Relevant International Sites: describes the sites that the AA report focuses on and their conservation requirements
- Section 4: Potential Impact Pathways: describes the possible impacts on the relevant international sites
- Section 5: Analysis of Nigg Development Masterplan (summarises the assessment matrices of Appendix 2): focuses on any parts of the Masterplan that may have an impact on international sites
- Section 6: In-combination effects: describes elements and policies contained in other plans and programmes that may have a combined impact with elements of the Masterplan
- Section 7: Avoidance/Mitigation Measures: describes avoidance and mitigation measures for each of the principal impacts predicted for international sites
- Section 8: Summary of the Assessment: provides an evaluation of predicted impacts, possible mitigation measures and concludes whether any further work is needed under the requirements of the EU Habitats Directive and Scottish Habitats Regulations

1.6 Strategic Environmental Assessment requirements

A Strategic Environmental Assessment (SEA) of the Nigg Development Masterplan was undertaken by Halcrow in parallel with this Appropriate Assessment. SEA takes a wider approach to broader sustainability and environmental impacts, rather than the narrow approach that AA takes by focusing on the predicted impacts of plans on international sites. SEA follows the requirements of the SEA Directive (2001/42/EC) whereas AA follows the requirements of the Habitats Directive (Council Directive 92/43/EEC) and the Wild Birds Directive (Council Directive 79/409/EEC).

In line with guidance on AA produced by the Scottish Executive², data collected during the Scoping Stage of the SEA has also been used to help establish the baseline for the AA.

The SEA scoping process identified the international sites that could potentially be affected by the Masterplan and informed the need for the AA screening to take place originally. The final Environmental Report of the SEA was submitted to the Highland Council on 17th September 2009. The results of this AA will feed into the SEA post-adoption statement. Scottish Ministers also require that the AA should be completed before adoption of the Masterplan.

² Scottish Executive, 2006. Assessing Development Plans in Terms of the Need for Appropriate Assessment; Interim Guidance May 2006.

2. Appropriate Assessment Procedure

2.1 Requirements of the Habitats Directive

AA is required where any plan, alone or 'in combination' with other plans, could have an adverse effect on the integrity of Natura 2000 Sites (i.e. Special Protection Areas (SPAs) designated under the EC Birds Directive³ and Special Areas of Conservation (SACs) designated under the EC Habitats Directive⁴). The UK is also party to the International Convention on Wetlands ('Ramsar' sites), signed in Ramsar, Iran (1971). Ramsar sites, like SPAs and SACs, are approved by Scottish Ministers. The procedure for listing Ramsar sites is the same as that for the classification of SPAs, and where, as in the great majority of cases so far, such sites are also considered for classification as SPAs, joint consultation and consideration is undertaken. For those sites which qualify for designation only under the Ramsar Convention (and not as SAC or SPA) the Scottish Executive has chosen as a matter of policy to apply the same considerations to their protection as if they were classified as SPAs.

As the Ramsar Convention has worldwide coverage, the sites relevant to this project are referred to as 'international sites', an all encompassing term, rather than 'European sites' or 'Natura 2000' sites.

Plans that should be subject to the AA process are described in Article 6(3) of the European Habitats Directive:

Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

Article 6(4) of the Habitats Directive goes on to discuss alternative solutions, the Imperative Reasons of Overriding Public Interest (IROPI) test and compensatory measures:

If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

In Scotland, international sites of nature conservation importance are often underpinned by notification as Sites of Special Scientific Interest (SSSI).

³ Council Directive 79/409/EEC on the conservation of wild birds

⁴ Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora

AA relates specifically and exclusively to the qualifying interests of international sites and not to the broader conservation interests or requirements under other SSSIs. However, the conservation objectives for international sites often relate to the SSSIs that underpin the international designations.

The Habitats Regulations⁵ aim to transpose the requirements of the Habitats Directive and Birds Directives into domestic legislation. These amendments apply to Scotland only.

2.2 The Appropriate Assessment Process

The following table provides a summary of the main stages in the AA process:

Table 2.1: Stages of Appropriate Assessment

Task AA1	Screening – identifying likely significant effects
Task AA2	Appropriate Assessment and ascertaining the effect on site integrity
Task AA3	Mitigation measures and alternative solutions

Appropriate Assessment promotes a hierarchy of avoidance, mitigation and compensatory measures. First, the plan should aim to avoid any negative impacts on international sites by identifying possible impacts early in plan-making, and altering the plan in order to avoid such impacts. These possible significant impacts should be identified during the screening phase; Task AA1, and adverse effects on the integrity of international sites should be identified in Task AA2.

(a) Task AA1

The first consideration in the screening assessment is whether the plan is directly connected with or necessary to site management for nature conservation and then whether the Masterplan is likely to have a significant effect (either individually or in combination with other plans or projects) on the ecological objectives for which the international sites have been designated, taking into account advice from SNH.

(b) Task AA2

This report presents the findings of Task AA2; the AA phase.

If the screening assessment, in agreement with SNH, concludes that the Masterplan is likely to cause significant impacts on any international site, the plan must be subject to a full AA. The implications of the plan must then be

⁵ Conservation (Natural Habitats & C. Amendment (Scotland) Regulations 2007 and the Conservation (Natural Habitats & C. Amendment (No.2) (Scotland) Regulations 2007

assessed in view of the site's conservation objectives (i.e. the reasons for which it was designated), so as to ascertain whether or not it will adversely affect the integrity of an international site.

Due to finding likely significant effects and uncertain effects on international sites at the screening stage it was necessary to progress to Task AA2 to determine whether these effects were likely to be adverse. The results of this assessment are shown in the matrices of Appendix 2 and summarised in sections 5 and 6.

(c) Task AA3

Mitigation measures should be applied during the AA process to the point where no adverse impacts on the site(s) remain. In fact, if the plan is likely to result in any adverse effects on the integrity of the sites, and no further practicable mitigation is possible, permission could only be granted if the Scottish Government is satisfied that: (a) there are no available alternative solutions, (b) the plan is required for imperative reasons of over-riding public interest (the IROPI test) and (c) compensatory measures are implemented (e.g. compensatory habitat creation) to maintain the coherence of the Natura 2000 network. Avoidance and mitigation measures are listed in section 7.

2.3 Appropriate Assessment and Land Use Planning Documents

In October 2005, the European Court of Justice ruled that 'appropriate assessments' must be carried out on all land use planning documents in the United Kingdom in order to demonstrate that their implementation would not adversely affect sites designated as of being of European importance. Following the ruling, the Scottish Executive published two draft amendments to the Habitats Regulations in 2007⁶.

2.4 Role of Organisations

(a) *Competent Authorities*

In the case of the Masterplan, the body responsible for the site's development, in this case THC, takes the role of competent authority for the purposes of the Habitats Regulations.

Competent authorities are responsible for:

- making an Appropriate Assessment before deciding to undertake, or give any consent, permission or other authorisation for a plan or project likely to have a significant effect on an international site, either alone or in combination with other plans and projects;
- involving Scottish Natural Heritage (SNH) at the outset of plan preparation and taking advice on the need and form of any Appropriate Assessment and the conclusions of such an assessment; and

⁶ Conservation (Natural Habitats & C. Amendment (Scotland) Regulations 2007 and the Conservation (Natural Habitats & C. Amendment (No.2) (Scotland) Regulations 2007

- ensuring that if there is a negative assessment of a plan or project, agreement to that plan or programme is only given if there are no alternative solutions, it must be carried out for imperative reasons of overriding public interest, and any compensatory measures that may be required are secured.

Scottish Guidance⁷ also recommends that, at each consultative stage of the plan, a short paper should be produced by the competent authority. This should set out *'how the authority has determined that there is not likely to be a significant effect and, where an Appropriate Assessment has been undertaken, the conclusions reached and what action is proposed or has been taken to comply with the Habitats Directive.'*

(b) *Scottish Natural Heritage (SNH)*

SNH implements, on behalf of the Scottish Government, international conventions and EC Directives on nature conservation encompassed in the Conservation (Natural Habitats, &c.) Regulations 1994 and the Conservation (Natural Habitats, &c.) (Scotland) Amendment Regulations 2007, by:

- providing advice on whether plans and programmes are likely to have a significant effect (either alone or in combination with other plans and projects) when requested to do so;
- advising competent authorities whether a plan or programme is necessary for the management of the site;
- commenting on Appropriate Assessments;
- providing advice on the ecological requirements of any compensatory measures; and
- providing advice on the suitability of any proposed compensatory measures.

The 2007 Habitat Regulations amendments imply that the competent authority can agree if the plan is likely to cause significant impacts, but it cannot 'give effect' to the plan until an AA has been carried out and determined that it will not adversely affect the integrity of the international site(s).

(c) *The Scottish Government*

The Scottish Government is responsible for:

⁷ Scottish Executive, 2006. Assessing Development Plans in Terms of the Need for Appropriate Assessment; Interim Guidance May 2006.

- directing the plan-making authority not to give effect to a plan that may have an adverse affect on site integrity.
- securing any necessary compensatory measures to ensure that the overall coherence of Natura 2000 is protected;
- confirming that any compensatory measures are sufficient to maintain the coherence of Natura 2000;
- informing the Commission of the measures adopted

2.5 Determining impacts on International Sites

The significance of a plan's effects on an international site depends on whether the "integrity" of the site is affected. Article 6(3) of the Habitats Directive requires that:

*"the competent national authorities shall agree to the plan... only after having ascertained that it will not adversely affect the **integrity of the site** concerned..."*

To determine what is meant by the "integrity" of the site, it is important to discover why the site was designated. This is a key stage in the AA process. Guidance⁸ recommends that the following information should thus be collated, where possible, for each relevant international site:

- Qualifying interest features: These are the reasons why the international site has been designated, for instance the endangered species that occupy the SAC; rare habitats that occur there; or threatened birds that breed or over-winter in the SPA. The AA focuses on the qualifying interest features that were the primary reasons for the site's designation.
- The site's conservation objectives: These help to focus the assessment. Conservation objectives are a statement of the overall nature conservation requirements for a site, expressed in terms of the favourable condition required for the habitats and/or species for which the site was selected.

The EC (2000) guidance states, "A site can be described as having a high degree of integrity where the inherent potential for meeting site conservation objectives is realised, the capacity for self repair and self renewal under dynamic conditions is maintained, and a minimum of external management support is required." Some habitats already require heavy management to maintain their site integrity, e.g. through drainage or periodic burning.

The integrity of a site relies on the maintenance of an environment, which will sustain its qualifying features and ensure its continuing viability. Legally the focus of AA is on the site's qualifying features and associated conservation objectives, but these rely fundamentally on ecological processes and functions for their maintenance in a favourable condition and cannot be appraised in isolation from

⁸ Scottish Executive, 2006. Assessing Development Plans in Terms of the Need for Appropriate Assessment; Interim Guidance May 2006.

them. Essential to the maintenance of interest features and the integrity of the site are those environmental conditions, which enable key ecological processes and functions to persist. These might include the quantity of water reaching a site, the quality of air, the stability of the climate, or a low level of disturbance.

2.6 AA Methodology

The methodology developed for this AA is based upon the following guidance documents:

- Circular 6/1995 (and 2000 update): Nature Conservation: Implementation in Scotland EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna and the Conservation of Wild Birds (“The Habitats and Birds Directives”)
- Scottish Executive, 2006. Assessing Development Plans in terms of the need for Appropriate Assessment
- EC, 2000. Managing Natura 2000 Sites: The Provisions of Article 6 of the ‘Habitats’ Directive 92/43/CEE

Consultation with SNH established that the principal guidance document for the AA should be the interim 2006 guidance produced for SNH listed above.

The basic methodology followed in this report is outlined below:

AA Screening Stage

- Listing all international sites that could be affected by the Masterplan and reviewing the qualifying interest features and conservation objectives of each site.
- Determining whether the plan was directly connected with or necessary to the management of the international sites.
- Identifying and discounting all Masterplan Principles and Objectives that will have no significant impact on the international sites.
- Identifying specific elements of the Masterplan that could cause a ‘likely significant effect’, either alone or in-combination with other plans or projects, on an international site.
- Where a significant effect on an international site remains likely, agreeing method and scope of AA with SNH.
- For each likely significant effect, alone or in-combination, assessing the implications for the international site in light of its conservation objectives.
- Listing any avoidance or mitigation measures necessary to avoid adverse effects on site integrity.

- Consulting SNH as part of Regulation 48(3) of the Scottish Habitats Regulations. If it can be ascertained that the Masterplan will not adversely affect the integrity of international sites, the plan can be adopted (as Supplementary Planning Guidance).

AA Stage

- Where a significant effect on a international site remains likely, an AA is required. Agree the methods and scope of the AA with SNH and other relevant stakeholders (e.g. SEPA; FCS).
- For each likely significant effect, alone or in combination, undertake an AA of the implications for the site in light of its conservation objectives, (regulation 48(1)). The Planning authority should acquire any further information, reasonably obtainable at this stage, to inform the assessment (regulation 48(2)). The assessment should be as full as practicable, *being proportional to the level in the hierarchy and detail of the plan.*⁹
- Having formally consulted SNH (regulation 48(3)) and other stakeholders that may have information or expertise to assist the AA (regulation 48(4)), the Planning Authority should identify any impacts on European sites, actions which might avoid or mitigate these, or restrictions which would allow them to be undertaken. The Planning Authority should ascertain that the plan would not adversely affect the integrity of any international site (regulation 48(5)). In doing so it should have regard to the manner in which it is proposed it will be carried out, and consider any restrictions or modifications to which the plan may be subjected, in order to achieve this (regulation 48(6)).
- If it *can* be ascertained that the plan will not adversely affect the integrity of any European site either with or without any restrictions or modifications which address any of the potential effects identified, it may proceed to adoption. In approving a higher level plan which will be subject to further elaboration at a more detailed level, it is important that conditions or restrictions on approval of the higher level plan ensure that further assessment will be required to ascertain that the integrity of any European site will not be adversely affected. It should be made explicit in the plan that any subsequent plan or project will only be compliant with the earlier plan in such circumstances.
- If it *cannot* be ascertained that a plan will *not* adversely affect the integrity of a European site, the planning authority can only proceed with it if it is agreed that it meets the necessary tests for imperative reasons of over-riding public interest, there being no alternatives and subject to appropriate compensatory measures (regulation 49). This has to be agreed by Scottish Ministers. It may also require consultation with the European Commission.

⁹ This section of the guidance is italicised to emphasise that the Masterplan is a conceptual document with no site-level planning details yet known.

2.7 Consultation

Consultation on the original methodology for the screening report took place via telephone and email conversations with SNH in March 2009. This consultation also established that the correct international sites had been identified. The final screening report was sent to SNH by the Highland Council on 14th May 2009. The findings of the screening report were discussed between the Highland Council, SNH and Halcrow at a meeting on 9th September 2009. This meeting also established the requirements and methodology for this Stage 2 (Appropriate Assessment) of the Nigg Development Masterplan.

3 Relevant International Sites

3.1 Detailed information on International sites

Extensive detailed information for each international site was presented in the appendices of the screening report but is not repeated in this report.

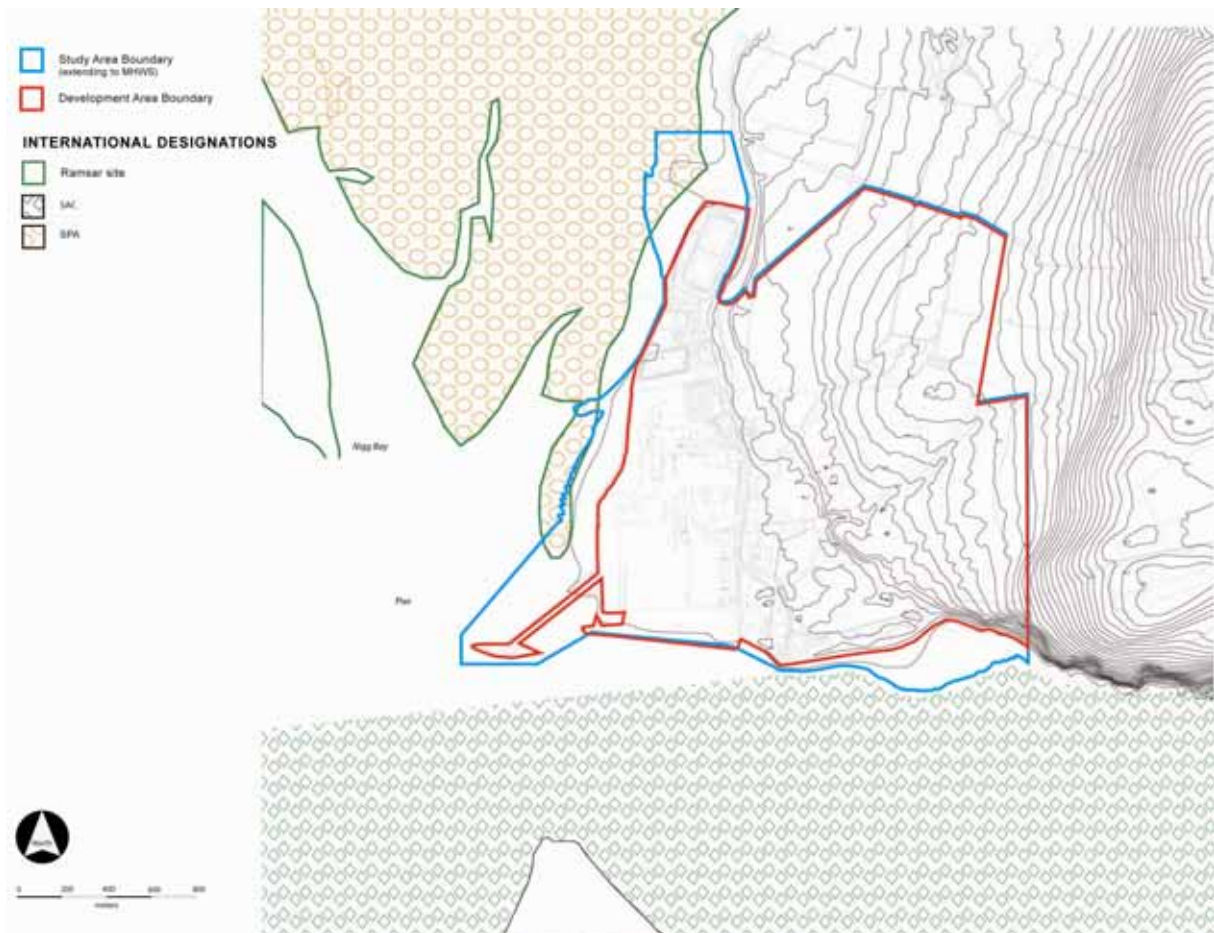
3.2 Task AA1: International Sites that could be affected by the Masterplan

In accordance with the SEA Scoping and initial consultations with SNH in March and April 2009, it was agreed that the international sites to be considered in the AA should be:

- Cromarty Firth Special Protection Area (SPA)
- Cromarty Firth Ramsar
- Moray Firth Special Area of Conservation (SAC)

All of these designations are adjacent to Nigg Yard, as shown in Figure 3.1

Figure 3.1 Moray Firth SAC, Cromarty Firth SPA and Ramsar in relation to Nigg Yard Development Site



3.3 Qualifying Features for International Sites

The following sections provide the qualifying features and conservation objectives for each of the international sites.

Cromarty Firth Ramsar Site

Information extracted from the Cromarty Firth Ramsar management plan

Site description

The Cromarty Firth Ramsar site is a large, narrow-mouthed estuary which supports the largest intertidal flats in the Moray Basin. The site extends eastwards for approximately 30 km from the islands at the mouth of the River Conon to the town of Cromarty, in the Ross & Cromarty District of Highland Region. The boundary of the site follows those of Cromarty Firth SSSI and the estuarine section of Lower River Conon SSSI.

Qualifying features

The Cromarty Firth Ramsar site qualifies under Criterion 1b by supporting outstanding examples of wetland habitat. The site holds the largest mudflats in Highland and at the mouth of the River Conon there is a rare surviving example of a transition from woodland, through scrub and freshwater fen, to brackish and finally saltmarsh communities.

The Cromarty Firth Ramsar site qualifies under Criterion 3a by regularly supporting over 20,000 waterfowl in winter. In the five-year period 1992/93 to 1996/97, a winter peak mean of 30,200 waterfowl was recorded, comprising 14,800 wildfowl and 15,400 waders.

The Cromarty Firth Ramsar site further qualifies under Criterion 3c by supporting internationally important wintering populations (1992/93-96/97 winter peak means) of greylag goose *Anser anser* (1,782, 2% of total Icelandic population, all of which winters in GB) and bar-tailed godwit *Limosa lapponica* (1,355, 3% of GB and 1% of W. European population).

Physical site features

Cromarty Firth is one of the major firths on the Moray Firth. It contains a range of high-quality coastal habitats including extensive intertidal mudflats and shingle bordered locally by areas of saltmarsh, as well as reedbeds around Dingwall.

Noteworthy flora includes nationally important species *Zostera angustifolia* and *Z. noltei*.

Noteworthy fauna includes a number of bird species:

Species regularly supported during the breeding season:

Osprey , <i>Pandion haliaetus</i> Europe	>2 pairs, representing an average of 1.5% of the GB population (5 year mean 1992-1996)
Common tern ¹⁰ , <i>Sterna hirundo hirundo</i> N & E Europe	413 apparently occupied nests, representing an average of 4% of the GB population (Seabird 2000 Census)
Species with peak counts in spring/autumn:	
Eurasian wigeon , <i>Anas penelope</i> NW Europe	10662 individuals, representing an average of 2.6% of the GB population (5 year peak mean 1998/9-2002/3)
Common redshank , <i>Tringa totanus totanus</i>	1643 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3)
Species with peak counts in winter:	
Slavonian grebe , <i>Podiceps auritus</i> , Northwest Europe	20 individuals, representing an average of 2.7% of the GB population (5 year peak mean 1998/9-2002/3)
Greater scaup , <i>Aythya marila marila</i> W Europe	225 individuals, representing an average of 2.9% of the GB population (5 year peak mean 1998/9-2002/3)
Red knot , <i>Calidris canutus islandica</i> W & S Africa (wintering)	3327 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Cromarty Firth SPA	
Information extracted from the Cromarty Firth SPA management plan	
Site description	
The Cromarty Firth SPA is a large, narrow-mouthed estuary which supports the largest intertidal flats in the Moray Basin. The site extends eastwards for approximately 30 km from the islands at the mouth of the River Conon to the town of Cromarty. The boundary of the SPA follows those of the Cromarty Firth SSSI and the estuarine section of Lower River Conon SSSI.	

¹⁰ Consultation with the RSPB for this AA highlighted the fact that the Nigg oil terminal itself is an important site for common tern nesting. Common terns are a qualifying species for both the Cromarty Firth international designations

Qualifying features

Article 4.1 qualification

The area qualifies as a SPA under Article 4.1 of the EC Wild Birds Directive by providing a habitat for an internationally important assemblage of birds, including foraging grounds for a nationally important number of breeding ospreys *Pandion haliaetus* that nest in surrounding woodland, and a nationally important population of common tern *Sterna hirundo*.

The SPA further qualifies under Article 4.1 by supporting a nationally important wintering population of whooper swan *Cygnus cygnus* and bar-tailed godwit *Limosa lapponica*.

Article 4.2 qualification

The site qualifies under Article 4.2 by supporting an internationally important wintering population of greylag goose *Anser anser* and in excess of 20,000 waterfowl.

The Cromarty Firth SPA further qualifies under Article 4.2 by supporting an internationally important wintering population (1992/93-96/97 winter peak means) of greylag goose *Anser anser* (1,782, 2% of total Icelandic population, all of which winters in GB).

The SPA qualifies under Article 4.2 by supporting in excess of 20,000 waterfowl. In the five-year period 1992/93 to 1996/97, a winter peak mean of 30,200 waterfowl was recorded, comprising 14,800 wildfowl and 15,400 waders.

The assemblage contains nationally important populations of 7 species (1992/93-96/97 winter peak means): wigeon *Anas penelope* (9204, 3% of GB), pintail *A. acuta* (319, 1%), scaup *Aythya marila* (295, 3% of GB), red-breasted merganser *Mergus serrator* (204, 2%), knot *Calidris canutus* (4312, 1%), curlew *Numenius arquata* (1,313, 1%) and redshank *Tringa totanus* (1,149, 1%).

Conservation Objectives

The SPA is vulnerable to industrial development (including land-claim), some of which is associated with the port of Invergordon as well as wider oil-related activities. Both can impact on water quality in the firth. The threat of damage by mechanical cockle-harvesting has been addressed over a large part of the firth by the granting of the Nigg and Udale Bays Nature Conservation (Amendment) Order in 1996. However, the cumulative impacts of a range of small-scale activities including disturbance from wildfowling and recreational activities are recognised pressures on the site. Recent integrated management initiatives (The Cromarty Firth Liaison Group and the wider Moray Firth Partnership) provide a mechanism through which a range of interested parties can help alleviate the range of development and recreational threats to this site. The main conservation objectives of the SPA are:

To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

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 site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

Qualifying Species:

- Bar-tailed godwit (*Limosa lapponica*)
- Common tern (*Sterna hirundo*)
- Curlew (*Numenius arquata*)*
- Dunlin (*Calidris alpina alpina*)*
- Greylag goose (*Anser anser*)
- Knot (*Calidris canutus*)*
- Osprey (*Pandion haliaetus*)
- Oystercatcher (*Haematopus ostralegus*)*
- Pintail (*Anas acuta*)*
- Red-breasted merganser (*Mergus serrator*)*
- Redshank (*Tringa totanus*)*
- Scaup (*Aythya marila*)*
- Whooper swan (*Cygnus cygnus*)
- Wigeon (*Anas penelope*)*
- Waterfowl assemblage

(*Indicates assemblage qualifier only)

Moray Firth SAC

Site description

The SAC designation covers 151,341.67 hectares and was originally proposed in 1996 to help protect the bottlenose dolphin population, which is considered to be rare in a European context. It is also the last remaining resident population in the North Sea. The dolphins have long life spans and reproduce slowly. The Moray Firth population is also relatively small and isolated. These factors make the population vulnerable.¹¹

In 2001 subtidal sandbanks were also added to the SAC designation. The sandbanks have an important role in maintaining sediment balance within the Firth and providing the spawning grounds for a wide variety of fish and invertebrates.¹²

Qualifying features¹³

Annex I habitats present as a qualifying feature, but not a primary reason for site selection

- ‘Sandbanks which are slightly covered by seawater all the time’
- Annex II species that are a primary reason for site selection
- Bottlenose dolphin *Tursiops truncatus*

¹¹ Moray Firth Partnership, 2009. Special Area of Conservation. Available on <http://www.morayfirth-partnership.org/work-2-sac.html>, accessed on 12/3/09.

¹² Moray Firth Partnership, 2002. The Moray Firth candidate Special Area of Conservation Management Scheme. Revision 1 (revision 2 is currently being consulted upon). Available on <http://www.morayfirth-partnership.org/work-2-management.html>, accessed on 17/3/09.

¹³ Source: JNCC Natura 2000 Standard Data Form.: Moray Firth SAC: Available on <http://www.jncc.gov.uk/ProtectedSites/SACselection/n2kforms/UK0019808.pdf>, accessed on 12/3/09.

Physical site description ¹⁴	
Notable Habitat Classes	
<i>Class</i>	<i>% cover</i>
Marine areas. Sea inlets.	100
Notable Habitat Types	
<i>Type</i>	<i>% cover</i>
Sandbanks which are slightly covered by sea water all the time	30
Estuaries	2
Large shallow inlets and bays	44.4
Notable fauna:	Bottlenose dolphin <i>Tursiops truncatus</i> Harbour porpoise <i>Phocoena phocoena</i> Common otter <i>Lutra lutra</i> Grey seal <i>Halichoerus grypus</i> Harbour seal <i>Phoca vitulina</i>
Management objectives ¹⁵	
<p>Under the auspices of the Moray Firth Partnership, a SAC management group was set up in October 1999 with EC LIFE Project funding. The group aims to develop management measures to restore and maintain the bottlenose dolphin population at a viable level.</p> <p>The dolphin population is monitored by Aberdeen University. A number of initiatives are already underway including an accreditation scheme for dolphin-watching cruise boats and codes of conduct for recreational pleasure craft. A strategy for dumping and dredging activities is also being developed to address these localised activities adjacent to the coastline.</p>	

¹⁴ Source: JNCC Natura 2000 Standard Data Form.: Moray Firth SAC: Available on <http://www.jncc.gov.uk/ProtectedSites/SACselection/n2kforms/UK0019808.pdf>, accessed on 12/3/09.

¹⁵ Source: JNCC Natura 2000 Standard Data Form: Moray Firth SAC: Available on <http://www.jncc.gov.uk/ProtectedSites/SACselection/n2kforms/UK0019808.pdf>, accessed on 12/3/09.

Conservation Objectives¹⁶

To avoid deterioration of the habitats of qualifying species (Bottlenose dolphins, *Tursiops truncatus*), or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving Favourable Conservation Status (FCS) for each of the qualifying features. To ensure for the qualifying species that the following are established then 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 the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species
- Distribution and viability of the species' host species (where relevant)
- Structure, function and supporting processes of habitats supporting the species' host species (where relevant).

To avoid deterioration of the qualifying habitat (sandbanks which are slightly covered by sea water all the time) thus ensuring that 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 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

¹⁶ Moray Firth Partnership, 2002. The Moray Firth candidate Special Area of Conservation Management Scheme. Revision 1. Available on <http://www.morayfirth-partnership.org/work-2-management.html> , accessed on 17/3/09.

4 Potential Impact Pathways

4.1 Introduction

The following sections describe ways in which the international sites could potentially be affected by activities at Nigg Yard. All of these potential impacts could theoretically apply to both the Cromarty Firth international designations and the Moray Firth SAC. These impacts were described in the May 2009 screening report but have been updated to reflect SNH consultation comments.

4.2 Noise and vibration

Construction and operation of new facilities on-site have the potential to significantly increase noise levels. This could lead to disturbance of protected bird species. Underwater noise and vibration could also potentially disturb bottlenose dolphins, the principal SAC qualifying interest species. Possible causes of noise disturbance that are relevant to Nigg Yard include:

- Dredging and sea disposal operations
- Underwater and coastal construction
- Vessel traffic
- Fixed and semi-submersible oil drilling platforms
- Helicopter traffic
- Use of heavy machinery and pile-driving
- Use of explosives for decommissioning

The SEA Scoping Report for the Masterplan also provided the following information in relation to noise that is useful to the Appropriate Assessment:

- Cromarty SPA/Ramsar site is approximately 1.5 km from the graving dock entrance. Any noisy activities associated with the graving dock could impact on qualifying interest bird species.
- The Cromarty Firth provides a marine traffic route to the ports at Delny, Invergordon and Deephaven. Any increase in vessel traffic likely to result from the Nigg Development Masterplan would add to the existing vessel traffic and noise. Further information on vessel traffic is provided in section 5.5.
- A significant increase in noise levels (above 3dB LA (eq)) will likely be generated during the construction phase of any redevelopment and during operation of the site.
- An Environmental Impact Assessment would be an important tool in the mitigation of any noise impacts.

4.3 Contaminated land

The Masterplan highlights the fact that areas of the site may potentially be contaminated with hydrocarbons or other chemical contaminants. In 2001, planning permission to store deemed hazardous substances was applied for and consented.

There is also likely to be residual oil, paint (from painting and shot-blasting operations) and asbestos on-site.

The Masterplan specifies that any redevelopment should be subject to a 'full contamination study, investigation and a possible remediation strategy.' Pollution prevention measures will also be needed during construction and operational use of the site.

4.4 Flood risk

A flood risk assessment has recently been carried out for Nigg Yard, in accordance with Scottish Planning Policy 7: Planning and Flooding. This identified coastal surge to be the principal flood risk to the site. This risk is due to high water levels as a result of combined tidal and meteorological effects. However, the risk of coastal flooding remains very low due to the existing elevation of the site, and the limited sea level rise expected during that period due to climate change. The Scottish Environmental Protection Agency (SEPA) have also confirmed the conclusion of the FRA that the lowest part of the site is above the 1 in 200 year flood event.

Despite the current flood risk being confirmed as acceptable to SEPA, who have no objections to the site being re-developed, the potential impacts of climate change and consequent sea level rise, should still be borne in mind for site development. The primary risk to the internationally designated sites comes from hydrocarbon and chemical contaminants potentially being mobilised by floodwater and spread into the marine environment.

4.5 Direct pollution risks

There is a risk that contamination from the Masterplan site could directly enter the marine environment, for example via a direct pollutant spillage, as well as via the flooding and run-off from contaminated land. In terms of run-off, organochlorines, heavy metals, oil and radionuclides are all known to be present in the Moray Firth. Other potential contaminants include biocides and anti-fouling paints. These pollutants can impact dolphins directly or indirectly through contamination of their food or habitat. Organochlorines and heavy metals can also be very persistent in the environment and accumulate in the animals bodies over a long period of time¹⁷. Oil contamination can more visibly affect marine species and coastal birds, such as the qualifying bird species associated with the Cromarty Firth designations. It can also be carcinogenic, toxic¹⁸ and flammable. Effluent discharge of sewage and degraded petroleum hydrocarbons can also be a source of organic enrichment and thereby degrade coastal habitats, such as the sandbanks for which the Moray Firth SAC is designated.

Ballast water discharge

Another form of potential direct pollution is through the discharge of ballast water into the marine environment. This water can potentially contain chemical

¹⁷ Moray Firth Partnership 2003, The Moray Firth candidate Special Area of Conservation Management Scheme Revision 1.

¹⁸ Moray Firth Partnership 2003, The Moray Firth candidate Special Area of Conservation Management Scheme Revision 1.

contaminants as well as exotic species that can disrupt indigenous habitats and species. Over half the ballast water discharged in Scottish oil terminals originates from northern Europe and the British Isles whereas 'considerable amounts originate from Southern Europe and North America'¹⁹. Species introduced from northern Europe may in fact present a greater threat as they may be more likely to survive in Scottish ecosystems. Fungal spores, viruses and other pathogenic organisms could also adversely affect native species such as the dolphins or the prey species they depend on – for example the pathogen *Gyrodactylus salaris* from Norwegian and Baltic ports could have a major effect on the salmonids, a prey species of the bottlenose dolphins²⁰.

Current pollutant levels in the Cromarty Firth area have recently been assessed by SEPA. Samples taken from the Inner Cromarty Firth, Outer Cromarty Firth transitional water bodies and Hilton of Cadboll to Whiteness Head coastal water body show that water quality is of 'high' status with respect to the Water Framework Directive. This means that levels of dissolved oxygen, inorganic nitrogen, trace metals and harmful organics in the waters are all at normal levels, as are the benthic invertebrates, plankton and lack of alien species found in these water bodies.²¹

Ship to ship oil transfer

In their response to the consultation on the Nigg Development Masterplan, the RSPB argued 'whilst the current method and level of operation is acceptable, any large increase would be a cause of concern in such a pollution-sensitive environment. Current ship-to-ship transfer activities take place alongside the jetty at Nigg and are regulated by the Cromarty Firth Port Authority.

Any ships involved in ship-to-ship transfer would continue to need to comply with the Marine Pollution Merchant Shipping (Ship-to-Ship Transfers) Regulations 2008²², which was consulted upon from May to August, 2008. Changes to the Regulations as a result of this consultation have still not been finalised at the time of writing this report. Ship transfers would also need to continue to comply with the International Convention for the Prevention of Pollution from Ships; MARPOL73/78²³.

4.6 Vessel traffic

Cromarty Firth is known to be vulnerable to a wide range of pressures, including recreation and wildfowling activity²⁴. Integrated management initiatives instigated by the Cromarty Firth Liaison Group and the Moray Firth Partnership (which now incorporates the Cromarty Firth Liaison Group) aim to mitigate the harmful effects of these activities. However, increased operations and vessel traffic at Nigg Yard may add to existing disturbance pressures.

¹⁹ Macdonald, E. Ballast water management at Scottish ports. *Fisheries Research Services Report No. 10/94*.

²⁰ Moray Firth Partnership 2003, The Moray Firth candidate Special Area of Conservation Management Scheme Revision 1.

²¹ SEPA, 2009. 'Cromarty Sampling' spreadsheet and *pers. comm.* via email to Halcrow, 18/3/09.

²² http://www.mcga.gov.uk/c4mca/080508_final_si_sts_for_cons.pdf, accessed on 7,4,09

²³ http://www.imo.org/TCD/contents.asp?doc_id=678&topic_id=258, accessed on 30/3/09.

²⁴ JNCC, 2006. Cromarty Firth Standard Natura 2000 Data Form.

Vessel disturbance is also known to affect dolphin species, including the resident bottlenose dolphin population. Reactions of bottlenose dolphins to vessel traffic can potentially be negative, dependant on the boat activity, speed and the size of the vessel. Disturbance from vessels or noise can potentially disrupt activities essential to the survival of dolphins, such as time spent foraging, socialising or breeding.²⁵

There are a large number and variety of vessels that use the Moray Firth throughout the year, as summarised in Table 4.1:

Table 4.1: Vessel types and numbers in the Moray Firth, 2008

Vessel Type ²⁶	Number of Movements	Busy Times
Anchor Handling Tugs	128	Throughout year
Barges	12	Throughout year
Barge carriers	2	Throughout year
Large Bulk carriers	2	Throughout year
Buoy Tenders	26	Throughout year
Coastal Tankers	44	Throughout year
Customs Cutters	4	Throughout year
Diving Support Vessels	74	Most in Summer months
Drill ships	2	Throughout year
Dry Cargo vessels	16	Throughout year
Fishery Research vessels	8	Throughout year
Fishing vessels	2	Throughout year
Cargo ships	232	Throughout year
Jacup rigs	2	Throughout year
Fish carriers	2	Throughout year
Offshore standby vessels	18	Throughout year
Oil Tankers	28	Throughout year
Passenger Ships	104	May to September
Pipelayers	30	May to September
Platform Support vessels	14	Throughout year
Oil rigs	20	Throughout year
Ro-Ro Cargo vessels	10	Throughout year
Seismic vessels	8	Throughout year
Shuttle Tankers	26	Throughout year
Tugs	138	Throughout year
Total	952	

Source: Cromarty Firth Port Authority, 2009

²⁵ Moray Firth Partnership 2003, The Moray Firth candidate Special Area of Conservation Management Scheme Revision 1.

²⁶ Figures are for 1st January to 31st December 2008 and exclude berth to berth movements which amount to approximately 50 in the year. (*pers comm.* Ken Gray (CFPA) to Halcrow 5/2/09).

The Moray Firth Partnership currently encourages all boat operators in the SAC to have engines and propellers that minimise noise in frequencies most likely to disturb dolphins and carry out regular maintenance of engines, propellers and boats. There is some evidence that dolphins are also occasionally hit by propellers²⁷.

4.7 Climate Change

Legislative background

The Scottish Government published a Climate Change Bill on 5th December 2008, which seeks to establish a legal framework for emissions reductions up to 2050. This year the Government also consulted on a climate change adaptation framework for Scotland²⁸.

Climate trends in Scotland

The SNIFFER Handbook of Climate Trends across Scotland²⁹ shows the following national trends:

- Scotland has become wetter since 1961, with an average increase of almost sixty percent in winter months in northern and western Scotland. For the majority of the country there has not been a large-scale significant change in average summer rainfall although some parts of north-west Scotland have become up to forty five percent drier in summer. Contrary to the Scottish national trend, Aberdeenshire has seen little change in precipitation in winter months, although this is compensated for in this region by a significant increase in precipitation in autumn (September-November).
- Heavy rainfall events have increased significantly in winter, particularly in northern and western regions.
- Scotland's sea levels may rise relative to the land, in some areas. By 2080 the current estimates range between 0 and 600 mm sea level rise.

SNIFFER is also currently undertaking a Local Climate Impact Profile for Scotland; the Highland Council participated in the pilot project for this work. This should provide additional useful climate data that could be incorporated into later, more detailed stages of the Masterplan.

The SEA Scoping Report also identified the following climate-related key issues for Nigg Yard:

²⁷ Moray Firth Partnership 2003, The Moray Firth candidate Special Area of Conservation Management Scheme Revision 1.

²⁸ Adapting Our Ways: Managing Scotland's Climate Risk: Consultation to inform Scotland's Climate Change Adaptation Framework.

²⁹ SNIFFER. Patterns of climate change across Scotland, March 2006. Available on <http://www.sniffer.org.uk/Webcontrol/Secure/ClientSpecific/ResourceManagement/UploadedFiles/CC03exs.rtf>, accessed on 17/3/09.

- Increasing activity on site may contribute to increased industrial and greenhouse gas (GHG) emissions and therefore impact upon the government's targets to reduce GHG emissions by 80% by 2050 (against the relevant baseline year, depending on gases targeted).
- Climate induced sea level rise will increase risk of flooding above that outlined in SEPA's flood risk maps which outline a 1 in 200 year event, but do not incorporate estimates of increased risk due to climatic factors.

SNH have reported that sea level rise in the Moray Firth is outstripping post-glacial isostatic uplift³⁰.

The Ross and Cromarty (East) Biodiversity Action Plan also identified that sea level rise could greatly affect low-lying coastal areas in eastern Ross and Cromarty over the next few decades. Due to the shallowness of extensive inter-tidal areas in the firths and the narrowness of flanking shingle and saltmarsh in many cases, widespread habitat loss may occur.

³⁰ SNH. 2002. Natural Heritage Futures Update: Moray Firth.

5. Analysis of Nigg Development Masterplan

5.1 Screening Stage: Introduction

A preliminary examination of the principal Masterplan options of a) Oil and gas focus with renewables secondary and b) Renewable energy park (green focus) showed that both options have the potential to cause significant impacts on the international sites. This is shown in matrix 1 of Appendix 2.

5.2 Task AA1-2: Connection with International Site Management Requirements

Following a review of the Masterplan and consultation with SNH, the findings of Task AA1-2 were that the Masterplan is not directly connected with the management of any international sites within the Nigg Yard area, and therefore the remaining AA screening methodology steps were followed.

5.3 Task AA1-3: Development that will not affect the International Sites

The Masterplan contains a series of 'development principles'. Underlying these is a wider list of objectives that give more specific detail on development options for the site. These are shown in full in Appendix 1.

In accordance with methodological advice from SNH, a list of Masterplan development principles that were deemed to have no effect, either alone or in combination, was drawn up.

It is likely that some Masterplan principles and their underlying objectives will not have sufficient level of detail to determine significant impacts on an international site. In this instance, as the effects are uncertain, they will be screened into the assessment.

Principles and objectives that were deemed to have no impact are described in Tables 5.1 and 5.2 respectively. A generic screening of the development principles in Table 5.1 was undertaken and only those principles screened 'in', have been taken forward for further assessment. For those principles that were screened 'in', a further screening exercise was undertaken to determine whether the objectives under these screened-in development principles were likely to have a significant effect (Table 5.2):

Table 5.1: Development Principles screening

Development Principles	Screened in or out	Rationale
Site content and operations	In	Various operations listed in the development objectives have the potential to cause environmental impacts and have implications for flood risk
Cost and value engineering	In	SEA Detailed Assessment Matrices indicated possible negative impacts from additional road surfacing
Project delivery	Out	No direct physical implications under this Development Principle
Impact and implications of the Masterplan	Out	No direct physical implications under this Development Principle
Integrating the spaces	In	New access arrangements could have environmental impacts
Integrating the port/harbour/major site with its surroundings	In	New access arrangements and construction of structures could have environmental impacts
Integrating functions	In	May have positive benefits in mitigating environmental effects
Integrating the environment	In	May have positive benefits in mitigating environmental effects
Integrating societies	Out	The Development Objectives under this Development Principle relate to societal issues rather than environmental

Table 5.2: Development Objectives screening

Development Objectives	Screened in or out	Rationale
Development Principle 1: Site content and operations		
Accommodate a range of uses	Out	No direct physical implications under this Development Objective
Acknowledge user interaction and operational linkages	Out	No direct physical implications under this Development Objective
Create integrated and coherent framework based on a simple grid	In	The detail of this objective includes construction of new roads
Renovate the graving dock to operate competitively	In	This has direct implications for the marine environment
Retain oil storage facility in current location	In	This entails possible environmental risk
Retain oil jetty	In	This entails possible environmental risk
Provide adequate sea access able to be shared by all users	In	This entails possible environmental risk and has direct implications for the marine environment
Utilise existing buildings through refurbishment	In	Use of existing buildings has the potential to disturb European Protected Species
Creation of additional berthing faces to south and east, accessing deep water where possible	In	This has direct implications for the marine environment
Development Principle 2: Cost and value engineering		

Development Objectives	Screened in or out	Rationale
Minimise up-front costs	Out	No direct physical implications under this Development Objective
Maximise use of existing built structures	In	Use of existing buildings has the potential to disturb European Protected Species
Minimise new permanent road alignments	In	Although road construction and use will be minimised there will still be some of each
Undertake phased provision of utilities	Out	No direct physical implications under this Development Objective
Development Principle 5: Integrating the spaces		
Make new connections to obtain new spaces	In	Could include new infrastructural connections and development with direct environmental implications
Consolidate and enhance existing connections	In	Could include new road and rail connections with direct environmental implications
Development Principle 6: Integrating the port/harbour/major site with its surroundings		
To take care in the treatment of separating uses/elements	Out	No direct physical implications under this Development Objective
To render the site visible	In	Objective could have implications for environmental mitigation
To exploit all potentialities of the water	In	This has direct implications for the marine environment

Development Objectives	Screened in or out	Rationale
Development Principle 7: Integrating functions		
To organise and benefit from blending	In	Objective could have implications for environmental mitigation
To make temporary uses a means to manage the site	Out	No direct physical implications under this Development Objective
Development Principle 8: Integrating the environment		
To reduce reciprocal impacts	In	Objective could have implications for environmental mitigation
To communicate and to get certain nuisances accepted	Out	No direct physical implications under this Development Objective

5.4 Scoping of Environmental Issues

Consultation on the Nigg Development Masterplan (November 2008 version) and the SEA Scoping Report (Halcrow, December 2008) led to the statutory SEA consultees (SNH, SEPA and Historic Scotland) agreeing to scope out some environmental topics. It was proposed that these topics were also scoped out of the AA.

- Soil; any issues to be addressed via a Contaminated Land study during decommissioning, a Remediation Strategy and a Construction Management Plan.
- Air; any pollution from construction to be addressed through EIA and Construction Management Plans.
- Climate Change; this was scoped out³¹ as an overarching issue in the SEA. However, climate change will be addressed in this AA via the issue of flooding, sea level rise and specific weather effects.

Out of the remaining SEA topics (Biodiversity, Water, Material Assets, Population and Human Health and Historic Environment), Biodiversity and Water were also considered to be necessary as topics to assess under the Habitats Regulations. The following table shows the issues that fall under the topics of Biodiversity and Water, and shows the reason why they have been scoped into this assessment. Potential impact distances have not been included as a) these are likely to be highly variable in a marine environment and b) the international site designations are directly adjacent to Nigg Yard, including the Masterplan area (see figure 3.1)

³¹ SEPA, January 2009. Official response to the SEA Scoping Report: 'SEPA does not consider that the proposals are likely to have strategically significant effects against climate change and therefore would have no concerns if this was subsequently scoped out of the assessment.' Further confirmation of the issue being scoped out was received from Historic Scotland (email *pers. comm.*,4/2/09) and SNH (email *pers. comm.*,5/2/09)

Table 5.3 Environmental Issues Scoped into AA at Screening Stage

Environmental Issue	Species and Sensitivity	Evidence
Noise and Vibration	Bottlenose dolphins SPA/Ramsar qualifying bird species	a) Moray Firth Candidate SAC Management Scheme Revision 1(Section 4.3) b) Würsig, <i>et al.</i> , 2000. Development of an air bubble curtain to reduce underwater noise of percussive piling. <i>Marine Environmental Research</i> , 49 : 79–93. c) Pease <i>et al.</i> , 2005. Effects of human disturbances on the behavior of wintering ducks. <i>Wildlife Society Bulletin</i> 33 (1):103-112.
Chemical/ Hydrocarbon pollution	SAC qualifying features: Bottlenose dolphins and subtidal sandbanks All Cromarty Firth SPA and Ramsar qualifying bird species	a) Moray Firth Candidate SAC Management Scheme Revision 1(Section 4.3) b) Wells <i>et al.</i> 1994. Organochlorine residues in harbour porpoise and bottlenose dolphins stranded on the coast of Scotland, 1988-1991. <i>Science of the Total Environment</i> , 151 (1): 77-99. c) Parsons <i>et al.</i> (2000) Cetacean Conservation in NorthWest Scotland: perceived threats to cetaceans, <i>European Research on Cetaceans</i> , 13 .
Nutrient/organic enrichment	Ramsar habitat (undisturbed intertidal mudflats with eelgrass <i>Zostera</i> spp. beds) All Cromarty Firth SPA and Ramsar qualifying bird species SAC habitat (sandbanks)	Moray Firth Candidate SAC Management Scheme Revision 1(Section 4.4)
Physical loss/ removal of substrate	SAC habitat (sandbanks)	Moray Firth Candidate SAC Management Scheme Revision 1(Section 4.4) Morris, R (Natural England). Ports and the Habitats Directive: A UK perspective of port-related dredging. Stojanovic <i>et al.</i> ,2006. The impact of the Habitats Directive on European port operations and management. <i>Geojournal</i> . 65 ; (3):165-176.
Introduction of non-native species	Ramsar habitat (undisturbed intertidal mudflats with eelgrass <i>Zostera</i> spp. beds) SAC habitat (sandbanks)	Moray Firth Candidate SAC Management Scheme Revision 1(Section 4.4)

Environmental Issue	Species and Sensitivity	Evidence
Interference with hydrographic patterns	Ramsar habitat (undisturbed intertidal mudflats with eelgrass <i>Zostera</i> spp. beds) SAC habitat (sandbanks)	Moray Firth Candidate SAC Management Scheme Revision 1(Section 4.4)
Flood risk	Run off from contaminated land could potentially pollute the marine environment and therefore all Natura interests for the Cromarty Firth SPA/ Ramsar and Moray Firth SAC	Same evidence base and risk as listed for chemical/hydrocarbon pollution.
Vessel traffic	Bottlenose dolphins are sensitive to vessel numbers, routes and noise levels. They can also be the victims of collisions. Other cetaceans (European Protected Species)	a) Sini <i>et al</i> , 2005. Bottlenose dolphins around Aberdeen harbour, north-east Scotland: a short study of habitat utilization and the potential effects of boat traffic. <i>J. Mar. Biol. Ass. U.K.</i> , 85 , 1547-1554, b) Janik, V.M and Thompson P.M. 1996. Changes in surfacing patterns of bottlenose dolphins in response to boat traffic. <i>Marine Mammal Science</i> , 12 (4): 597-602.

5.5 Task AA2: AA: Site Options and Development Objectives that may impact on International Sites

The screening stage ascertained which development objectives were likely to cause impacts on international sites, the nature of these impacts, possible avoidance or mitigation measures and the conclusion of likely significant effect. The impact of the objectives on the qualifying features of the international sites is provided in the assessment matrices of Appendix 2. The matrices show that Option 1, Oil and gas focus with renewables secondary, could lead to significant impacts on all qualifying features of all three international designations. This was primarily due to increased pollution risk but also increased construction and vessel noise and disturbance risk to bottlenose dolphins and Cromarty Firth qualifying bird species. Option 2, Renewable Energy Focus, would also lead to increased vessel traffic but there was seen to be a lower pollution risk as there would likely be lower quantities of oil storage and transportation with a renewable energy focused site.

Formal consultation with SNH on the screening report confirmed that both options could cause significant effects and neither option was preferred over the other. For this reason, the assessment matrices in this report concentrate on the development principles and their underlying objectives. This approach also involves a greater description of mitigation measures, in line with SNH recommendations.

The screening report shows which of the development objectives and principles are likely to cause significant effects on the international sites. The majority of the objectives and principles that were screened into the original assessment were assessed as having likely significant effects or uncertain effects, which were also treated as being likely significant effects. However, the objectives in Table 5.4 were screened out as having no likely significant effects:

Table 5.4: Development objectives screened out after assessment

Development Principle	Development Objective	Reason screened out
2: Cost and value engineering	Minimise new permanent road alignments	In the event of potential run-off from new roads into the marine environment (if they passed near to it) the use of Sustainable Drainage Systems and adherence to SEPA PPC guidelines were seen as sufficient mitigation to avoid likely significant effects on the international sites.
6: Integrating the port/harbour/major site with its surroundings	Render the site visible	This objective focused on reducing nuisance and providing mitigation to ensure the site was integrated as much as possible into its surrounding environment.
7: Integrating functions	To organise and benefit from blending	This objective was assessed as having potential to mitigate rather than cause any environmental impacts.
8: Integrating the environment	To reduce reciprocal impacts	This objective was assessed as having potential to mitigate rather than cause any environmental impacts.

Due to the finding of no likely significant effect, these objectives were not taken through to the AA stage. All remaining development objectives, including those where conclusions of 'no likely significant effect – providing mitigation' were re-assessed in the matrices of Appendix 2, to ensure that appropriate mitigation was recommended for each objective. The results of this second assessment are summarised in Table 5.5:

Table 5.5: Summary of effects on international sites caused by the Masterplan alone

Development Principle/ Objective	Site (s) affected	Nature of effect	Conclusion of AA – adverse effect on site integrity? ✓ ✗ ?	Mitigation needed? ✓ ✗	Within current remit of Highland Council as Competent Authority to mitigate? ✓ ✗
Development Principle 1: Site Content and Operations					
Create integrated and coherent framework based on a simple grid	Moray Firth SAC	Increased marine access could increase marine vessel traffic with associated noise/movement disturbance (potentially affecting feeding or breeding behaviour or social activity), injury and potential death of bottlenose dolphins	?	✓	✗
	Cromarty Firth SPA/ Ramsar/ Moray Firth SAC	Maximising developed areas may lead to site drainage issues (e.g. from increased hardstanding) and possible water-borne contamination via run-off or groundwater pollution. Persistent pollutants (e.g. organochlorines) could pass through the food chain and accumulate in bottlenose dolphins, other marine mammals or SPA/ Ramsar bid species. They could also directly deteriorate habitat.	✗	✓	✓
Renovate the graving dock to operate competitively	Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Possible water-borne contamination from use of hazardous substances during renovation/ drainage of graving dock. Persistent pollutants (e.g. organochlorines) could pass through the food chain and accumulate in bottlenose dolphins, other marine mammals or SPA/ Ramsar bid species. They could also directly deteriorate habitat.	✗	✓	✓
	Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Possible water-borne contamination from draining down of dry dock (via groundwater). Persistent pollutants (e.g. organochlorines) could pass through the food chain and	✗	✓	✓

		accumulate in bottlenose dolphins, other marine mammals or SPA/ Ramsar bid species. They could also directly deteriorate habitat.			
	Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Noise pollution and vibration from renovation, which could lead to behavioural changes or habitat avoidance for dolphins and qualifying bird species	x	✓	✓
Retain oil storage facility in current location	Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Possible water-borne contamination from draining down of dry dock (via groundwater). Persistent pollutants (e.g. organochlorines) could pass through the food chain and accumulate in bottlenose dolphins, other marine mammals or SPA/ Ramsar bid species. They could also directly deteriorate habitat.	x	✓	✓
Retain oil jetty	Cromarty Firth SPA/ Ramsar Moray Firth SAC	Vessel traffic and noise disturbance to bottlenose dolphins and SPA/Ramsar qualifying bird species. Increased marine vessel traffic with associated noise/movement disturbance (potentially affecting feeding or breeding behaviour or social activity), injury and potential death of bottlenose dolphins.	x	✓	x
	Cromarty Firth SPA/ Ramsar Moray Firth SAC	Risk of hydrocarbon pollution from site directly affecting SAC habitat and directly or indirectly affecting dolphins or bird species through food chain via run-off or groundwater contamination.	x	✓	✓
	Cromarty Firth SPA/ Ramsar Moray Firth SAC	Chemical, oil and litter pollution from vessels. Persistent pollutants (e.g. organochlorines) could pass through the food chain and accumulate in bottlenose dolphins, other marine mammals or SPA/ Ramsar bid species. They could also directly deteriorate habitat.	?	✓	x
Provide adequate sea access able to be shared by all users	Cromarty Firth SPA/ Ramsar Moray Firth SAC	Vessel traffic and noise disturbance to bottlenose dolphins and SPA/Ramsar qualifying bird species. Increased marine vessel traffic with associated noise/movement disturbance (potentially affecting feeding or breeding behaviour or social activity), injury and potential death of bottlenose dolphins	?	✓	x

	Cromarty Firth SPA/ Ramsar Moray Firth SAC	Chemical, oil and litter pollution from vessels. Persistent pollutants (e.g. organochlorines) could pass through the food chain and accumulate in bottlenose dolphins, other marine mammals or SPA/ Ramsar bid species. They could also directly deteriorate habitat.	?	✓	✗
Utilise existing buildings through refurbishment	European Protected Species: Bats	Possible construction noise, physical and light disturbance to roosts: could lead to behavioural change/ habitat avoidance. Disturbance to flight lines	✗	✓	✓
Creation of additional berthing faces to south and east, accessing deep water where possible	Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Noise pollution and vibration from construction (e.g. sheet piling) and noise pollution from vessel traffic and increased number of vessels – disturbance to bottlenose dolphins and possible disturbance to SPA/Ramsar bird species further afield	✗	✓	✓
	Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Dredging to a depth of 10m may; <ul style="list-style-type: none"> • increase suspended sediment • mobilise pollutants • disrupt supporting habitat/food supply for qualifying species • disposal of dredged material could also cause habitat loss/ degradation Habitat degradation could affect SAC sandbanks, Ramsar wetland habitat SPA wetland habitat (Article 4.1 qualification), e.g. through pollutant deposition	?	✓	✗
Development Principle 2: Cost and Value Engineering					
Maximise use of existing built structures	European Protected Species: Bats	Possible construction noise, physical and light disturbance to roosts: could lead to behavioural change/ habitat avoidance. Disturbance to flight lines	✗	✓	✓
Development Principle 5: Integrating the spaces					
Make new connections to obtain new spaces	Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Developing on proximal land to the east is unlikely to affect the international designations unless there are drainage issues that may affect them indirectly	✗	✓	✓

Consolidate and enhance existing connections	Cromarty Firth SPA/ Ramsar	Site drainage issues and possible water-borne contamination into the SPA/Ramsar to the west if a new rail connection (and associated infrastructure) to Arabella is constructed. Pollution risk from run-off or groundwater contamination could directly deteriorate SPA/ Ramsar wetland habitat.	x	✓	✓
	Cromarty Firth SPA/ Ramsar	Construction of new infrastructure could have noise impacts on qualifying bird species	x	✓	✓
Development Principle 6: Integrating the port/harbour/major site with its surroundings					
To exploit all the potentialities of the water	Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Pollution Risk from Yard via run-off or groundwater contamination. Persistent pollutants (e.g. organochlorines) could pass through the food chain and accumulate in bottlenose dolphins, other marine mammals or SPA/ Ramsar bird species. They could also directly deteriorate habitat.	x	✓	✓
	Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Pollution Risk from vessels (including ship-to-ship) Oil pollution could directly deteriorate habitat and physically impact on all SAC/SPA/Ramsar qualifying species and their food chains. .	?	✓	x
	Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Chemical pollution risk from ballast water: deterioration of water quality and habitat quality	?	✓	x
	Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Introduction of new marine organisms via ballast water: possible invasive species disrupting ecosystem, e.g. toxic algae	?	✓	x
	Cromarty Firth SPA/ Ramsar Moray Firth SAC.	Vessel traffic and noise disturbance to bottlenose dolphins and SPA/Ramsar qualifying bird species	?	✓	x

6. In-combination Effects

6.1 Overview

Impacts on international sites from the Masterplan alone may be exacerbated when considered alongside policies from other plans and programmes, and, in some cases, may cause an insignificant effect to become significant.

Several plans and programmes were examined to ascertain whether they might lead to the same or similar impacts as those identified in section 6. This included the following plans:

- The Moray Firth SAC Management Scheme; details the conservation objectives of the SAC, human and natural threats, a management scheme and monitoring programme
- Nigg and Udale Bays 5 year Management Plan (RSPB); includes objectives for intertidal habitat, wet grassland and other habitats
- Ross and Cromarty (East) Biodiversity Action Plan; sets out objectives for habitats and species in the area
- Natural Heritage Futures (SNH); includes aims to restore and maintain coastal and marine habitats and species in the Moray Firth
- Scottish Executive Marine Coastal Framework (2005)
- SEPA. Catchment Pollution Reduction Programme under Directive 78/659/EEC on the quality of fresh waters needing protection or improvement in order to support fish life

However, these plans are not considered to have any in-combination impacts as they all seek to minimise rather than add to harmful impacts on the international sites. If the Nigg Development Masterplan adheres to the conservation objectives of the international sites it would also help to progress the objectives of the plans listed above.

A small number of other plans and their predicted effects in relation to Masterplan objectives are shown in the in-combination matrix of Appendix 2. The following table summarises these potential in-combination effects:

Table 6.1: In-combination effects summary

Site(s) affected	Other plan/ project in question	Nature of effect
Moray Firth SAC/ European Protected Species	Ross and Cromarty East Local Plan/ Cromarty/ Special Uses:	Increased vessel traffic from increased use of Cromarty harbour causing disturbance to bottlenose dolphins and other cetaceans
Moray Firth SAC/ Cromarty Firth SPA/Ramsar/ European Protected Species	No specific plan/project	<p>Any increase in vessel traffic from motorised water sports and research and wildlife-watching vessels</p> <p>Any increase in number of vessels associated with future on and offshore development</p> <p>Any increase in shipping from Inverness (e.g. due to Inverness Harbour's new quay and marina development) may increase vessel traffic passing through Moray Firth</p>
Moray Firth SAC/ Cromarty Firth SPA/ Ramsar/ European Protected Species	No specific plan/project	<p>Pollution risk from various sources:</p> <ul style="list-style-type: none"> • sewerage outfalls, • waste discharge, bilge water from vessels • ballast water discharge • marine litter • agricultural run-off • aquaculture discharge • urban run-off • use of anti-fouling coatings
Moray Firth SAC/ Cromarty Firth SPA/ Ramsar/ European Protected Species	Future shoreline management and coastal defence (there is currently no Shoreline Management Plan for the Nigg area)	Possible implications for flood risk. If increased risk, also an increased water-borne pollution risk

7. Avoidance/Mitigation Measures

7.1 Task AA3: Avoidance and possible mitigation measures for Masterplan

As a result of the recommendations of the SEA and the AA, the Masterplan now incorporates a specified requirement, in Development Principle 8, to develop both Construction and Operational Environmental Management Plans and undertake Environmental Impact Assessment for the development of Nigg Yard. In addition, the following measures should be implemented, where practicable, to address the key environmental impacts discussed in this report:

7.1.1 *Water pollution impacts*

To address any issues of residual pollution on the site, a Contamination Study will need to be conducted that covers all areas of the oil terminal and fabrication yard. This could potentially look at areas of the site that have poor or inadequate drainage, where pollutants could potentially seep into the marine environment via run-off or groundwater contamination. A Remediation Strategy would follow this. Various targeted mitigation measures, such as use of bunds to contain potential spills, should be implemented after a full Environmental Impact Assessment has been undertaken. Replacing old or unsuitable equipment could reduce pollution risk, as could avoiding the use of harmful chemicals wherever possible. Consultation with SEPA and use of their Pollution Prevention and Control guidelines should also be undertaken. In their consultation response³² to the FRA for the site, SEPA request that the minimum formation level of the site be 3.62 m AOD, stipulated as a requirement in the FRA, be clearly stated in the Masterplan itself.

The following potential water pollution impacts are examined separately to show the discrete potential pollutant pathways:

Drainage of graving dock

The process of discharging the current water stored in the graving dock under plans to renovate the dock (under Development Principle 1: Site Content and Operations) would require obtaining a discharge licence from SEPA. After the initial application has been submitted to SEPA, a pre-application meeting is normally required in order to deal with any potential issues. Thereafter, the application is put through a determination process which includes consultation with the public and other required bodies such as the HSE. An application has a four months determination period. This may be extended by notice from SEPA or by agreement with the applicant in special circumstances, i.e. if there is a lack of information on the initial application.

³² Letter from SEPA to Highland Council, 23rd September 2009.

Ship-to-Ship oil transfer

Ship-to-ship transfer by vessels operating out of Nigg currently comply with international regulations which are described in section 4.5. These are the:

- Marine Pollution Merchant Shipping (Ship-to-Ship Transfers) Regulations 2008, which was consulted upon from May to August, 2008. Changes to the Regulations as a result of this consultation have still not been finalised at the time of writing this report.
- International Convention for the Prevention of Pollution from Ships; MARPOL73/78.

To protect the international sites, ship to ship transfers will need to continue to comply with the environmental safety requirements of the Cromarty Firth Port Authority.

Oil pollution from the Masterplan area of Nigg Yard

An Oil Spill Contingency Plan (OSPC) should be prepared to ensure that any spillages, should they occur, are minimised in terms of their extent or severity. The Plan should be consistent with the existing Cromarty Firth Port Authority OSPC Plan and the National Contingency Plan and be approved by THC in consultation with SNH and SEPA. The current plans relate to the entire Firth and Nigg Oil Terminal for minor tier one oil spills and relate to tankers operating out of the Oil Terminal jetty. The new OSPC should be prepared and implemented to incorporate the entire Masterplan area of Nigg Yard.

Ballast water discharge

Ballast water discharge is regulated by the Maritime and Coastguard Agency. It is controlled under the International Maritime Organisation's Ballast Water Management Convention (BWMC) (International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004). At present ballast water is managed under a voluntary code to comply with the BWMC and the OSPAR³³ Convention. However, ballast water discharge standards are being made mandatory under the BWMC. For example, ballast water exchange between ships will be phased out by 2016, discharge standards will be stricter and ballast water treatment systems will be required on many ships³⁴. The Maritime and Coastguard Agency's Marine Guidance Note 363, 'The Control and Management of Ships' Ballast Water and Sediments', outlines the discharge standards and how they are expected to change under the BWMC and guidance on the main requirements of the convention.

³³ The legal instrument guiding international cooperation on the protection of the marine environment of the North-East Atlantic.

³⁴ *Pers. comm.* Maritime and Coastguard Agency, 28/9/09.

This Marine Guidance Note and the voluntary guidance on ballast water management are provided in Appendix 3. There are no additional local measures enforced by the Cromarty Firth Port Authority or any other body to manage ballast water.³⁵

In addition to the above conventions and standards, the Convention on Biological Diversity, the Bonn Convention and Bern Convention all include provisions that require Member States to control the introduction of, or control already introduced, exotic species which may threaten native or protected species. Article 196 of UNCLOS also provides that States should take all measures necessary to prevent the intentional and accidental introduction of species, alien or new, to a particular part of the marine environment, which may cause significant and harmful changes thereto. To protect the integrity of the Moray Firth SAC and the Cromarty Firth SPA/Ramsar it is important that ships continue to comply with Marine Guidance Note 363 until the BWMC is ratified.

Both ship-to-ship oil transfer and ballast water discharge are outside the scope of the Masterplan and the Highland Council as the Competent Authority to influence as they are associated with the oil terminal owned by Ithaca and the Wood Group.

7.1.2 Dredging

Dredging and its impacts on the international sites are outside the remit of the Highland Council and the Masterplan. However, it is an activity that is likely to continue at Nigg Yard and it is also likely to cause direct impacts on the marine environment; it is therefore beneficial to the AA to consider its impacts on the international sites.

Dredging has the potential to cause direct damage to habitats and also mobilise pollutants present in suspended sediment. Capital and maintenance dredging are not currently subject to any licensing control in Scotland, although capital dredging is subject to EIA. However, the Scottish Marine Bill, introduced to parliament in April 2009, proposes to increase licensing requirements for dredging.

At present the Food and Environment Protection Act (FEPA) 1985 (Deposits in the Sea) provides the legislative guidance on dredging and Marine Scotland (MS) is the competent authority for enforcement, with the CFPO responsible for implementing dredging activities. Section 34 of the Coast Protection Act 1949 (as amended by Section 36 of the Merchant Shipping Act 1988 and the Energy Act 2004) also requires the consent of MS for dredging operations. Licenses for dredging deposits made in Scottish waters are the responsibility of the Scottish Executive. Currently when assessing an application for depositing dredged material the FEPA Team at the Fisheries Research Services determines whether licences should be granted. Not all licenses issued under FEPA stipulate a requirement to monitor marine disposal of dredged material. The requirement for monitoring is determined

³⁵ Pers. comm. Cromarty Firth Port Authority, 29/9/09.

by the licensing authority on a case by case basis³⁶. The Marine Bill proposes that Marine Scotland should have general responsibility for any new marine licensing scheme, including dredging licenses. At present, the Cromarty Firth Port Authority has a FEPA license to carry out dredging activities.

Mitigation safeguards to protect the international sites should include the following measures, in addition to retaining the current FEPA license and following established dredging protocols;

- no disposal of dredging within 200 m of an area with dolphins. Installed hydrophones will help establish dolphin positions.
- Marine Mammal Observers (MMOs) should be on board dredging boats to help avoid disturbance impacts.
- dredging should not be carried out in the May to September period, due to the increased use of the inner Moray Firth by cetaceans.
- monitor the disposal of dredged material for environmental impact (during and after operations) if the disposal license requires monitoring.
- sample the material to be dredged to ascertain its nature and possible environmental impact from dredging and disposal.
- minimise the footprint of the area affected by dredging machinery.
- monitor how disposal sites might affect dolphin and bird species and their habitats.
- develop and use guidelines about specific routes for vessels to follow to minimise impacts on cetaceans and SPA/Ramsar bird species and their habitats. This may require up-to-date information from the Moray Firth Partnership and Aberdeen University on dolphin usage of the Nigg area and information from the RSPB on the Cromarty Firth SPA and Ramsar site's vulnerability to dredging.

7.1.3 *Vessel disturbance*

Shipping is currently regulated by the International Maritime Organisation, which now includes a formal correspondence group on shipping noise and marine mammals. Cetaceans are protected from disturbance by the Scottish Habitats Regulations and there are duties under Article 6.2 of the Habitats Directive for Ministers to take measures to avoid significant disturbance of species for which Natura sites have been designated.

³⁶ Sustainable Seas for All: a consultation on Scotland's first Marine Bill. Available on:
<http://www.scotland.gov.uk/Publications/2008/07/11100221/6>

However, general shipping is not considered as significant disturbance, whereas powerboat racing and wildlife tourism boats can pose more of a direct threat.³⁷ This may be due to the noise frequency of recreation boat engines or propellers or the direct harassment of marine mammals by some boat operators. To mitigate these impacts, the Marine Wildlife Watching Code and Dolphin Space Programme are in use in the Moray Firth.

Currently, the impacts of offshore oil-related activities are mitigated by the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001, which require an AA to take place to protect internationally designated sites if there is likely to be a significant effect on one or more of these sites. The AA would need to take place before any UK Continental Shelf (UKCS) license is granted. To mitigate the effects of vessels depositing waste or other material in or near international sites, the Food and Environment Protection Act (FEPA), 1985 (Part II) requires that a license be obtained from the licensing authority to deposit any articles or substances in the sea or under the seabed.

Before the Masterplan area is fully operational it should be possible to extrapolate approximate vessel numbers and vessel types that will use the site when the site during construction and when the site is fully operational. Close consultation with the Moray Firth Partnership and SNH could help develop an avoidance and mitigation strategy to prevent impacts from vessels on marine mammals or the Cromarty Firth's qualifying bird species. However, it may be difficult to isolate which traffic is associated with the re-development of the Masterplan area of Nigg Yard and exactly how many vessels may constitute a problem to qualifying species over and above existing levels. It is outside the scope of the Masterplan to have direct influence over all vessel traffic that could potentially disturb European Protected Species but there may be indirect ways in which the impacts of traffic associated with the redeveloped site can be minimised. Traffic numbers will continue to be monitored by the Cromarty Firth Port Authority and the status of the international sites will continue to be monitored by SNH, MFP and others – liaison between all parties should ensure adverse impacts are avoided.

To mitigate any potential disturbance caused by vessels carrying waste, all ports are required to have a Port Waste Management Plan under the National Port Waste Management Strategy. If necessary, SNH can also make bylaws for the protection of a European marine site under Section 37 of the Wildlife and Countryside Act 1981.

In addition to the liaison between key interest groups, a Boat Traffic Management Plan will be prepared. This Plan will carry out an assessment of the boat numbers and types using the site.

³⁷ Scottish Government, *pers. comm.*, 30/9/09.

Through modelling, the Plan will determine what effect these additional boat numbers will have on vessel densities in the SAC and, if necessary, mitigation measures to manage boat traffic will be put in place. The Plan will be approved and enforced either by THC through the planning legislation and/or through the Scottish Government Ports and Harbours Division through a Harbour Order or a Harbour Revision Order. The Masterplan has now been updated to reflect this precautionary mitigation.

7.1.4 Noise pollution

To prevent noise pollution from construction or operational use of the site a Construction Environmental Management Plan and an Operational Environmental Management Plan should be formulated, which takes into account the mitigation proposed in an EIA. This would involve obtaining information on existing and predicted noise sources, using Best Available Technology, following SEPA'S PPC guidelines and complying with British Standards on noise. These management plans should also include a Noise Management Plan (including monitoring measures) for assessing noise impacts. According to SEPAs guidance³⁸ on noise pollution, this may include:

- restrictions on activities/ timing or location
- noise containment, e.g. use of silencing equipment, noise bunds
- external doors fitted with self-closing mechanisms

The Noise Management Plan should address piling, construction and vibration noise. It is a current requirement to apply for consent from Marine Scotland and the CFPA for any piling or marine construction works below the High Water Mark and it will be a requirement to continue this consents process.

Mitigation measures to reduce disturbance to international site interests to acceptable levels should be implemented prior to works commencing on the site. The Noise Management Plan should be approved by THC in consultation with SNH.

The following additional mitigation can be used to mitigate noise produced by pile-driving:

Timing of works

Liaison with SNH³⁹ suggested the timing of pile-driving and construction could be crucial to whether the internationally designated species are affected or not. The following months should ideally be avoided:

- May to September (cetaceans use inner Moray Firth more during this time)
- October to March (qualifying bird species use Cromarty Firth more during this time)

³⁸ SEPA. Guidance on the control of noise at PPC installations.

³⁹ Meeting with SNH, Great Glen House, Inverness, 9,9,09.

Underwater bubble curtains

The use of specialist bubble curtain equipment can inhibit sound transmission through water and therefore reduce overall sound pressure levels during pile-driving. A study⁴⁰ has shown that a bubble curtain can effectively lower sound levels within 1km of the pile-driving and the experiment represented a success for mitigating the impacts of noise on dolphins (*Sousa chinensis*).

7.1.5 Additional mitigation for bird species

An RSPB report⁴¹ shows the fledgeling success of common terns using the oil terminal between 2000 and 2006. An SNH report⁴² also shows there are also two wader roosts within the development site area. The first is on a small point of reclaimed land at NH79336 71009 to the north of the terminal and the second at NH78882 69662 on the outer wall of the oil terminal. According to the SNH report, although the roost sites have declined in importance since 1995, Eurasian oystercatchers (an SPA qualifying species) still regularly roost at the terminal in large numbers.

Despite the uncertainty surrounding the effects of construction and operational noise on bird species, this AA recommends that, as a precautionary measure, the EIA and Construction and Operational Management Plans would need to take into account how and when common terns, or any other SPA/Ramsar qualifying bird species, may be using the oil terminal or wider development area and devise appropriate mitigation accordingly. As stated previously, it would be best to avoid construction in the period between October and March to avoid the time when the Cromarty Firth is most used by the qualifying bird species of the SPA and Ramsar site.

7.1.6 Bats in existing site buildings

As a precautionary measure, a survey of bats that may be using existing built structures should be carried out prior to permission being granted for planning applications and a licensed bat ecologist should devise an appropriate removal or mitigation strategy.

⁴⁰ Würsig *et al.*, 2000. Development of an air bubble curtain to reduce underwater noise of percussive piling. *Marine Environmental Research*, 49: 79–93.

⁴¹ RSPB 2008. Moray Firth Tern Monitoring 2007.

⁴² SNH. Moray Firth Wader and Wildfowl roosts summary.

8. Summary of the Assessment

8.1 The effects of the Masterplan

The screening stage of the AA found that both options for development of Nigg Yard, oil and gas focus with renewables secondary and renewable energy focus could potentially significantly impact on all three international nature conservation designations. Impacts would primarily be through construction noise and vibration disturbance and vessel disturbance to Cromarty Firth's qualifying bird species, the Moray Firth SACs bottlenose dolphins and other cetaceans, which are all designated as European Protected Species.

Due to the close proximity of the development site to the international sites and the proximity of the international sites to each other, many potential impacts were found to apply to all three international sites. As a result of this, the assessment matrices in Appendix 2 do not specify impacts on particular qualifying features for most development principles and objectives. Exceptions to this rule are noise pollution and vessel disturbance, which are likely to affect designated species rather than habitats. Vessel disturbance to bottlenose dolphins, the species for which the Moray Firth SAC is designated, could be exacerbated by vessel traffic from motorised water sports, research and wildlife-watching vessels and other existing vessel traffic, such as the tugs, cargo ships and passenger ships listed in table 4.1. A Vessel Traffic Management Plan needs to be prepared to ensure that increased vessel density in the Moray Firth SAC does not adversely affect bottlenose dolphins or other cetaceans using the area. The Sea Mammal Research Unit (SMRU) has already carried out modelling work on recreational boat traffic in the SAC and the unit has confirmed that the modelling could be adapted to accommodate other vessel types.

Noise from vessels using Nigg Yard could also be exacerbated by construction and operational usage of the site. Noise disturbance was also found to potentially affect the qualifying bird species of the Cromarty Firth SPA and Ramsar site.

One of the biggest potential risks to all qualifying features of all three international sites is pollution. This can be in the form of direct pollution from vessels using Nigg Yard or accidental pollution from the Yard itself. There are particularly high pollution risks associated with ship-to-ship oil transfer and ballast water discharge. Ballast water could also potentially introduce invasive species that could directly affect the habitats and species in the area. However, both ship-to-ship transfer and ballast water discharge are managed under the current consents and regulatory framework and are outside the scope of the Highland Council, as Competent Authority for the Masterplan, to influence.

Indirect pollution into the marine environment can arise from surface run-off or groundwater contamination from on-site oil storage or pollution spillage. The risks of this are potentially significant. The Flood Risk Assessment shows that the site is at risk from tidal flooding due to sea level rise but this is in the longer term than the 25 year design life of the site. The greatest risk identified by the Flood Risk Assessment was coastal surge. The area is also predicted to continue having heavy rainfall events due to climate change.

Both tidal surge and heavy rainfall and storm events could potentially mobilise contaminants present on the site, either through tidal inundation or surface run-off and groundwater contamination, thereby conducting the pollutants into the marine environment. In their response to the FRA, SEPA are satisfied with the conclusion that the lowest part of the site is above the 1 in 200 year flood event. These levels should lower the overall flood risk to acceptable levels but a minimum site formation level for the site is suggested in section 7.2.

In terms of in-combination impacts on the international sites, the principal combined impacts on the sites were found to be from general vessel traffic using the Moray and Cromarty Firths and pollution from various sources entering these areas. For example, vessel traffic in the Moray Firth can be influenced by shipping and other vessels passing to and from Inverness and other local ports. Pollution may also arise from sewerage outfalls waste and bilge and ballast water discharge from vessels, marine litter, agricultural run-off, aquaculture discharge and urban run-off.

Finally, dredging to give a water depth of 10 metres for new berthing could also potentially cause a direct loss of substrate and SAC habitat and increase suspended and deposited sediment. The disposal of dredged material could lead to further habitat loss or degradation unless avoidance or mitigation measures are put in place.

8.2 *The Requirements for further AA*

Although not all of the predicted environmental impacts associated with the Masterplan are within the remit of the Highland Council, as Competent Authority for the AA, to mitigate, the impacts are likely to be avoided if the appropriate mitigation measures listed in this report are put in place. Providing these measures are put in place there are not likely to be adverse effects on any of the Natura interests and therefore no further work will be required under the Scottish Habitats Regulations.

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Glossary

Appropriate Assessment (AA)	An assessment of the potential impacts of a proposed plan on a Natura 2000 site, either alone or in combination with other plans.
Biodiversity Action Plan (BAP)	The UK BAP is a document setting out the UK biological resource, identifying the conservation status of target species and habitats and related targets for conservation/restoration of these species and habitats. Local BAPS (LBAP) identify local priorities, working in partnerships to achieve these priorities which contribute to the UK BAP.
National Nature Reserve (NNR)	NNRs were established to protect the most important areas of wildlife habitat and geological formations in Britain, and as places for scientific research. They are either owned or controlled by SNH or are privately owned and managed along with the owner under a Nature Reserve Agreement (NRA). Other NNRs are owned and managed by partner organisations, including Forestry Commission Scotland, The National Trust for Scotland and RSPB Scotland. They cover nearly every type of habitat in the UK and are open to the public.
Natura 2000	A network of Europe-wide sites designated under the Habitats Directive (92/43/EEC), comprising Special Areas of Conservation, Special Protection Areas and Ramsar sites.
Ramsar Site	Wetlands designated as internationally important under the Convention on Wetlands, Ramsar, 1971.
Site of Special Scientific Interest (SSSI)	SSSIs are designated by SNH. They underpin other nature conservation designations, such as Special Protection Areas and Special Areas of Conservation. For example, the boundary of the Cromarty Firth SPA follows the same line as the Cromarty Firth SSSI and the estuarine section of the Lower River Conon SSSI.
Special Area of Conservation (SAC)	SACs are designated to protect the 220 habitats and approximately 1000 species listed in Annex I and II of the Habitats Directive which are considered to be of European interest following criteria given in the directive. Each SAC has various conservation objectives.
Special Protection Area (SPA)	Sites that are strictly protected sites classified in accordance with Article 4 of the EC Directive on the conservation of wild birds (79/409/EEC), (Birds Directive). They are classified for rare and vulnerable birds, listed in Annex I of the Birds Directive, and for regularly occurring migratory species.

Abbreviations

AA	Appropriate Assessment
BAP	Biodiversity Action Plan
CFLG	Cromarty Firth Liaison Group
CO ₂	Carbon Dioxide
CPO	Compulsory Purchase Order
EC	European Commission
EIA	Environmental Impact Assessment
EU	European Union
GIS	Geographic Information System
ICZM	Integrated Coastal Zone Management
IMO	International Maritime Organization
MCA	Maritime and Coastguard Agency
MFP	Moray Firth Partnership
PPC	Pollution Prevention and Control
RSPB	Royal Society for the Protection of Birds
SAC	Special Areas of Conservation, as prescribed by the EC Habitats Directive (92/43/EEC)
SDS	Sustainable Drainage Systems
SEA	Strategic Environmental Assessment
SEPA	Scottish Environment Protection Agency
(S)FRA	(Strategic) Flood Risk Assessment
SMP	Shoreline Management Plan
SNH	Scottish Natural Heritage
SNIFFER	Scotland and Northern Ireland Forum For Environmental Research
SPA	Special Protection Area as prescribed by the EC Birds Directive (79/409/EEC)
SSSI	Site of Special Scientific Interest
THC	The Highland Council