Appendix 5. MRIP Support Sites - Maps & Assessment Tables – Highland

North

1. **Gills Bay**
2. **Loch Eriboll**
3. **Scrabster**
4. **Wick**

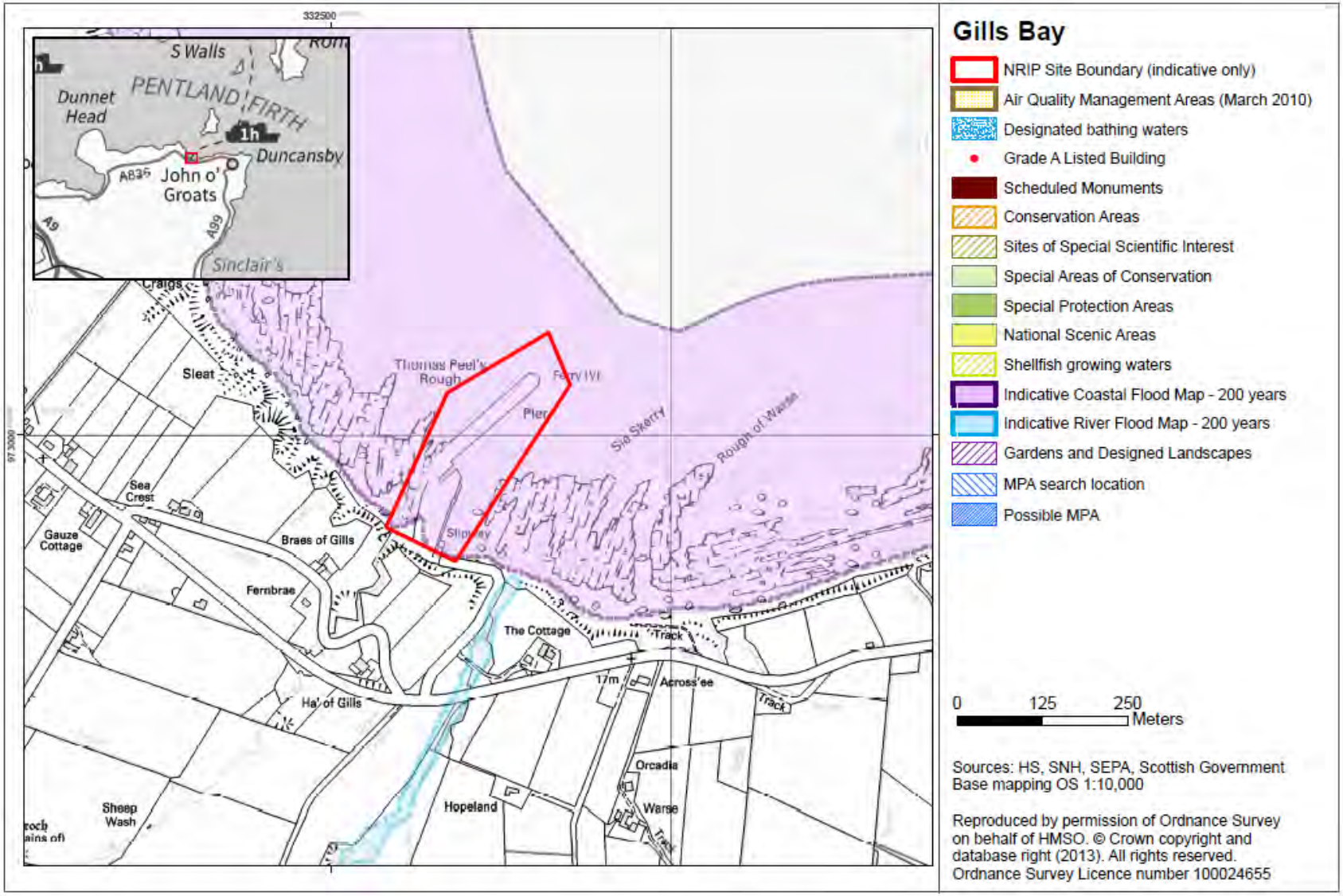
East

5. **Ardersier** — assessed in NRIP SEA 2010
6. **Highland Deephaven** — assessed in NRIP SEA 2010
7. **Invergordon**
8. **Inverness**
9. **Nigg** — assessed in NRIP SEA 2010

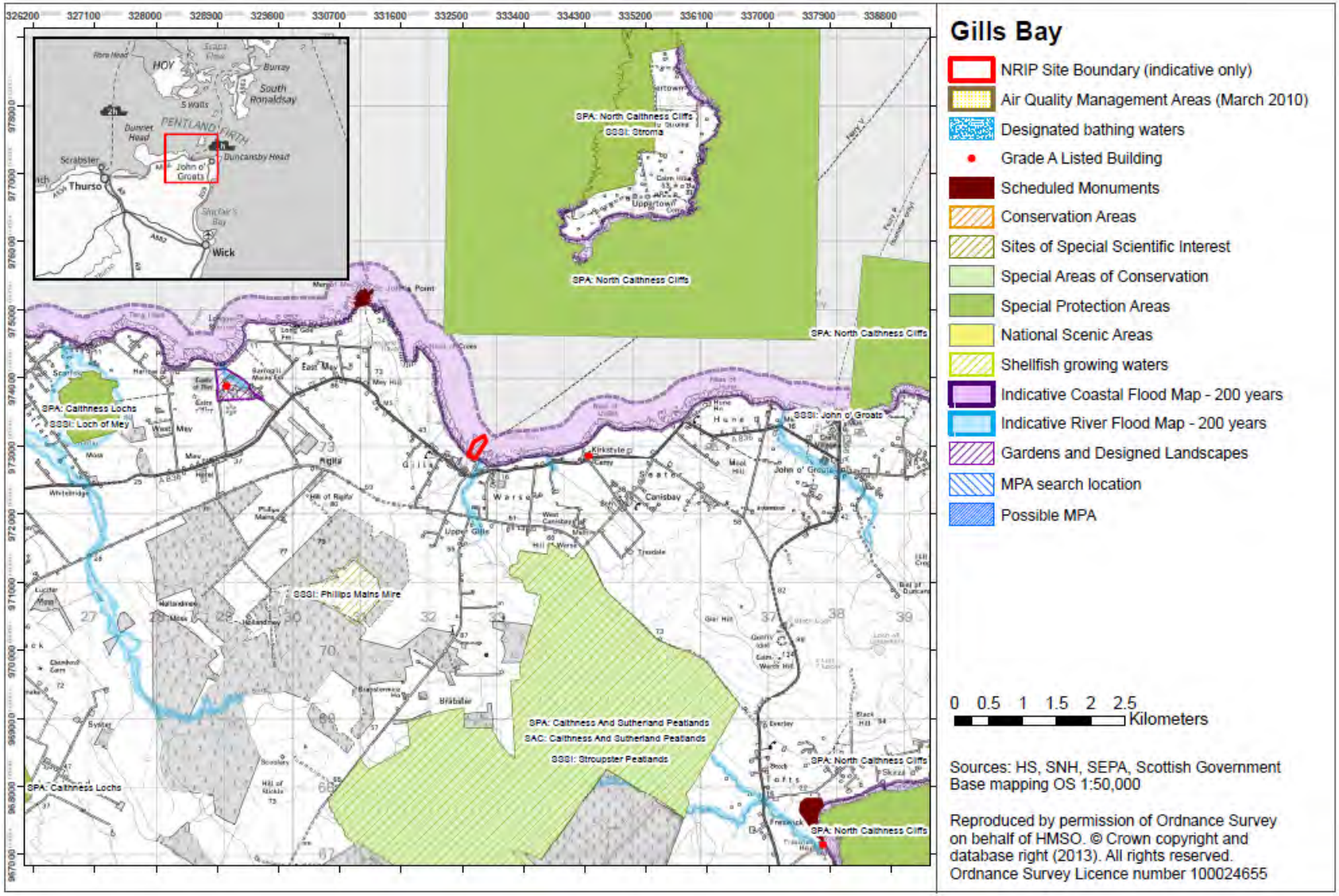
West

10. **Altanavaig**
11. **Kishorn** — assessed in NRIP SEA 2010
12. **Kyle of Lochalsh**
13. **Mallaig**
14. **Uig**
15. **Ullapool**

Site Map: Gills Bay



Wider Map: Gills Bay



Assessment Table: Gills Bay

SITE USE – Possible Assembly/Construction and Installation; Operations and Maintenance

POTENTIAL DEVELOPMENT

Assembly/Construction & Installation (potential capacity)

- Within the existing port, new buildings are likely to be required, as there appear to be few, if any, existing buildings available to re-use. No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

Operations & Maintenance

- Within the existing port, new buildings are likely to be required, as there appear to be few, if any, existing buildings available to re-use. No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

See Section 3 of the Environmental Report for assumptions about wet storage.

ENVIRONMENTAL BASELINE – GILLS BAY

Biodiversity, Flora & Fauna –

Caithness and Sutherland Peatlands SPA and Ramsar – Blanket bog, aggregations of breeding birds – red-throated diver, short eared owl, wigeon, wood sandpiper, hen harrier, merlin, golden eagle, golden plover, greenshank and black throated diver, common scoter, dunlin, greylag goose, breeding bird assemblages (approximately 2 km south-east of pier).

Caithness and Sutherland Peatlands SAC – Blanket bog, otter, wet heathland, depressions on peat substrates, wet mires, acid-stained lakes and ponds, clear-water lakes and lochs and marsh saxifrage (approximately 2 km south-east of pier).

North Caithness Cliffs SPA – Aggregations of breeding birds – puffin, razorbill, kittiwake, peregrine, seabird assemblage, guillemot and fulmar (approximately 2 km north-north-east of pier).

Loch of Mey SSSI – Aggregations of non-breeding birds – greenland white-fronted goose, breeding bird assemblages and traditional grassland (wetland) (approximately 5 km west of the pier).

Stroma SSSI – aggregations of breeding birds – guillemot, sandwich tern, artic tern, seabird colony and maritime cliff (approximately 4 km north-east of the pier).

Caithness Lochs SPA and Ramsar – aggregations of non-breeding birds – greylag goose, whooper swan, Greenland white-fronted goose (approximately 5 km west of the pier).

ENVIRONMENTAL BASELINE – GILLS BAY

Loch Heilen SSSI – aggregations of non-breeding birds - greylag goose, whooper swan, Greenland white-fronted goose (approximately 7 km south-west of the pier).

Duncansby Head SSSI – aggregations of breeding birds – guillemot, kittiwake, fulmar, seabird colony, maritime cliff and coastal geomorphology (approximately 7 km east of the pier).

Seals – Potential designated haul-out site for both grey and harbour seals located throughout Orkney and around the Pentland Firth, the nearest being for grey seals at Gills Bay, Pentland Skerries, Mucke Skerry, Stroma North and Mell Head Skerry to the east and north-east, and harbour seals at Ness of Quoys to the east[1]. Indications are that the Pentland Firth and Orkney waters are well used by both grey and harbour seals[2] with seals often seen lying on rocks near to the seashore[3].

European Protected Species – Cetaceans are likely to be passing through the area. Otters may be found using this area of coast (see above).

Waterbirds – Areas of Search developed to identify possible marine SPAs are located in Orkney and the Moray Firth. While these areas do not as yet represent formal designations, they provide additional information for identifying important aggregations of waterbirds in Scotland and complement the existing network of SPAs[4].

Population and Human Health – Pier is isolated with closest building approximately 200m to the east. There are scattered residential properties around Gills Bay.

Water & Marine Environment – Coastal waters classification (2011): Good.

Climatic Factors – The site is within an Indicative 200 year Flood Zone.

Air – No air quality issues identified.

Soil, Geology & Coastal Processes – The site is not within an area designated as a geological SSSI. **Stroma SSSI** – maritime cliff (approximately 4 km north-east of the pier) and **Duncansby Head SSSI** – maritime cliff and coastal geomorphology (approximately 7 km east of the pier).

[1] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.
[2] SMRU (2013) Marine Mammal Scientific Support Research Programme MMSS/001/11, Grey and harbour seal usage maps [online] Available at: http://www.scotland.gov.uk/Resource/0043/00437053.pdf [accessed 5/12/2013]
[3] Ports and Harbours of the UK – Gill's Bay [online] Available at: http://www.ports.org.uk/port.asp?id=533 [accessed 16/01/2014]
[4] The Scottish Government (2011) Special Protection Areas (SPAs) [online] Available at: http://www.scotland.gov.uk/Topics/Environment/Wildlife-Habitats/protectedareas/NATURA/SPAs (accessed 5/4/2014)

ENVIRONMENTAL BASELINE – GILLS BAY

Sections of the North Sutherland Coast (e.g. beaches, soft cliffs, etc.) have been identified as having the potential for erosion or accretion. Accretion has been observed at Dunnet Bay (approximately 11 km west of the pier), and coastal erosion on the southern coast of Stroma and of coastal areas near John O'Groats (approximately 6 km east of the pier).

Cultural Heritage – Gills Haven Pier has an Historic Environment Record with the Highland Council (MHG1721) and Canmore (Canmore ID 9412). The Council recognises Ha' of Gills Farmstead (MHG656) located approximately 200 m south of pier. A cluster of historic features is located around 3 km north-west of the pier at St John's Point including the Scheduled Monument Fort and Site of St John's Chapel (ID 2689). A cluster of five wrecks is located approximately 250 m east of the pier, with a number of others located further offshore within the Pentland Firth.

Landscape / Seascape – No national designations. Isolated residents likely to have views of coast/sea.

Material Assets – The Harbour is privately owned and built for the Ro/Ro ferry service between Gill's Bay and St Margaret's Hope. The Pentland Firth is used by a range of marine users, including fishing and recreational vessels amongst others.

Gill's Bay is a reasonably exposed beach break with reasonably consistent surf. Site appears to be used only occasionally by surfers and sea kayakers. There is little information available for this site and exact location of surf breaks and entry/landing points along the Bay are unknown.

Issues Scoped Out:
Air – There is likely to be increased boat traffic due to the movement of devices, which could result in increased atmospheric emissions. However, given existing levels of boat movements, these additional emissions are unlikely to result in significant effects.
Soil, Geology & Coastal Processes – Given the vessel movements and numbers of devices assumed for this assessment, it is considered unlikely that changes to wave patterns would be such that they would result in significant alterations of coastal processes or in significant impacts on soil and marine geology.

ASSESSMENT – GILLS BAY				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Breeding birds – Caithness and Southerland Peatlands SAC/SPA/RAMSAR, North Caithness Cliffs SPA, Stroma SSSI, Caithness Lochs SPA/ Ramsar, Loch Heilen SSSI, Duncansby Head SSSI, Areas of Search	Potential disturbance (vessel noise and human presence) from O&M and wet storage activities. Presence of new features likely to disturb and possibly displace birds, e.g. red-throated divers, from feeding.	Temporary, depending on location, duration and frequency of activity.	Time storage activities and vessel movements to avoid bird breeding season, overwintering, etc.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Otters – Caithness and Sutherland Peatlands SAC and elsewhere (European Protected Species)	Potential disturbance of otters (noise during storage, physical presence of devices and human presence) from storage of devices.	Effects will be temporary but, depending on duration and frequency of storage, may be medium-term.	Devices should not be stored on or near habitat used by otters.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Seals	Risk of corkscrew injury from slow-moving vessels with certain types of ducted propeller or those using dynamic positioning; disturbance to seal haul-out locations.	Death of individual seals may affect overall population numbers/ viability, given that the harbour species in particular is generally in decline; displacement of seals.	Avoid using vessels with ducted propellers for slow-speed activities, e.g. manoeuvring, particularly during breeding season. Avoid storage of devices near seal haul out locations during moulting times and breeding season if relevant.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
European Protected Species: cetaceans (for otters see above)	Risk of collision with vessels; entanglement in mooring lines (e.g. minke whale); disturbance and displacement	Risk of these events occurring is unclear, thus significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/viability	Avoid cetacean habitat and migration routes. Use high-visibility mooring lines.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided

ASSESSMENT – GILLS BAY				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Population / Human Health Proximity to scattered residential properties around Gills Bay	Noise disturbance during site operations.	Effects are likely to be localised	Site operation protocols and/or good neighbour agreements would set out conditions for controlling noise and/or disturbance from activities.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Water & Marine Environment Coastal waters classification	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed. Introduction of devices into the waterbody.	Effects are likely to be localised and temporary	Increased turbidity: as above. No mitigation proposed for temporary morphological effects.	Increased turbidity: as above. Temporary morphological effects.
Climatic Factors Site is within an Indicative 200 year Flood Zone.	Potential for Gills Bay to be at risk of flooding from the sea.	This will be a permanent threat given the long-term impacts of climate change.	Ensuring suitable design measures to increase defensibility and mitigate adverse effects of potential sea level rises	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
	Increase in GHG emissions due to vessel movements associated with O&M.	Emissions from vessels are unlikely to contribute significantly to those from the existing Scottish fleet.	Vessel operators may wish to implement energy- and fuel-efficiency measures to reduce fuel consumption and consequent GHG emissions.	Emissions from vessels would continue but are unlikely to contribute significantly to those from the existing Scottish fleet.
Cultural Heritage Listed Buildings and historic features in the environs of the site.	O&M operations are unlikely to affect the setting of the listed buildings and historic features.	No effect	None required	None
Wreck sites	It is unlikely that O&M works would affect existing wreck sites, given their location. Storage of devices could affect wreck sites through destruction of features.	Permanent loss of wreck features	Avoid storage on these areas.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.

ASSESSMENT – GILLS BAY				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Landscape / Seascape Proximity to scattered residential properties around Gills Bay	Isolated residents are likely to have views of stored devices which are on or break the water surface.	Effects are likely to be local in nature and temporary, and are unlikely to be significant.	If necessary, locate devices in a sheltered bay away from overall views of Gills Bay.	Assuming mitigation is implemented, the potential for significant adverse visual effects should be reduced.
Material Assets Harbour access	Possible effects on navigational safety, e.g. ferries. Devices could block access to the harbour/ferry terminal and displace harbour users (e.g. require ferries to be re-routed).	Collisions could result in injury/death of human beings, oil spills etc. Inefficient operation of ferry terminal and/or ferries. Potential displacement of harbour activities.	Ensure that devices are located away from access points to the harbour. Wet storage site will need to be appropriately lit and/or marked. Liaison with MCA, Harbour Authority and other vessel operators to agree storage areas and navigable channels.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Fishing grounds	Possible disturbance and/or displacement of fishing from local grounds by wet storage of devices.	Temporary loss of fishing grounds during storage operations. Potential displacement of fishing activities – adverse socio-economic and community effects; potential intensification of fishing elsewhere	Ensure that devices are located away from these areas. Liaison with Inshore Fisheries Group and/or local fishermen as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Recreational areas	Possible disturbance and/or displacement of recreational areas by wet storage of devices.	Temporary loss of recreational areas during storage operations, with concomitant local economic loss.	Ensure that devices are located away from these areas. Liaison with Royal Yachting Association Scotland as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Tourism and recreation	Possible disturbance and/or displacement of recreational users of Gills Bay (specifically surfers and sea kayakers), with potential adverse socio-economic and community	Temporary loss of recreational areas with (minor) concomitant local economic loss. Siting of infrastructure could adversely impact on the wave	Liaison with the Pentland Canoe Club, the Scottish Surfing Federation and Scottish Canoe Association to be undertaken. Ensure that devices are	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.

ASSESSMENT – GILLS BAY				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	effects.	resource.	located away from recreational areas.	
OTHER DEVELOPMENTS None known.				
Cumulative Effects	Adverse cumulative effects are not anticipated at this site.			

Implications for development:

The following requires further examination at the project level:

- effects on birds using nearby SPA/SSSI/Ramsar habitat.
- effects on otters using nearby SAC habitat and other areas.
- risk of disturbance to seal haul out locations and corkscrew injury to seals.
- need to alleviate flood risk through project planning and design.
- planning and design to avoid and/or reduce landscape/visual effects and effects on historic environment, including wrecks.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage

Early discussions should be held with SNH, SEPA, Historic Scotland, the Local Planning Authority, Harbour Authority, MCA, Inshore Fisheries Group and/or local fishermen, Royal Yachting Association Scotland, marine recreation groups (Pentland Canoe Club, Scottish Canoe Association and the Scottish Surfing Federation), and other vessel operators as required.

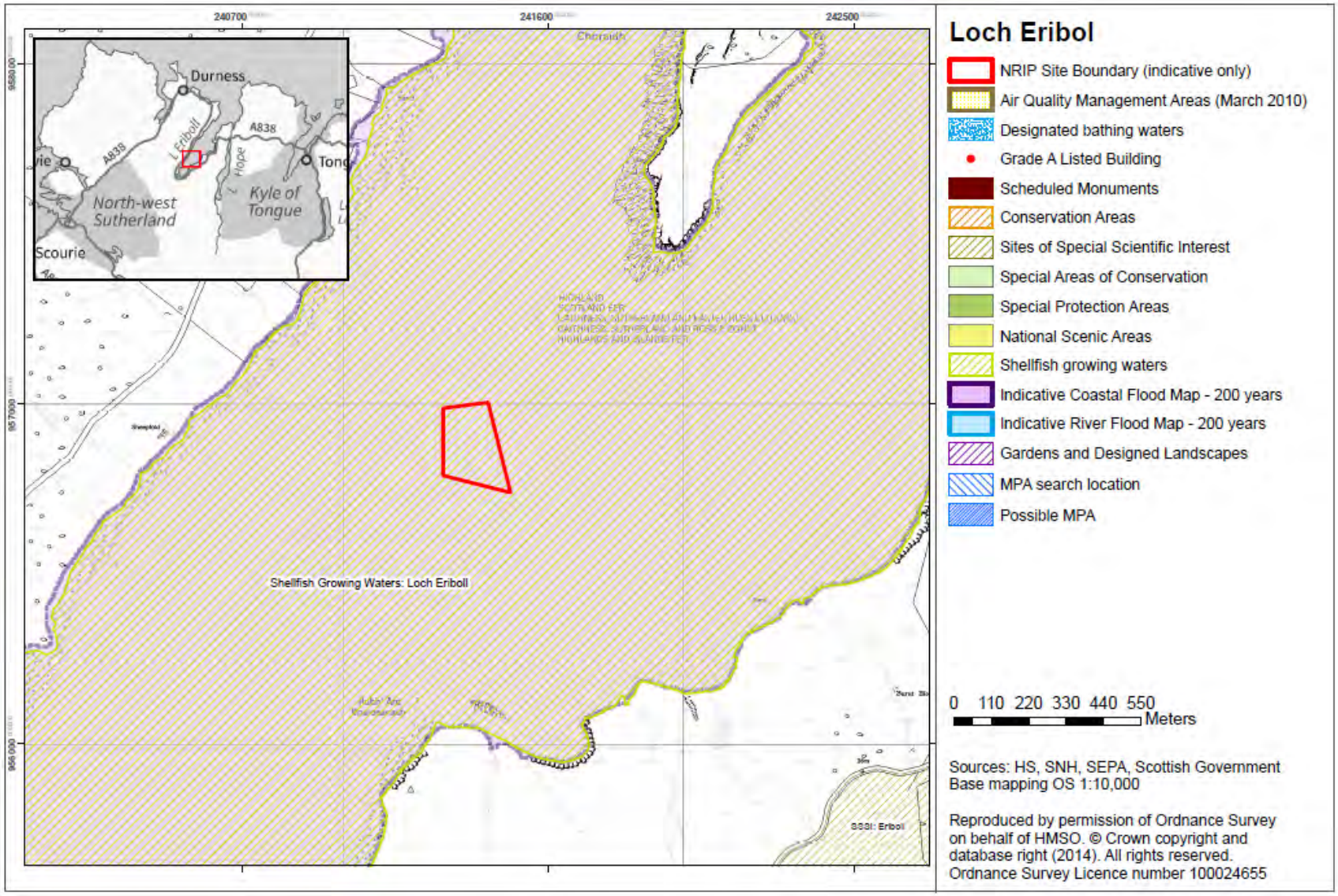
Habitats Regulations Appraisal

It is likely that Habitats Regulations Appraisal will be required at the project level, covering at least the following issues:

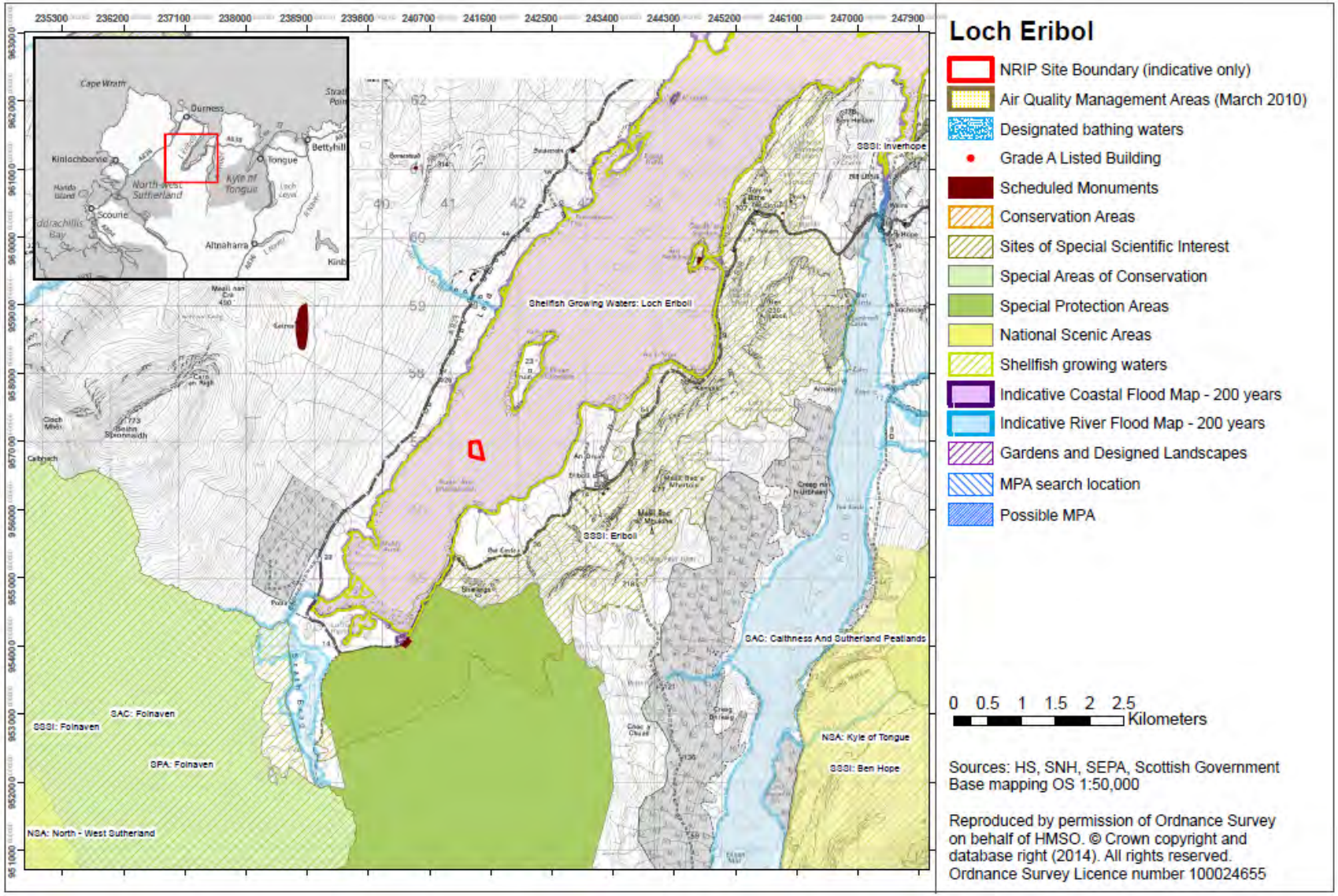
- effects of site operations on breeding and non-breeding birds from nearby SPA/SSSI/Ramsar habitat.
- effects on otter from Caithness and Sutherland Peatlands SAC

Early discussions should be held with SNH.

Site Map: Loch Eriboll



Wider Map: Loch Eriboll



Assessment Table: Loch Eriboll

SITE USE – Refuge/wet storage/unplanned maintenance

POTENTIAL DEVELOPMENT

Refuge/Wet Storage/Unplanned Maintenance
For unplanned maintenance, it may be necessary to provide a portacabin (or similar) at a suitable location around the loch, as there appear to be no buildings available for re-use. No further infrastructure upgrade required.

There are three scenarios for wet storage:
(a) Company that manufactures the devices cannot store them as it needs the laydown space so the developer needs to move the devices to a wet storage site which is both close to the lease site and sheltered.
(b) The developer wants to store the devices close to the lease site until the installation vessel they wish to use is available, which means they store them in the loch.
(c) Refuge site needed when devices are being towed to the installation site and need to take shelter during bad weather (for a day or two) before resuming progress.

See Section 3 of the Environmental Report for assumptions about wet storage.

ENVIRONMENTAL BASELINE – LOCH ERIBOLL

Biodiversity, flora and fauna –
Eriboll SSSI - Upland birch woodland, dryas heath, open water transition fen, quaternary of Scotland, cambrian and moine (adjacent to east side of loch)

Foinaven SSSI - Breeding bird assemblage, blanket bog, upland birch woodland, upland assemblage, dystrophic and oligotrophic lochs and moine (adjacent to loch at southern end).

Foinaven SAC - Blanket bog, depressions on peat substrates, species-rich grassland with mat-grass in upland areas, dry heaths, wet heathland with cross-leaved heath, plants in crevices on base-rich rocks, tall herb communities, plants in crevices on acid rocks, acidic scree, otter (adjacent to loch at southern end).

Foinaven SPA – Aggregations of breeding birds – golden eagle (adjacent to loch at southern end).

A'Mhoine SSSI - Aggregations of breeding birds and bogs – golden plover, dunlin, greenshank, breeding bird assemblage and blanket bog (approximately 3 km east of the loch).

Caithness and Sutherland Peatlands SAC - Blanket bog, depressions on peat substrates, wet heathland with cross-leaved heath, very wet mires often identified by unstable "quaking" surface, otter, acid peat-stained lakes and ponds, clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels and marsh saxifrage (approximately 4 km east of the loch).

ENVIRONMENTAL BASELINE – LOCH ERIBOLL

Caithness and Sutherland Peatlands SPA – Aggregations of breeding birds – red-throated diver, short-eared owl, wigeon, wood sandpiper, hen harrier, merlin, golden eagle, golden plover, greenshank, dunlin, common scoter and black-throated diver (approximately 4 km east of the loch).

Caithness and Sutherland Ramsar – Blanket bog and aggregations of breeding birds – dunlin, greylag goose and breeding bird assemblages (approximately 4 km east of the loch).

North Sutherland Coastal Islands SSSI – Aggregations of non-breeding birds – Greenland barnacle goose (approximately 2 km north-west of loch entrance).

Eilean Hoan SSSI – Aggregations of breeding and non-breeding bird – grey black-backed gull (breeding) and Greenland barnacle goose (non-breeding) (approximately 2 km north-west of loch entrance)

Durness SSSI - Dryas heath, limestone pavement, base-rich loch, arenig – llanvirn and Cambrian - tremadoc, moine, maritime cliff and sand dunes (approximately 3 km west of loch entrance)

Seals – Potential designated haul-out sites for harbour seals at Sandbanks near Kyle of Tongue, and grey seals at Geodha nan Aigheann, Eilean Hoan and Stac a' Chlo along Scotland's north coast[5]. Indications are that these waters are used by both harbour and grey seals[6].

European Protected Species – Cetaceans are likely to be passing through the area. Otters may be found using this area of coast.

Population and Human Health – Loch is relatively isolated but there are a small number of dwellings around the Loch, particularly on the western shore.

Water and marine environment – Shellfish licensing consents have been approved in Loch Eriboll[7]. Coastal waters classification (2011): Good.

Climatic Factors – The site is within an Indicative 200 year Flood Zone.

Air – No air quality issues identified.

Soil, Geology & Coastal Processes – Site is not within an area designated as a geological SSSI. **Eriboll SSSI** – Dryas heath, open water transition fen, quaternary of Scotland, cambrian and moine (adjacent to east side of loch), **Foinaven SSSI** – blanket bog, dystrophic and oligotrophic lochs and moine (adjacent to loch at southern end), **Foinaven SAC** – Blanket bog, depressions on peat substrates, dry heaths, wet heathland with cross-leaved heath

[5] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.
[6] SMRU (2013) Marine Mammal Scientific Support Research Programme MMSS/001/11, Grey and harbour seal usage maps [online] Available at: http://www.scotland.gov.uk/Resource/0043/00437053.pdf [accessed 5/12/2013]
[7] Site 35 of Shellfish Water Designations 2012 – Loch Eriboll

ENVIRONMENTAL BASELINE – LOCH ERIBOLL

(adjacent to loch at southern end), **A'Mhoine SSSI** – blanket bog (approximately 3 km east of the loch) and **Caithness and Sutherland Peatlands SAC** – Blanket bog, depressions on peat substrates, wet heathland with cross-leaved heath, very wet mires often identified by unstable "quaking" surface (approximately 3 km east of the loch).

Sections of Loch Eriboll (e.g. beaches, soft cliffs, etc.) have been identified as having the potential for erosion or accretion, and coastal erosion has been identified within the Loch itself and along the coastline to the east of the Loch.

Cultural heritage – Scheduled Monument Ard Neackie, limekilns (SM4096) is located at pier on eastern side of loch, Loch Eriboll Souterrain (SM2185) located adjacent to A838 at southern end of loch, and Meall Nan Cra Cairns (SM9450) are located to the west of the Loch with views over much of Loch Eriboll. There are a number of Listed buildings in proximity to the loch including Rispond Lodge, cottage and fishing station (Category B Index Number 495) located at Rispond Bay, at north-west edge of loch, Ard Neackie, pier limekilns and ferry house (Category B (group) Index Number 516) located at pier on eastern side of loch and Laid, Polla Bridge by Polla Ford on A838 (Category C Index Number 492) located at southern end of loch. Several wrecks have been identified within Loch Eriboll, with clusters located at the northern end of the loch and near to Ard Neackie.

Landscape / Seascape – No national designation.

Material Assets – Shellfish and finfish aquaculture interests identified in the area, and other vessels, such as fishing and recreational craft, are known to frequent the loch. The loch is also recognised as a Minor Training Area used by the MoD.

Issues Scoped Out:

Population and Human Health – There is likely to be increased boat traffic due to the movement of devices, which could result in noise and disturbance. However, given the relative isolation of the loch, this effect is unlikely to be significant.

Air – There is likely to be increased boat traffic due to wet storage activities, which could result in increased atmospheric emissions. However, given existing levels of boat movements, these additional emissions are unlikely to result in significant effects.

ASSESSMENT – LOCH ERIBOLL				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Birds and aggregations of breeding and non-breeding - Eriboll SSSI, Foinaven SSSI/SPA/ SAC, A'Mhoine SSSI, Caithness and Sutherland Peatlands SPA/SPA/SAC	Potential disturbance (vessel noise and human presence) from wet storage activities. Presence of new features likely to disturb and possibly displace birds, e.g. red-throated divers, from feeding.	Temporary, depending on location, duration and frequency of activity.	Time storage activities and vessel movements to avoid bird breeding season.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Seals	Risk of corkscrew injury from slow-moving vessels with certain types of ducted propeller or those using dynamic positioning; disturbance to seal haul-out locations.	Death of individual seals may affect overall population numbers/ viability, given that the harbour species in particular is generally in decline; displacement of seals.	Avoid using vessels with ducted propellers for slow-speed activities, e.g. manoeuvring, particularly during breeding season. Avoid storage of devices near seal haul out locations during moulting times and breeding season if relevant.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
Otters from Foinaven SAC and Caithness and Sutherland Peatlands SAC and elsewhere (European Protected Species)	Potential disturbance of otters (noise during storage, physical presence of devices and human presence) from storage of devices.	Effects will be temporary but, depending on duration and frequency of storage, may be medium-term.	Devices should not be stored on or near habitat used by otters.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
European Protected Species: cetaceans	Risk of collision with vessels; entanglement in mooring lines (e.g. minke whale); disturbance and displacement	Risk of these events occurring is unclear, thus significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/viability	Avoid cetacean habitat and migration routes. Use high-visibility mooring lines.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided

ASSESSMENT – LOCH ERIBOLL				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Water & Marine Environment Shellfish licencing consents have been approved for Loch Eriboll	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed could affect shellfish growing activities.	Effects are likely to be localised and temporary.	Developers should consider whether there are anchoring methods which would not result in increased turbidity.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
Coastal waters classification	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed. Introduction of devices into the waterbody.	Effects are likely to be localised and temporary	Increased turbidity: as above. No mitigation proposed for temporary morphological effects.	Increased turbidity: as above. Temporary morphological effects.
Climatic Factors Site is within the Indicative 200 year Flood Zone.	Potential for coastal areas within Loch Eriboll to be at risk of flooding from the sea.	This will be a permanent threat given the long-term impacts of climate change and the potential volatility this could have on micro-climates.	Ensuring suitable design measures to increase defensibility and mitigate adverse effects of potential sea level rises	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
	Increase in GHG emissions due to vessel movements associated with wet storage activities.	Emissions from vessels are unlikely to contribute significantly to those from the existing Scottish fleet.	Vessel operators may wish to implement energy- and fuel-efficiency measures to reduce fuel consumption and consequent GHG emissions.	Emissions from vessels would continue but are unlikely to contribute significantly to those from the existing Scottish fleet.
Soil, Geology & Coastal Processes Designated geodiversity features	Short-term anchorage or storage of devices directly on the seabed is unlikely to result in significant adverse effects on protected geodiversity features.	No significant adverse effect	None required	None
Wave patterns and coastal processes	Given the vessel movements and numbers of devices assumed for this assessment, it is considered unlikely that changes to wave patterns would be such that they would result in significant alterations of coastal	No significant adverse effect	None required	None

ASSESSMENT – LOCH ERIBOLL				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	processes or in significant impacts on soil and marine geology.			
Cultural Heritage Scheduled Monuments, Listed Buildings and other historic features in the environs of the Loch.	Storage of devices which are on or break the water surface is unlikely to affect the setting of the listed buildings or other historic features.	No effect	None required	None
Wreck sites	Storage of devices could affect wreck sites through destruction of features.	Permanent loss of wreck features	Avoid storage on these areas	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Landscape / Seascape scattered dwellings around the loch	Storage of devices which are on or break the water surface may have adverse local landscape and visual effects.	Effects are likely to be local in nature and temporary.	At the local level, locate devices in a sheltered bay away from overall views of Loch Eriboll.	Assuming mitigation is implemented, the potential for significant adverse visual effects should be reduced.
Material Assets Jetty access and Navigation	Possible effects on navigational safety, e.g. fishing, recreational vessels, etc. Devices could block access to the jetty at Ard Neackie and displace users.	Collisions could result in injury/death of human beings, oil spills etc. Potential displacement of activities.	Ensure that devices are located away from access points to the jetty. Wet storage sites will need to be appropriately lit and/or marked. Liaison with MCA, Harbour Authority, aquaculture operators, MoD and other vessel operators to agree storage areas and navigable channels.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Fishing grounds	Possible disturbance and/or displacement of local fishing grounds by wet storage of devices.	Temporary loss of fishing grounds during storage operations. Potential displacement of fishing activities – adverse socio-economic and	Ensure that devices are located away from these areas. Liaison with Inshore Fisheries Group and/or local fishermen as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.

ASSESSMENT – LOCH ERIBOLL				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
		community effects; potential intensification of fishing elsewhere		
Recreational areas	Possible disturbance and/or displacement of recreational areas by wet storage of devices.	Temporary loss of recreational areas during storage operations, with concomitant local economic loss.	Ensure that devices are located away from these areas. Liaison with Royal Yachting Association Scotland as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Minor Training Areas	Possible disturbance and/or displacement of Naval activities by wet storage of devices.	Temporary loss of Minor Training Areas during storage operations.	Ensure that devices are located away from these areas. Liaison with MoD as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
OTHER DEVELOPMENT Fishing and vessel traffic within Loch Eriboll. MoD activities within the Loch.				
Cumulative Effects	Possible cumulative effect with other users of the loch (e.g. fishing, recreational, MoD users, etc.). Potential for cumulative effects on birds using nearby SPA/SSSI habitat and on marine mammals (i.e. corkscrew seal injuries). However, significant adverse effects potentially arising from site operations could be avoided through appropriate mitigation.			

Implications for development:

The following requires further examination at the project level:

- effects on birds using adjacent SPA/SSSI habitat, particularly red-throated diver. Early discussions should be held with SNH regarding timing, extent, location and duration of storage.
- risk of disturbance to seal haul out locations and corkscrew injury to seals.
- need to alleviate flood risk through project planning and design.
- planning and design to avoid and/or reduce effects on historic environment including wrecks.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage

Early discussions should be held with SNH, SEPA, Historic Scotland, the Local Planning Authority, Harbour Authority, MCA, Inshore Fisheries Group and/or local fishermen, The Crown Estate, MoD, aquaculture operators, Royal Yachting Association Scotland and other vessel operators as required.

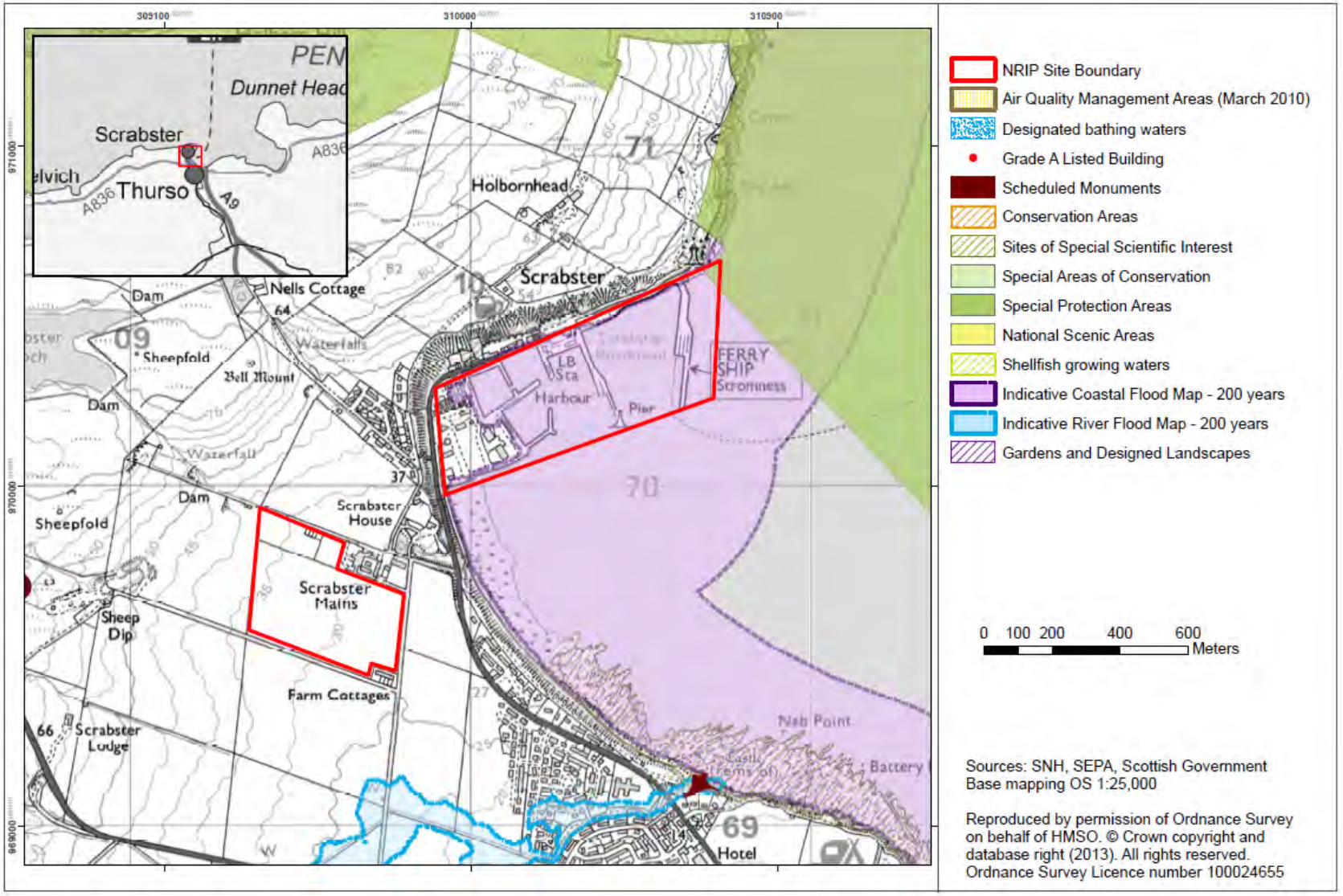
Habitats Regulations Appraisal

It is likely that Habitats Regulations Appraisal will be required at the project level, covering at least the following issues:

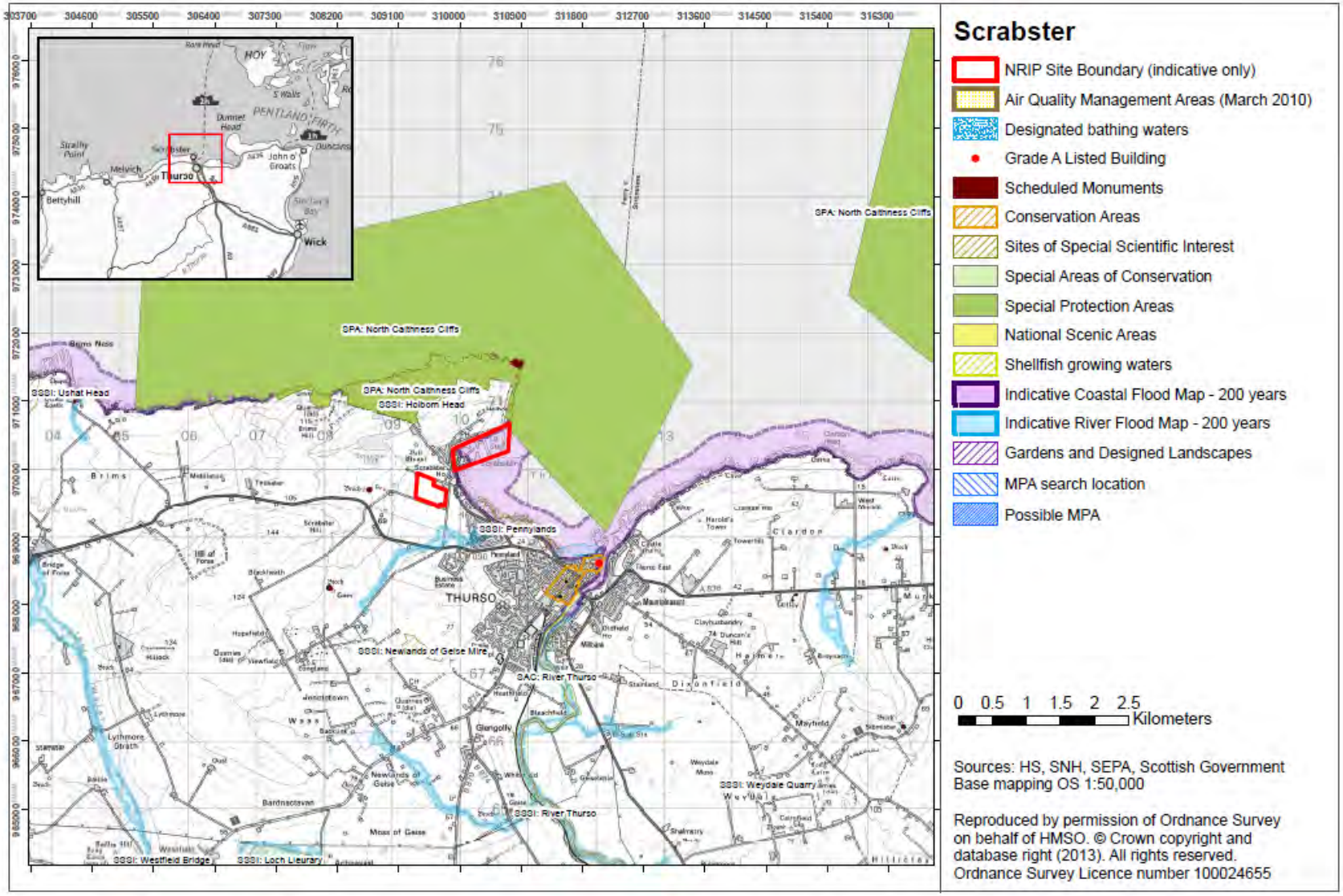
- effects on birds using adjacent SPA habitat, particularly red-throated diver.

Early discussions should be held with SNH.

Site Map: Scrabster



Wider Map: Scrabster



Assessment Table: Scrabster

SITE USE – Possible Manufacturing; Assembly/Construction and Installation; Operations and Maintenance

POTENTIAL DEVELOPMENT

Manufacturing
Within the existing port, re-use existing buildings, where possible, or provide new ones. (Note: building space may become available due to the harbour upgrade.) No further infrastructure upgrade required.

Assembly/Construction & Installation
- Within the existing port, re-use existing buildings, where possible, or provide new ones. (Note: building space may become available due to the harbour upgrade.) No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

Operations & Maintenance
- Within the existing port, re-use existing buildings, where possible, or provide new ones. (Note: building space may become available due to the harbour upgrade.) No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

See Section 3 of the Environmental Report for assumptions about wet storage.

ENVIRONMENTAL BASELINE – SCRABSTER

Biodiversity, flora and fauna –

North Caithness Cliffs SPA - Aggregations of breeding birds – razorbill, kittiwake, peregrine, puffin, seabird assemblage, guillemot and fulmar (approximately 1-2 km east of harbour).

Dunnet Head SSSI - Seabird colony (breeding), guillemot and maritime cliff (approximately 10 km east of harbour).

River Thurso SAC and SSSI – Atlantic salmon, fen, marsh, swamp and vascular plants (approximately 2.5 km south-east or harbour).

Newlands of Geise Mire SSSI – Fen, marsh, swamp and vascular plants (approximately 3 km south of harbour).
Seals – Potential designated haul-out site for grey seals are located to the east within the Pentland Firth, the nearest being at Gills Bay, Stroma North and Mell Head Skerry. Potential harbour seal haul-out sites are located throughout southern Orkney, the nearest being at Ness of Quoys within the Pentland Firth[8]. Indications are that the waters off the North Sutherland Coast and Pentland Firth are well used by both grey and harbour seals[9].

[8] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.

ENVIRONMENTAL BASELINE – SCRABSTER

European Protected Species – Cetaceans are likely to be passing through the area. Otters may be found using this area of coast.

Waterbirds – Areas of Search developed to identify possible marine SPAs are located in Orkney and the Moray Firth. While these areas do not as yet represent formal designations, they provide additional information for identifying important aggregations of waterbirds in Scotland and complement the existing network of SPAs[10].

Population and Human Health – Harbour is in close proximately to residential areas, the nearest approximately 100 m to the west and north.

Water & Marine Environment – Coastal waters classification (2011): Good.

Climatic Factors – The site is within an Indicative 200 year Flood Zone.

Air – No air quality issues identified.

Soil, Geology & Coastal Processes – **Holborn Head SSSI** – Palaeontology and supralittoral rock – Silurian – Devonian Chordata and maritime cliff, **Dunnet Head SSSI** – maritime cliff, and **Pennylands SSSI** – Palaeontology and stratigraphy – Silurian – Devonian chordata and non-marine Devonian – (approximately 0.5 km south-east of harbour). Sections of the North Sutherland Coast coastline (e.g. beaches, soft cliffs, etc.) have been identified as having the potential for erosion or accretion, including Thurso and Dunnet Bays. Accretion has been observed at Dunnet Bay (approximately 11 km east of the pier) and coastal erosion in Thurso Bay itself.

Cultural Heritage – Listed Buildings include Scrabster ice house and adjoining cottage (Category C Index Number 14955) within existing harbour area and Holborn Head lighthouse and keeper's house (Category B Index Number 14952) adjacent to existing harbour. Listed Building Scrabster House (Category C Index Number 14954) located adjacent to identified enterprise area. There are wreck sites both in Thurso Bay and the Pentland Firth to the north of the site.

Landscape / Seascape – No national designation identified.

Material Assets – Scrabster harbour supports other interests including fishing vessels and recreational vessels, and the ferry service from Scrabster to Stromness operates from here[11].

Thurso Bay (with three separate breaks) is regarded as one of the best surfing sites in the UK and has held national and international championships for

[9] SMRU (2013) Marine Mammal Scientific Support Research Programme MMSS/001/11, Grey and harbour seal usage maps [online] Available at: http://www.scotland.gov.uk/Resource/0043/00437053.pdf [accessed 5/12/2013]

[10] The Scottish Government (2011) Special Protection Areas (SPAs) [online] Available at: http://www.scotland.gov.uk/Topics/Environment/Wildlife-Habitats/protectedareas/NATURA/SPAs (accessed 5/4/2014)

[11] The Scottish Government (2011) Scotland's Marine Atlas: Information for the National Marine Plan, pg. 147 – 173.

ENVIRONMENTAL BASELINE – SCRABSTER
surfing, wave skiing and kayaking over the past few decades. The site lies approximately 2km to the south east of Scrabster Harbour. **Issues Scoped Out:** *Air* – There is likely to be increased boat traffic due to O&M activities, which could result in increased atmospheric emissions. However, given existing levels of boat movements, these additional emissions are unlikely to result in significant effects.

ASSESSMENT – SCRABSTER				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Birds - North Caithness Cliffs SPA, Dunnet Head SSSI, Areas of search	Potential disturbance (noise and human presence) from site operations and wet storage activities (if undertaken) to birds using the harbour area. Due to the nature of existing activities in the harbour, it is unlikely this will add significantly to existing levels of noise and disturbance.	Localised but unlikely to be significant. It is likely that pre-storage bird survey will be a requirement of the marine licensing process.	None required.	None.
Seals	Risk of corkscrew injury from slow-moving vessels with certain types of ducted propeller or those using dynamic positioning; disturbance to seal haul-out locations.	Death of individual seals may affect overall population numbers/ viability, given that the harbour species in particular is generally in decline; displacement of seals.	Avoid using vessels with ducted propellers for slow-speed activities, e.g. manoeuvring, particularly during breeding season. Avoid storage of devices near seal haul out locations during moulting times and breeding season if relevant.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
European Protected Species: otters	It is unlikely that proposed activities will add significantly to existing levels of noise and disturbance, due to the nature of existing activities in the harbour. Unlikely that otters, if they are using the harbour	No effects	None required.	None.

ASSESSMENT – SCRABSTER				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	area, will be further disturbed.			
European Protected Species: cetaceans	Risk of collision with vessels; entanglement in mooring lines (e.g. minke whale); disturbance and displacement	Risk of these events occurring is unclear, thus significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/viability	Avoid cetacean habitat and migration routes. Use high-visibility mooring lines.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided
Population / Human Health Residential developments within 100 m of site.	Noise disturbance during site operations. Due to the nature of existing activities in the harbour, it is unlikely this will add significantly to existing levels of noise and disturbance.	Localised	Site protocols and/or good neighbour agreements would set out conditions for controlling noise and/or disturbance from construction activities and site operations.	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
Water & Marine Environment Coastal waters classification	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed. Introduction of devices into the waterbody.	Effects are likely to be localised and temporary	Increased turbidity: as above. No mitigation proposed for temporary morphological effects.	Increased turbidity: as above. Temporary morphological effects.
Climatic Factors Site is within the Indicative 200 year Flood Zone.	Potential for the harbour and surrounds to be at risk of flooding from the sea.	This will be a permanent threat given the long-term impacts of climate change.	Ensuring suitable design measures to increase defensibility and mitigate adverse effects of potential sea level rises	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
	Increase in GHG emissions due to vessel movements associated with site operations.	Emissions from vessels are unlikely to contribute significantly to those from the existing Scottish fleet.	Vessel operators may wish to implement energy- and fuel-efficiency measures to reduce fuel consumption and consequent GHG emissions.	Emissions from vessels would continue but are unlikely to contribute significantly to those from the existing Scottish fleet.
Soil, Geology & Coastal Processes Holborn Head SSSI - Palaeontology and	Site activities on land will not affect the features of the SSSIs. Short-term anchorage or storage of	No significant adverse effect	None required	None

ASSESSMENT – SCRABSTER				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
supralittoral rock – Silurian – Devonian Chordata and maritime cliff and Dunnet Head SSSI - maritime cliff	devices directly on the seabed during O&M is unlikely to result in significant adverse effects on protected geodiversity features.			
Wave patterns and coastal processes	Site activities on land will not affect wave patterns and coastal processes. Given the vessel movements and numbers of devices assumed for this assessment, it is unlikely that changes to wave patterns would be such that they would result in significant alterations of coastal processes.	No significant adverse effect	None required	None
Cultural Heritage Listed Buildings in harbour environs and nearby area including Scrabster ice house and adjoining cottage, Holborn Head lighthouse and keeper's house and Scrabster House	As no new infrastructure is required, effects on the site or setting of these features are not anticipated.	No effect.	None	None
Wreck sites	Storage of devices could affect wreck sites through destruction of features.	Permanent loss of wreck features	Avoid storage on these areas.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Landscape / Seascape Residential developments within 100 m of site.	Residents in Scrabster are likely to have views of stored devices which are on or break the water surface.	Effects are likely to be local in nature and temporary, and are unlikely to be significant.	If necessary, locate devices in a sheltered bay away from overall views of Thurso Bay.	Assuming mitigation is implemented, the potential for significant adverse visual effects should be reduced.

ASSESSMENT – SCRABSTER				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Material Assets Harbour access	Possible effects on navigational safety, e.g. ferries and other vessels. Devices could block access to the harbour/ferry terminal and displace harbour users (e.g. require ferries to be re-routed).	Collisions could result in injury/death of human beings, oil spills etc. Inefficient operation of ferry terminal and/or ferries. Potential displacement of harbour activities.	Ensure that devices are located away from access points to the harbour. Wet storage site will need to be appropriately lit and/or marked. Liaison with MCA, Harbour Authority and other vessel operators to agree storage areas and navigable channels.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Fishing grounds	Possible disturbance and/or displacement of local fishing grounds by wet storage of devices.	Temporary loss of fishing grounds during storage operations. Potential displacement of fishing activities – adverse socio-economic and community effects; potential intensification of fishing elsewhere	Ensure that devices are located away from these areas. Liaison with Inshore Fisheries Group and/or local fishermen as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Recreational areas	Possible disturbance and/or displacement of recreational areas by wet storage of devices.	Temporary loss of recreational areas during storage operations, with concomitant local economic loss.	Ensure that devices are located away from these areas. Liaison with Royal Yachting Association Scotland as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Tourism and recreation	Possible disturbance and/or displacement of recreational users of Thurso Bay (specifically surfers and kayakers), with potential adverse socio-economic and community effects.	Effects from construction and operation are likely to be local in nature and intermittent, and are unlikely to impact Thurso Bay given its distance from Scrabster Harbour.	Ensure that devices are located away from these areas. Liaison with the Pentland Canoe Club, Scottish Canoe Association and the Scottish Surfing Federation, if required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
OTHER DEVELOPMENTS Ferry services and other marine users (e.g. fishing, commercial and recreational vessels) operate from Scrabster Harbour.				
Cumulative Effects	Possible cumulative effects with existing vessel traffic and anchorages in and around the			

ASSESSMENT – SCRABSTER				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	harbour identified. Assuming mitigation is implemented, the risk of significant adverse cumulative effects should be reduced.			

Implications for development:

The following requires further examination at the project level:

- effects on birds using harbour from nearby SPA and SSSI habitat. It is likely that pre-storage bird survey will be a requirement of the marine licensing process. Early discussions should be held with SNH.
- preparation and agreement of construction protocols/good neighbour agreements.
- need to alleviate flood risk through project planning and design.
- risk of disturbance to seal haul out locations and corkscrew seal injuries
- planning and design to avoid and/or reduce landscape/visual effects and effects on historic environment, including wrecks.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage

Early discussions should be held with SNH, SEPA, Historic Scotland, the Local Planning Authority, Harbour Authority, MCA, Inshore Fisheries Group and/or local fishermen, The Crown Estate, Royal Yachting Association Scotland and other marine recreation groups (Pentland Canoe Club, Scottish Canoe Association and the Scottish Surfing Federation), and vessel operators as required.

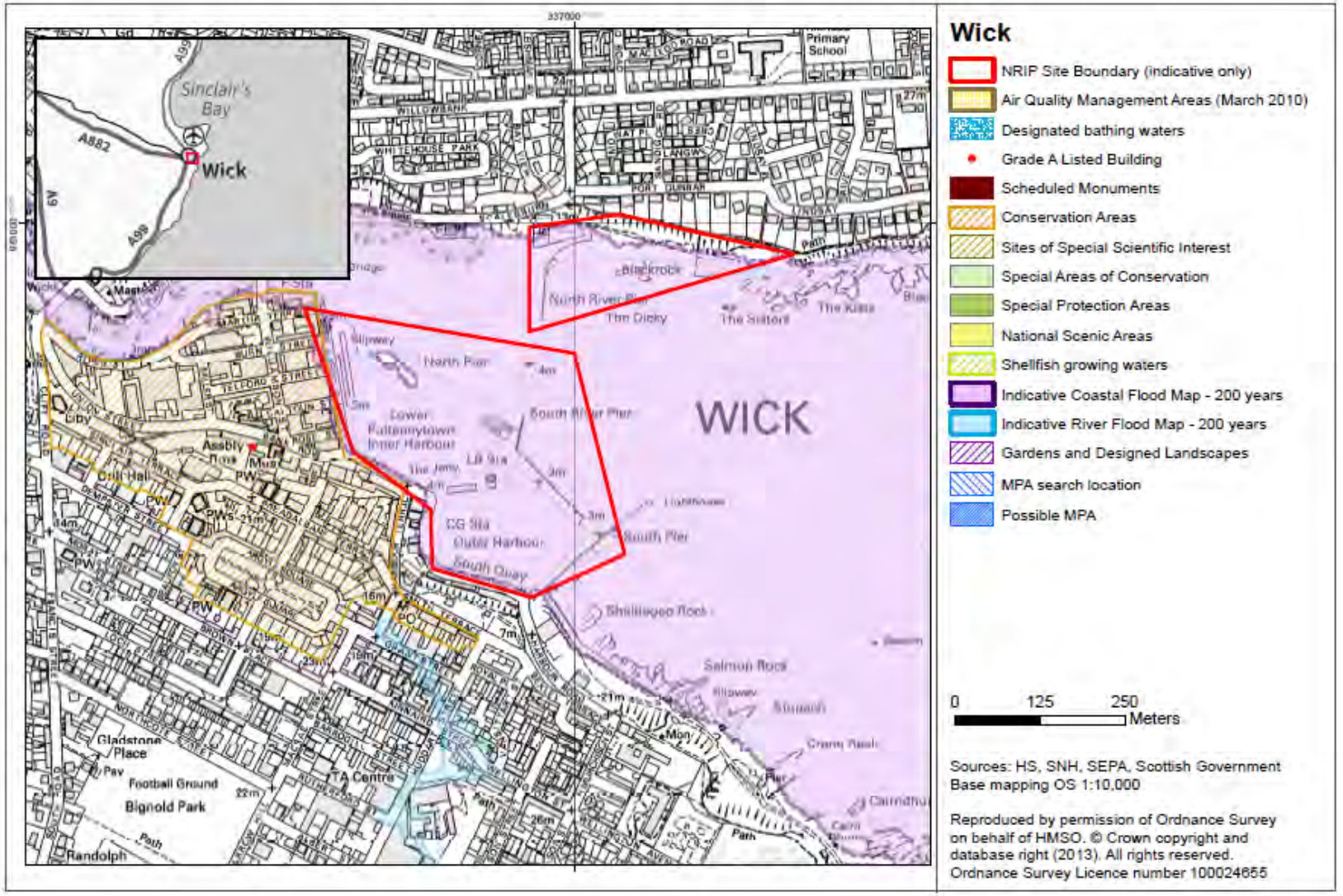
Habitats Regulations Appraisal

It is likely that Habitats Regulations Appraisal will be required at the project level, covering at least the following issues:

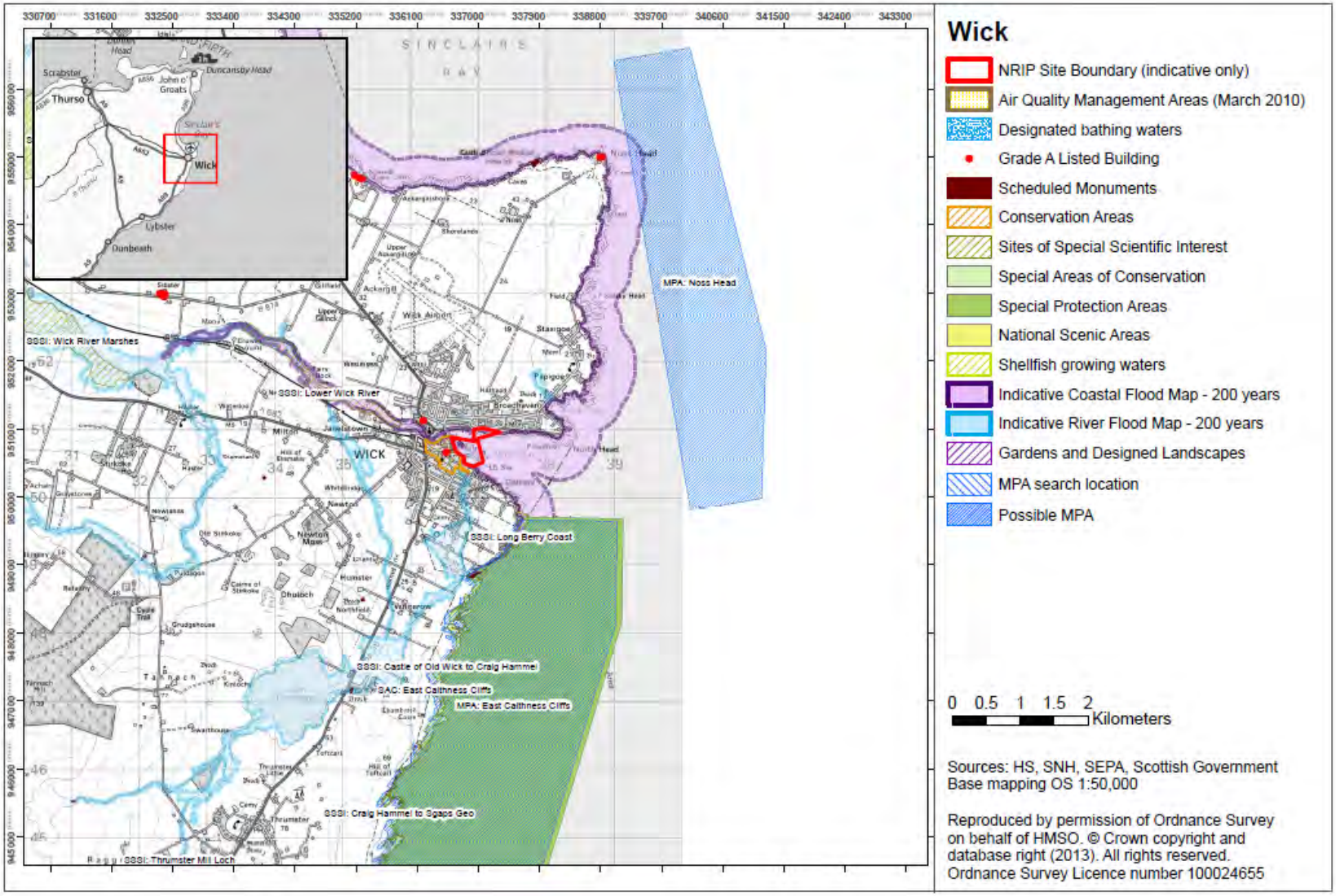
- effects of site operations on birds using habitat within the SPA

Early discussions should be held with SNH.

Site Map: Wick



Wider Map: Wick



Assessment Table: Wick

SITE USE – Assembly/Construction and Installation; Operations and Maintenance

POTENTIAL DEVELOPMENT

Assembly/Construction & Installation

- Within the existing port, re-use existing buildings, where possible, or provide new ones. No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

Operations & Maintenance

- Within the existing port, re-use existing buildings, where possible, or provide new ones. No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

See Section 3 of the Environmental Report for assumptions about wet storage.

ENVIRONMENTAL BASELINE – WICK

Biodiversity, flora and fauna –

East Caithness Cliffs SPA – Aggregations of breeding birds – seabird assemblage, cormorant, Northern fulmar, great black-backed gull, common guillemot, herring gull, black-legged kittiwake, peregrine, Atlantic puffin, razorbill and European shag (approximately 2 km south-east of harbour). The seaward extension extends approximately 2 km into the marine environment to include the seabed, water column and surface. The boundary of the SPA overlaps partly or wholly with the following biological SSSIs: Castle of Old Wick to Craig Hammel, Craig Hammel to Sgaps Geo, Dunbeath to Sgaps Geo, and Berriedale Cliffs.

East Caithness Cliffs MPA – black guillemot. The MPA comprises sea cliffs, between Wick and Helmsdale, and adjacent waters along the coast where black guillemot feed.

North Caithness Cliffs SPA - aggregations of breeding birds – fulmar, guillemot, kittiwake, peregrine, puffin, razorbill (approximately (approximately 15 km north of the harbour).

Caithness and Sutherland Peatlands SAC – variety of habitats including wetland (e.g. blanket bog) and water bodies – and otter. Comprises several discrete sites (approximately 10 km north and 7 km south-west of the harbour).

Caithness and Sutherland Peatlands SPA – aggregations of breeding birds – black-throated diver, common scoter, dunlin, golden eagle, golden plover, greenshank, hen harrier, merlin, red-throated diver, short-eared owl, wigeon and wood sandpiper. Comprises several discrete sites (approximately 10 km north and 7 km south-west of the harbour).

Caithness Lochs SPA – aggregations of breeding birds – Greenland white-fronted goose, greylag goose, whooper swan (approximately 8 km north of the harbour).

ENVIRONMENTAL BASELINE – WICK

Berriedale Cliffs SSSI – aggregations of breeding birds – fulmar, guillemot, kittiwake, razorbill, shag, seabird colony – and supralittoral rock (coast) – maritime cliff (approximately 25 km south-west of the harbour).

Craig Hammel to Sgaps Geo SSSI – aggregations of breeding birds – guillemot, kittiwake, razorbill, seabird colony – and supralittoral rock (coast) – maritime cliff (approximately 5 km south of the harbour).

Loch Heilen SSSI – aggregations of breeding birds – Greenland white-fronted goose, greylag goose, whooper swan (approximately 15 km north-west of the harbour).

Noss Head MPA – horse mussel beds. The horse mussel bed extends across most of the MPA.

Seals – Potential designated haul-out sites for both harbour and grey seals located to the north at the Pentland Firth (Gills Bay, Stroma North and Mell Head Skerry) and Dornoch Firth, Moray Firth and their surrounds to the south (Loch Fleet, Ardersier, Lothmore, etc.)[12]. Indications are that offshore waters ranging from the Moray Firth to the south and Pentland Firth and Orkney to the north are well used by both harbour and grey seals[13].

European Protected Species – Cetaceans are likely to be passing through the area. Otters may be found using this area of coast.

Waterbirds – Areas of Search developed to identify possible marine SPAs are located in Orkney and the Moray Firth. While these areas do not as yet represent formal designations, they provide additional information for identifying important aggregations of waterbirds in Scotland and complement the existing network of SPAs[14].

Population and human health – Harbour is located immediately adjacent to residential area. Local residents are likely to have views of Wick Bay.

Water & Marine Environment – Coastal waters classification (2011): High.

Climatic Factors – The site is within an Indicative 200 year Flood Zone.

Air – No air quality issues identified.

[12] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.
[13] SMRU (2013) Marine Mammal Scientific Support Research Programme MMSS/001/11, Grey and harbour seal usage maps [online] Available at: http://www.scotland.gov.uk/Resource/0043/00437053.pdf [accessed 5/12/2013]
[14] The Scottish Government (2011) Special Protection Areas (SPAs) [online] Available at: http://www.scotland.gov.uk/Topics/Environment/Wildlife-Habitats/protectedareas/NATURA/SPAs (accessed 5/4/2014)

ENVIRONMENTAL BASELINE – WICK

Soil, Geology & Coastal Processes – **Long Berry Coast SSSI** – Stratigraphy – non-marine Devonian, **Dunbeath to Sgaps Geo SSSI** - supralittoral rock (coast) – maritime cliff (approximately 12 km south-west of the harbour), **Castle of Old Wick to Craig Hammel SSSI** – supralittoral rock (coast) - maritime cliff (approximately 2 km south-east of harbour). Sections of the Wick Coast coastline have been identified as having the potential for erosion or accretion (e.g. beaches, soft cliffs, etc.), including Sinclair's Bay to the north of Wick. Accretion has been observed at Sinclair's Bay (approximately 5 km north of the harbour).

Cultural heritage – Listed Buildings in and around Wick harbour include the South Pier and North Pier lighthouses (Category B), the old fish market and a storehouse on Harbour Quay (both Category C) and clusters of Listed Buildings (various categories) in the nearby residential area. There are two Scheduled Monuments in the harbour environs: The Pap, a broch 350m east of Hillhead (No 578) (approximately 1 km north east of the harbour); and Cairn of Elsay, a broch, near Staxigoe (No 532) (approximately 3 km north east of the harbour). There are wreck sites both in Wick Bay and along the coastline to the north and south.

Landscape / Seascape – No national designation identified.

Material Assets – Wick Harbour supports fishing vessels; a marina for recreational vessels; cargo vessels; and the offshore renewable energy industry.

Issues Scoped Out:
Air – There is likely to be increased boat traffic due to the O&M activities, which could result in increased atmospheric emissions. However, given existing levels of boat movements, these additional emissions are unlikely to result in significant effects.
Landscape / Seascape –. A working harbour with existing buildings and marine infrastructure which support the fishing, offshore and leisure industries. Additional infrastructure and vessel movements unlikely to result in significant landscape or visual effects.

ASSESSMENT - WICK

Environmental Receptor	Effect	Characteristic	Mitigation	Residual Effects
Biodiversity, Flora and Fauna Birds – including East Caithness Cliffs SPA, East Caithness Cliffs MPA, various SPAs and SSSIs, Areas of search	Potential disturbance (noise and human presence) from site operations; presence of new features likely to disturb and possibly displace red-throated divers from feeding.	Due to the nature of existing activities in the harbour, it is unlikely this will add significantly to existing levels of noise and disturbance; effects from new features likely to be localised and temporary	Time storage activities and vessel movements to avoid breeding season, overwintering, etc.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.

ASSESSMENT - WICK				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Noss Head MPA	Risk of loss of and/or damage to sensitive benthic habitats from anchoring or storage of gravity devices directly on the seabed.	Effects may be temporary or longer term, depending on the ability of the habitat to recover from disturbance. Recovery will also be dependent on the number of devices, the methods of anchoring and storage location/duration.	Where vulnerable benthic habitats have been identified, the storage of devices should be avoided. It is likely that pre-storage benthic surveys will be required as part of the marine licensing process.	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
Seals	Risk of corkscrew injury from slow-moving vessels with certain types of ducted propeller or those using dynamic positioning; disturbance to seal haul-out locations.	Death of individual seals may affect overall population numbers/ viability, given that the harbour species in particular is generally in decline; displacement of seals.	Avoid using vessels with ducted propellers for slow-speed activities, e.g. manoeuvring, particularly during breeding season. Avoid storage of devices near seal haul out locations during moulting times and breeding season if relevant.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
European Protected Species: Cetaceans	Risk of collision with vessels; entanglement in mooring lines (e.g. minke whale); disturbance and displacement	Risk of these events occurring is unclear, thus significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/viability	Avoid cetacean habitat and migration routes. Use high-visibility mooring lines.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided
Otters: Caithness and Sutherland Peatlands SAC and elsewhere (European Protected Species)	Uncertain whether otter are using Wick Harbour. It is unlikely that proposed activities will add significantly to existing levels of noise and disturbance, due to the nature of existing activities in the harbour.	No effects	None required.	None.

ASSESSMENT - WICK				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Population / Human Health Residential developments within 100m of site.	Noise disturbance during site operations. Due to the nature of existing activities in the harbour, it is unlikely this will add significantly to existing levels of noise and disturbance.	Localised	Site protocols and/or good neighbour agreements would set out conditions for controlling noise and/or disturbance from construction activities and site operations.	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
Water & Marine Environment Coastal waters classification	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed. Introduction of devices into the waterbody.	Effects are likely to be localised and temporary	Increased turbidity: as above. No mitigation proposed for temporary morphological effects.	Increased turbidity: as above. Temporary morphological effects.
Climatic Factors Site is within an Indicative 200 year Flood Zone.	Potential for the harbour and piers to be at risk of flooding from the sea.	This will be a permanent threat given the long-term impacts of climate change.	Ensuring suitable design measures to increase defensibility and mitigate adverse effects of potential sea level rises	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
	Increase in GHG emissions due to vessel movements associated with site operations.	Emissions from vessels are unlikely to contribute significantly to those from the existing Scottish fleet.	Vessel operators may wish to implement energy- and fuel-efficiency measures to reduce fuel consumption and consequent GHG emissions.	Emissions from vessels would continue but are unlikely to contribute significantly to those from the existing Scottish fleet.
Soil, Geology & Coastal Processes Long Berry Coast SSSI and Sinclair's Bay	Potential damage to geological features from wet storage of devices. (Devices have the potential to result in some changes to wave energy dissipation and coastal processes.)	Effects of this will range from temporary to permanent depending on storage location/duration and frequency.	Locate devices away from this SSSI. Alternatively, implement sediment and erosion controls at SSSI during wet storage operations. If alternative locations are used, ensure that these do not affect sensitive benthic habitat (e.g. Noss Head MPA) or identified areas of	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.

ASSESSMENT - WICK				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
			erosion/accretion (e.g. Sinclair's Bay).	
Cultural Heritage Listed Buildings	As no new infrastructure is required, effects on the site or setting of these features are not anticipated.	No effect	None required	None
Scheduled Monuments	As no new infrastructure is required, and given the distance between the harbour and these features, no effects are anticipated.	None	None required	None
Wreck sites	Storage of devices could affect wreck sites through destruction of features.	Permanent loss of wreck features	Avoid storage on these areas.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Landscape / Seascape Residential developments within 100 m of site.	Residents in Wick are likely to have views of stored devices which are on or break the water surface.	Effects are likely to be local in nature and temporary, and are unlikely to be significant.	If necessary, locate devices in a sheltered bay away from overall views of Wick Bay.	Assuming mitigation is implemented, the potential for significant adverse visual effects should be reduced.
Material Assets Harbour access and Navigation	Possible effects on navigational safety, e.g. cargo and fishing vessels. Devices could block access to the harbour terminal and displace harbour users.	Collisions could result in injury/death of human beings, oil spills etc. Potential displacement of harbour activities.	Ensure that devices are located away from access points to the harbour. Wet storage site will need to be appropriately lit and/or marked. Liaison with MCA, Harbour Authority, and other vessel operators to agree storage areas and navigable channels.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Fishing grounds	Possible disturbance and/or displacement of local fishing grounds by wet storage of	Temporary loss of fishing grounds during storage operations.	Ensure that devices are located away from these areas. Liaison with Inshore	Assuming mitigation is implemented, the risk of significant adverse effects

ASSESSMENT - WICK				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	devices.	Potential displacement of fishing activities – adverse socio-economic and community effects; potential intensification of fishing elsewhere	Fisheries Group and/or local fishermen as required.	should be reduced.
Recreational areas	Possible disturbance and/or displacement of recreational areas by wet storage of devices.	Temporary loss of recreational areas during storage operations, with concomitant local economic loss.	Ensure that devices are located away from these areas. Liaison with Royal Yachting Association Scotland as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
OTHER DEVELOPMENT Upgrade of Wick Harbour – installation of heavy lifting equipment, dredging of channel to commercial quay				
Cumulative Effects	Assuming mitigation is implemented, the risk of significant adverse cumulative effects should be reduced.			

Implications for development:

The following requires further examination at the project level:

- effects on birds using harbour from nearby SPA, MPA and SSSI habitat. Early discussions should be held with SNH regarding timing, extent, location and duration of storage
- effects on protected biodiversity features of the MPA
- risk of disturbance to seal haul out locations and corkscrew injury to seals
- preparation and agreement of construction protocols/good neighbour agreements.
- need to alleviate flood risk through project planning and design.
- planning and design to avoid and/or reduce effects on wrecks. If wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage

Early discussions should be held with SNH, SEPA, Historic Scotland, the Local Planning Authority, Harbour Authority, MCA, Inshore Fisheries Group and/or local fishermen, Royal Yachting Association Scotland and other vessel operators as required.

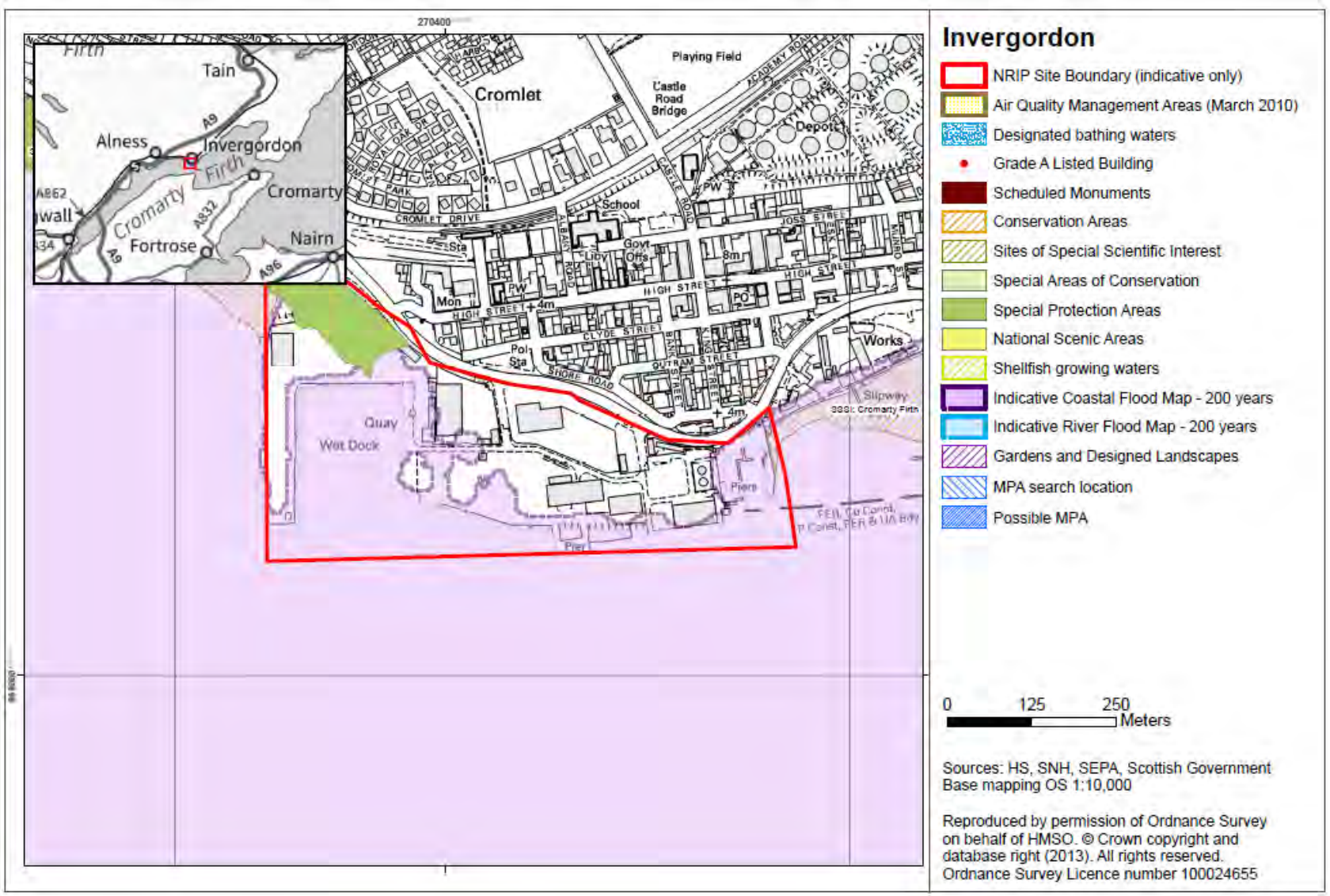
Habitats Regulations Appraisal

It is likely that Habitats Regulations Appraisal will be required at the project level, covering at least the following issues:

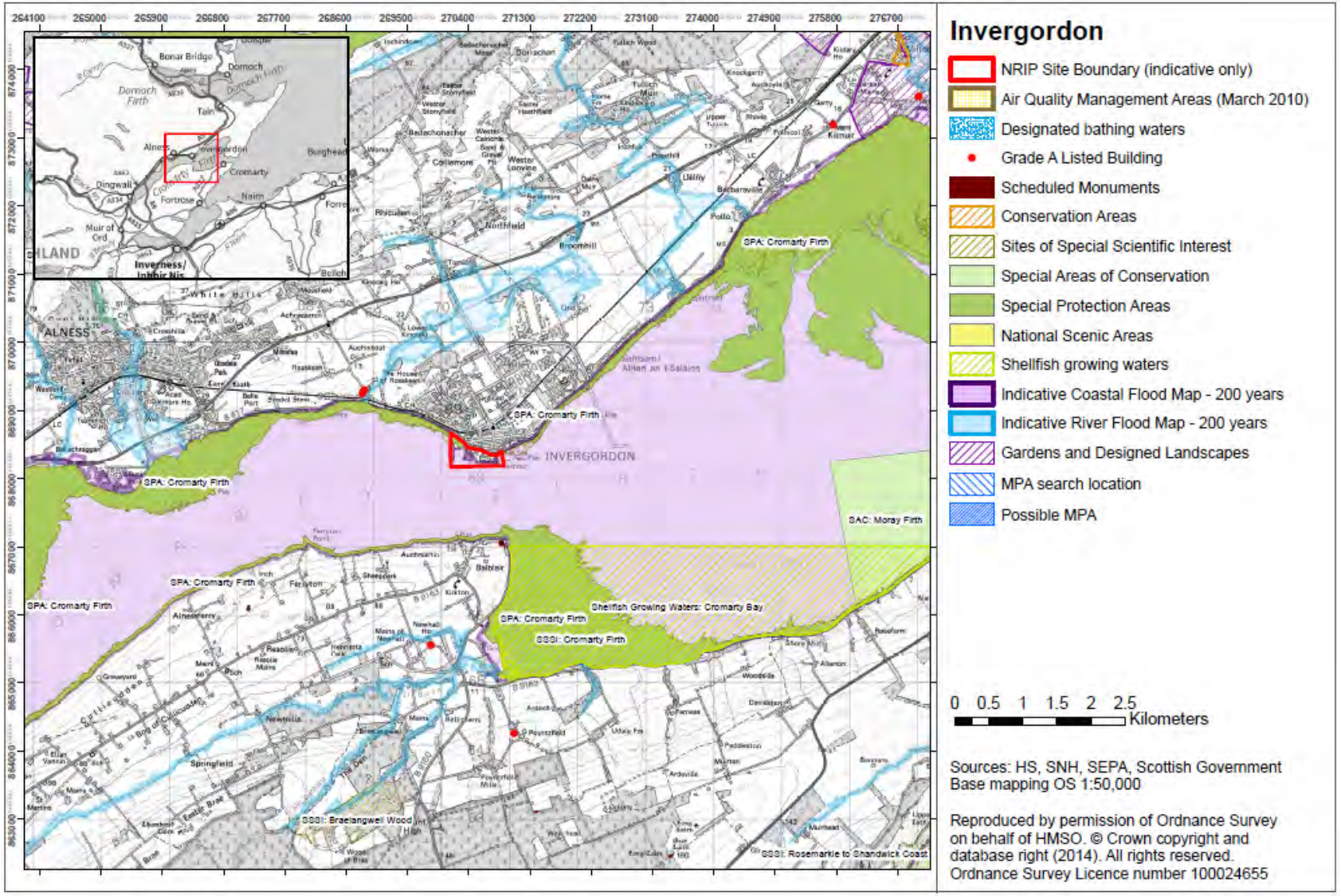
- disturbance of birds from noise and human presence
- disturbance of birds from wet storage of devices
- review of potential effects on otters using Wick Harbour

Early discussions should be held with SNH.

Site Map: Invergordon



Wider Map: Invergordon



Assessment Table: Invergordon

SITE USE- Manufacturing; Assembly/Construction and Installation; Operations and Maintenance

POTENTIAL DEVELOPMENT

Manufacturing
Within the existing port, re-use existing buildings, where possible, or provide new ones. No further infrastructure upgrade required.

Assembly/Construction & Installation
- Within the existing port, re-use existing buildings, where possible, or provide new ones. No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

Operations & Maintenance
- Within the existing port, re-use existing buildings, where possible, or provide new ones. No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

See Section 3 of the Environmental Report for assumptions about wet storage.

ENVIRONMENTAL BASELINE – INVERGORDON

Biodiversity, flora and fauna –

Cromarty Firth SPA/RAMSAR – aggregations of breeding birds – osprey, common tern; aggregations of non-breeding birds – waterfowl assemblage, dunlin, greylag goose, knot, pintail, red-breasted merganser, redshank, scaup and whooper swan.

Cromarty Firth SSSI - Non-breeding birds – bar-tailed godwit, red breasted merganer, redshank, whooper swan, wigeon, salt marsh, mudflats and sandflats.

Inner Moray Firth SPA – aggregations of breeding birds – Common tern, osprey; aggregations of non-breeding birds - oystercatcher, teal, waterfowl assemblage, bar-tailed godwit, cormorant, curlew, goldeneye, goosander

Moray Firth SAC - Subtidal sandbanks and bottlenose dolphin.

Morangie Forest SPA – breeding capercaillie – 2 discrete areas – approximately 7 km north and 6 km north-west of Invergordon.

Novar SPA – breeding capercaillie – approximately 9 km west of Invergordon.

Dornoch Firth and Morrich More SAC – marine inshore sublittoral rock (reefs); marine inshore sublittoral sediment (subtidal sandbanks); coastal littoral sediment (Glasswort and other annuals colonising mud and sand; Atlantic salt meadows); marine littoral sediment (estuaries; intertidal mudflats and sandflats); otter; harbour seal; coastal supralittoral sediment (coastal dune heathland; dunes with juniper thickets

ENVIRONMENTAL BASELINE – INVERGORDON

Dornoch Firth and Loch Fleet SPA – aggregations of breeding birds – Osprey; aggregations of non-breeding birds – Oystercatcher, Teal, Waterfowl assemblage, Bar-tailed godwit, Curlew, Dunlin, Greylag goose, Wigeon. Approximately 15 km north and north-east of Invergordon.

Morrich More SSSI - aggregations of non-breeding birds - bar-tailed godwit, curlew, teal, wigeon; breeding bird assemblage; coastal littoral sediment (saltmarsh); invertebrate assemblage; coastal supralittoral sediment (sand dunes); vascular plant assemblage. Approximately 15 km north and north-east of Invergordon.

Loch Eye SPA/SSSI – greylag goose, whooper swan (non-breeding). SSSI also supports eutrophic loch. Approximately 12 km north-east of Invergordon.

Seals – Potential designated haul-out site for harbour seals in Ardersier, Inner Beauly Firth, Findhorn and Loch Fleet, the nearest located near Foulis Ferry, and grey seals at Lothmore between Helmsdale and Brora. The nearest Dornoch Firth located up the coast to the north of the site has been designated as an SAC for harbour seal interests, amongst other features. Indications are that the Cromarty Firth, Dornoch Firth and Moray Firth are well used by both harbour and grey seals[15].

European Protected Species – Cetaceans are likely to be passing through the area. Moray Firth SAC is designated for bottlenose dolphins. Otters may be found using this area of coast.

Waterbirds – An Area of Search developed to identify a possible marine SPA is located in the Moray Firth. While these areas do not as yet represent formal designations, they provide additional information for identifying important aggregations of waterbirds in Scotland and complement the existing network of SPAs[16].

Population and Human Health – Harbour is located adjacent to a residential area.

Water & Marine Environment – Estuary waters classified in 2011 as medium/high[17]. Cromarty Bay, across the firth from Invergordon, is designated as a Shellfish Water[18].

Climatic Factors – The site is within an Indicative 200 year Flood Zone.

Air – No air quality issues identified.

[15] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.
[16] The Scottish Government (2011) Special Protection Areas (SPAs) [online] Available at: http://www.scotland.gov.uk/Topics/Environment/Wildlife-Habitats/protectedareas/NATURA/SPAs (accessed 5/4/2014)
[17] SEPA (undated) Water classification results [online] Available at: http://www.sepa.org.uk/water/monitoring_and_classification/classification/classification_results.aspx (accessed 9/12/2013)
[18] Site 11 of Shellfish Water Designations 2013 – Cromarty Bay.

ENVIRONMENTAL BASELINE – INVERGORDON

Soil, Geology & Coastal Processes – Morrich More SSSI - Coastal Geomorphology of Scotland (approximately 12 km north of Invergordon). Cromarty Firth SSSI contains salt marsh, mudflats and sandflats (approximately 500 m east of the harbour).
Much of the Cromarty Firth coastline have been identified as having the potential for erosion or accretion (e.g. beaches, soft cliffs, etc.). Coastal erosion has been identified within the Firth to the west of the harbour, and at Nigg Bay to the east of the harbour.

Cultural heritage – No Scheduled Monuments. Numerous Listed Buildings in and around the High Street area. Numerous wreck sites in the Cromarty Firth and in the waters off Invergordon.

Landscape / seascape – No national designation. Dornoch Firth NSA is approximately 15 km north of Invergordon. Residents in Invergordon may have views of the Cromarty Firth.

Material Assets – The harbour supports oil tankers, rigs, and cruise liners. The existing port is to be upgraded as follows: the widening of the existing finger of the Queens Dock at Invergordon Service Base, and the construction of a berth structure for the south end of the finger, including dredging and sea disposal at "Sutors" disposal site, piling, rock armouring, land reclamation and block paving[19].

There are no aquaculture interests in the Cromarty Firth. The waters around Invergordon support demersal fishing and shellfish, both trawling (Nephrops) and static gear (Nephrops). There is a RYA light recreational cruising route that runs through the Cromarty Firth and connects to a heavy recreational cruising route in the Moray Firth; the nearest marinas are in Nairn and Inverness.

Issues Scoped Out:
Air – There is likely to be increased boat traffic due to the movement of devices, which could result in increased atmospheric emissions. However, given existing levels of boat movements, these additional emissions are unlikely to result in significant effects.

[19] Details of the project are available at http://www.scotland.gov.uk/Topics/marine/Licensing/marine/scoping/Invergordon

ASSESSMENT – INVERGORDON				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Birds – Cromarty Firth SPA/RAMSAR/SSSI, Inner Moray Firth SPA, Dornoch Firth and Loch Fleet SPA, Morrich More SSSI, Loch Eye SPA/SSSI, Area of Search	Potential disturbance (vessel noise and human presence) from wet storage activities. Presence of new features may disturb and possibly displace birds from feeding.	Temporary, depending on location, duration and frequency of activity.	Time storage activities and vessel movements to avoid bird breeding season, overwintering, etc.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Breeding capercaillie (Morangie Forest SPA, Novar SPA)	Capercaillie will not be using habitat in the environs of the harbour. No effects are anticipated.	No effect	None required	None
Salt marsh, mudflats and sandflats – Cromarty Firth SSSI	Wet storage of devices in these areas could result in destruction of habitat features, with consequent effects for birds using this habitat.	Effects of this will range from temporary to permanent depending on storage location/duration and frequency	Avoid wet storage of devices in these areas.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Seals including those from Dornoch Firth and Morrich More SAC	Risk of corkscrew injury from slow-moving vessels with certain types of ducted propeller or those using dynamic positioning; disturbance to seal haul-out locations.	Death of individual seals may affect overall population numbers/ viability, given that the harbour species in particular is generally in decline; displacement of seals.	Avoid using vessels with ducted propellers for slow-speed activities, e.g. manoeuvring, particularly during breeding season. Avoid storage of devices near seal haul out locations during moulting times and breeding season if relevant.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
Otters: Dornoch Firth and Morrich More SAC and elsewhere	It is unlikely that proposed activities will add significantly to existing levels of noise and	No effects	None required.	None.

ASSESSMENT – INVERGORDON				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
(European Protected Species)	disturbance, due to the nature of existing activities in the harbour. Unlikely that otters will be affected (if they are using the harbour area)			
Other European Protected Species: cetaceans (including bottlenose dolphins in Moray Firth SAC)	Risk of collision with vessels; entanglement in mooring lines (e.g. minke whale); disturbance and displacement	Risk of these events occurring is unclear, thus significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/viability	Avoid cetacean habitat, known "hot-spot" locations and migration routes. Use high-visibility mooring lines.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided
Population / Human Health Residential developments within 100 m of site.	Noise disturbance during site operations. Due to the nature of existing activities in the harbour, it is unlikely this will add significantly to existing levels of noise and disturbance.	Localised	Site protocols and/or good neighbour agreements would set out conditions for controlling noise and/or disturbance from construction activities and site operations.	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
Water & Marine Environment Estuary waters classification	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed. Introduction of devices into the waterbody.	Effects are likely to be localised and temporary	Increased turbidity: as above. No mitigation proposed for temporary morphological effects.	Increased turbidity: as above. Temporary morphological effects.
Designated shellfish waters	Designated shellfish waters are on the other side of Cromarty Firth, so no effects are anticipated.	No effects	None required	None
Climatic Factors Site is within an Indicative 200 year Flood Zone	Potential to be at risk of flooding from the sea	This will be a permanent threat given the long-term impacts of climate change.	Ensuring suitable design measures to increase defensibility and mitigate adverse effects of potential sea level rises	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.

ASSESSMENT – INVERGORDON				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	Increase in GHG emissions due to vessel movements associated with O&M.	Emissions from vessels are unlikely to contribute significantly to those from the existing Scottish fleet.	Vessel operators may wish to implement energy- and fuel-efficiency measures to reduce fuel consumption and consequent GHG emissions.	Emissions from vessels would continue but are unlikely to contribute significantly to those from the existing Scottish fleet.
Soil, Geology & Coastal Processes Cromarty Firth SSSI - salt marsh, mudflats and sandflats. Coastal processes.	Potential damage to geological features from wet storage of devices, if undertaken. (Devices have the potential to result in some changes to wave energy dissipation and coastal processes.)	Effects of this will range from temporary to permanent depending on storage location/duration and frequency.	Locate devices away from this SSSI and areas of identified erosion/accretion (i.e. Nigg Bay). Alternatively, implement sediment and erosion controls at SSSI during wet storage operations.	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
Cultural Heritage Wreck sites	Storage of devices could affect wreck sites through destruction of features.	Permanent loss of wreck features	Avoid storage on these areas.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Listed Buildings in and around the High Street	Listed Buildings are well away from the port area. Any new shed or laydown area would be within the existing port, so the site and setting of the Listed Buildings will not be affected.	No effect	None required	None
Landscape/Seascape Dornoch Firth NSA Residential developments within 100 m of site	It is unlikely that O&M operations and/or storage would affect the special qualities of the National Scenic Area, given the distance of the NSA from Invergordon. Storage of devices which are on or break the water surface	Effects are likely to be local in nature and temporary, and are unlikely to be significant.	At the local level, it may be desirable to locate devices in a sheltered bay away from Invergordon. Avoid locations designated for nature conservation.	Assuming mitigation is implemented, the potential for significant adverse effects at the local level should be reduced.

ASSESSMENT – INVERGORDON				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	may have adverse local landscape and visual effects.			
Material Assets Harbour access and Navigation	Possible effects on navigational safety, e.g. cargo and fishing vessels. Devices could block access to the harbour terminal and displace harbour users.	Collisions could result in injury/death of human beings, oil spills etc. Potential displacement of harbour activities.	Ensure that devices are located away from access points to the harbour. Wet storage site will need to be appropriately lit and/or marked. Liaison with MCA, Harbour Authority, and other vessel operators to agree storage areas and navigable channels.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Fishing grounds	Possible disturbance and/or displacement of fishing from local grounds by wet storage of devices.	Temporary loss of fishing grounds during storage operations. Potential displacement of fishing activities – adverse socio-economic and community effects; potential intensification of fishing elsewhere	Ensure that devices are located away from these areas. Liaison with Inshore Fisheries Group and/or local fishermen as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Recreational areas	Possible disturbance and/or displacement of recreational areas by wet storage of devices.	Temporary loss of recreational areas during storage operations, with concomitant local economic loss.	Ensure that devices are located away from these areas. Liaison with Royal Yachting Association Scotland as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
OTHER DEVELOPMENTS Upgrade of existing harbour. Port developments at Nigg and Ardersier.				
Cumulative Effects	Potential for adverse cumulative effects seals (corkscrew injuries) and bottlenose dolphins. Early discussions should be held with SNH. Potential for adverse cumulative effects on fishing and recreational activities. Early discussions should be held with Inshore Fisheries Groups and/or local fishermen, and with Royal Yachting Association Scotland.			

Implications for development:
The following requires further examination at the project level:

- effects on birds. Early discussions should be held with SNH regarding timing, extent, location and duration of wet storage.
- risk of disturbance to seal haul out locations and corkscrew seal injuries.
- risk of noise disturbance/collisions with bottlenose dolphins.
- need to alleviate flood risk through project planning and design.
- planning and design to avoid and/or reduce effects on landscape/seascape and/or wrecks
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage

Early discussions should be held with SNH, SEPA, Historic Scotland, the Local Planning Authority, Harbour Authority, MCA, Inshore Fisheries Group and/or local fishermen, Royal Yachting Association Scotland, and other vessel operators as required.

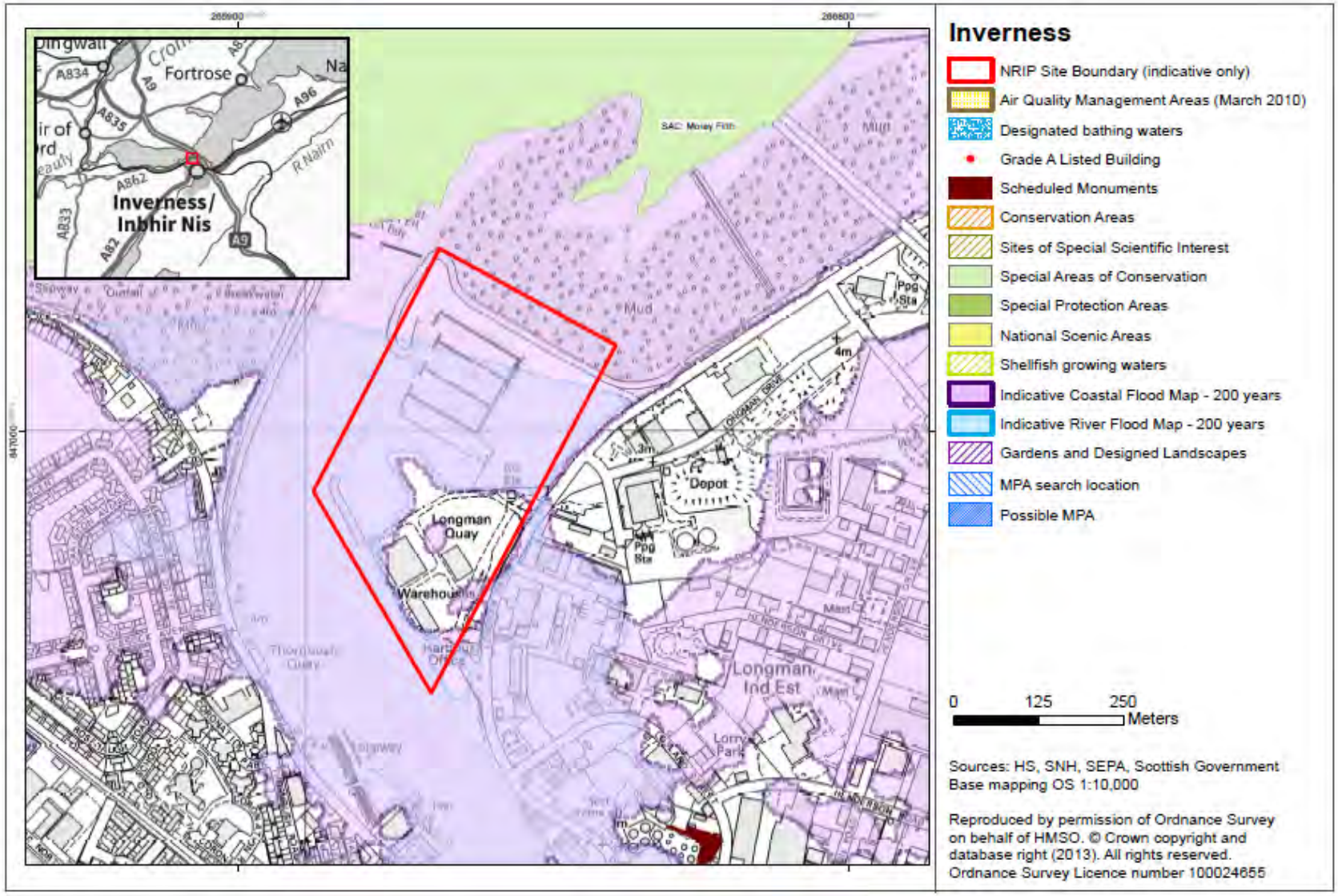
Habitats Regulations Appraisal

It is likely that Habitats Regulations Appraisal will be required at the project level, covering at least the following issues:

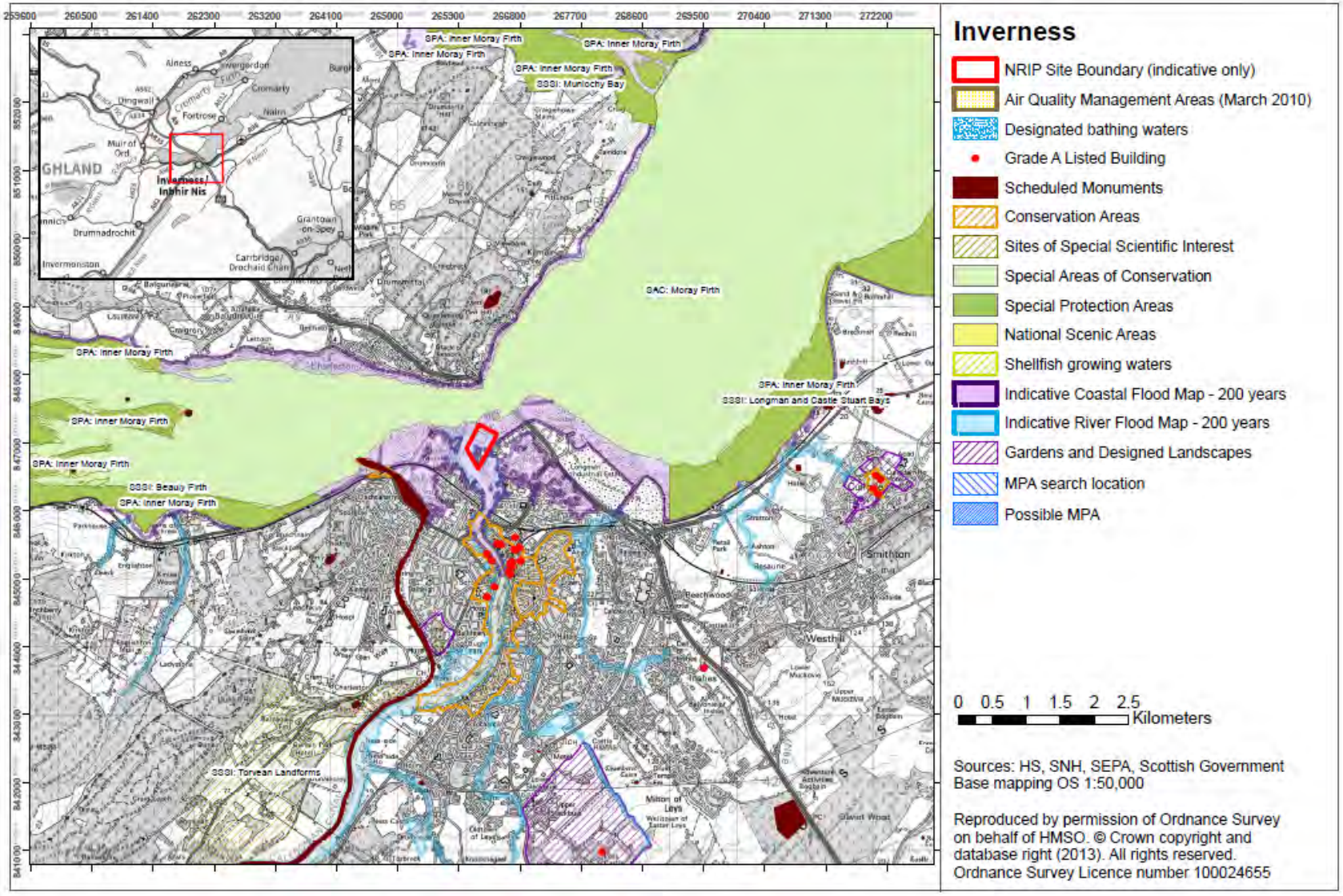
- effects of O&M and/or wet storage activities on birds from nearby SPAs.
- effects of O&M and/or wet storage activities on seals from nearby SAC.
- effects of O&M and/or wet storage activities on bottlenose dolphins from nearby SAC.

Early discussions should be held with SNH.

Site Map: Inverness



Wider Map: Inverness



Assessment Table: Inverness

SITE USE – Assembly/Construction and Installation; Operations and Maintenance

POTENTIAL DEVELOPMENT

Possible Assembly/Construction & Installation

- Within the existing port, re-use existing buildings, where possible, or provide new ones. No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

Operations & Maintenance

- Within the existing port, re-use existing buildings, where possible, or provide new ones. No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

See Section 3 of the Environmental Report for assumptions about wet storage.

ENVIRONMENTAL BASELINE – INVERNESS

Biodiversity, Flora & Fauna –

Beauly Firth SSSI - Aggregations of non-breeding birds, littoral sediment (coast) and vascular plants – goosander, greylag goose, red-breasted merganser, saltmarsh and vascular plant assemblage (approximately 3 km west of harbour).

Longman and Castle Stewart Bays SSSI - Aggregations of non-breeding birds and littoral sediment – cormorant, goldeneye, red-breasted merganser, redshank, wigeon, saltmarsh, eelgrass beds and mudflats (approximately 3 km east of harbour).

Inner Moray Firth SPA/RAMSAR - Aggregations of breeding and non-breeding birds – osprey, common tern, goldeneye, goosander, greylag goose, red-breasted merganser, redshank, scaup, wigeon and bar-tailed godwit (approximately 3 km east and west of harbour).

Moray Firth SAC – Inshore sublittoral sediment (coast) and mammals – subtidal sandbanks and bottlenose dolphins (all the waters around the harbour are designated as SAC).

River Moriston SAC – Atlantic salmon and freshwater pearl mussel (approximately 40 km south west of the site).

Munlochy Bay SSSI – Aggregations of non-breeding birds and littoral sediment - Greylag goose, wigeon, saltmarsh and mudflats (approximately 5.5 km north-east of the harbour).

ENVIRONMENTAL BASELINE – INVERNESS

Seals – potential designated haul-out site for harbour seals in Ardersier, Inner Beauly Firth, Findhorn and Loch Fleet, and grey seals at Lothmore between Helmsdale and Brora. Indications are that the Moray Firth, Inner Firth and Beauly Firth are well used by both harbour and grey seals[20].

European Protected Species – cetaceans and Atlantic salmon are likely to be passing through the area. Otters may be found using this area of coast.

Waterbirds – An Area of Search developed to identify a possible marine SPA is located in Moray Firth. While these areas do not as yet represent formal designations, they provide additional information for identifying important aggregations of waterbirds in Scotland and complement the existing network of SPAs[21].

Population and Human Health – Harbour located in residential area.

Water & Marine Environment – The transitional waters of the Beauly Firth as classified as good/high[22].

Climatic Factors – The site is within an Indicative 200 year Flood Zone.

Air – No air quality issues identified.

Soil, Geology and Coastal Processes – **Moray Firth SAC** – Inshore sublittoral sediment (coast) – subtidal sandbanks.
Much of the Inner Moray Firth and Beauly Firth coastlines have been identified as having the potential for erosion or accretion (e.g. beaches, soft cliffs, etc.). Coastal erosion and accretion have been identified at numerous locations on the southern side of the Firth to the east and west of the harbour respectively.

Cultural Heritage – Scheduled Monuments identified include the remains of Cromwell's fort (SM953) and Listed Building – Clock Tower (Category B Index Number 35193) located approximately 500 m south-east of existing harbour area. Various other listed buildings are located in nearby residential areas. Longmore Quay (Canmore ID 280004) is located on the site. Numerous other features have been identified near to the site, including the Western and Eastern Breakwaters (Canmore ID 280002 and 280003) located adjacent to the site to the west. Several wreck sites were identified within the Beauly and Moray Firths, the nearest located approximately 800 m west of the harbour near Clachnaharry and some 1 km north-east of the site in the Inner Moray Firth.

Landscape / Seascape – No national designation.

[20] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.
[21] The Scottish Government (2011) Special Protection Areas (SPAs) [online] Available at: http://www.scotland.gov.uk/Topics/Environment/Wildlife-Habitats/protectedareas/NATURA/SPAs (accessed 5/4/2014)
[22] SEPA (undated) Water classification results [online] Available at: http://www.sepa.org.uk/water/monitoring_and_classification/classification/classification_results.aspx (accessed 9/12/2013)

ENVIRONMENTAL BASELINE – INVERNESS
Material Assets – Inverness Marina is located within the proposed site. The Coastguard operates from Longman Drive and recreational vessels use the marina. **Issues Scoped Out**: *Air* – There is likely to be increased boat traffic due to O&M activities, which could result in increased atmospheric emissions. However, given existing levels of boat movements, these additional emissions are unlikely to result in significant effects.

ASSESSMENT – INVERNESS				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora & Fauna Breeding and non-breeding birds – Beauly Firth and Longman and Castle Stewart Bays SSSI, Inner Moray Firth SPA/RAMSAR, Area of Search	Potential disturbance (noise and human presence) from site operations to birds using the harbour area. Due to the nature of existing activities in the harbour, it is unlikely this will add significantly to existing levels of noise and disturbance. Presence of new features (e.g. wet storage activities) may disturb and possibly displace birds from feeding.	Temporary, depending on location, duration and frequency of activity.	Time storage activities and vessel movements to avoid bird breeding season, overwintering, etc.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Seals	Risk of corkscrew injury from slow-moving vessels with certain types of ducted propeller or those using dynamic positioning; disturbance to seal haul-out locations.	Death of individual seals may affect overall population numbers/ viability, given that the harbour species in particular is generally in decline; displacement of seals.	Avoid using vessels with ducted propellers for slow-speed activities, e.g. manoeuvring, particularly during breeding season. Avoid storage of devices near seal haul out locations during moulting times and breeding season if relevant.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
European Protected Species: otters	It is unlikely that proposed activities will add significantly to existing levels of noise and disturbance, due to the nature	No effects	None required.	None.

ASSESSMENT – INVERNESS				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	of existing activities in the harbour. Otter unlikely to be affected (if they are using the harbour area).			
Other European Protected Species: cetaceans (including bottlenose dolphins in Moray Firth SAC), Atlantic salmon	Risk of collision of cetaceans with vessels; entanglement in mooring lines (e.g. minke whale); disturbance and displacement. Given current levels of harbour and vessel activity, there is unlikely to be a significant effect on Atlantic salmon interests or secondary impacts on other designated features (e.g. freshwater pearl mussel interests).	Risk of these events occurring is unclear, thus significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/viability	Avoid cetacean habitat and migration routes. Use high-visibility mooring lines. Avoid Atlantic salmon migration periods.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided
Water & Marine Environment Transitional waters classification	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed. Introduction of devices into the waterbody.	Effects are likely to be localised and temporary	Increased turbidity: as above. No mitigation proposed for temporary morphological effects.	Increased turbidity: as above. Temporary morphological effects.
Population and Human Health Residential developments within 100 m of site.	Noise disturbance during site operations. Due to the nature of existing activities in the harbour, it is unlikely this will add significantly to existing levels of noise and disturbance.	Localised	Site protocols and/or good neighbour agreements would set out conditions for controlling noise and/or disturbance from construction activities and site operations.	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
Climatic Factors Site is within the Indicative 200 year Flood Zone.	Potential for the Inverness site to be at risk of flooding from the sea.	This will be a permanent threat given the long-term impacts of climate change and the potential volatility this	Ensuring suitable design measures to increase defensibility and mitigate adverse effects of potential	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.

ASSESSMENT – INVERNESS				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
		could have on micro-climates.	sea level rises	
	Increase in GHG emissions due to vessel movements associated with O&M.	Emissions from vessels are unlikely to contribute significantly to those from the existing Scottish fleet.	O&M vessel operators may wish to implement energy- and fuel-efficiency measures to reduce fuel consumption and consequent GHG emissions.	Emissions from vessels would continue but are unlikely to contribute significantly to those from the existing Scottish fleet.
Soil, Geology & Coastal Processes Inshore sublittoral sediment (coast) – subtidal sandbanks – Moray Firth SAC Coastal processes	Potential damage to geological features from wet storage of devices. (Devices have the potential to result in some changes to wave energy dissipation and coastal processes.)	Effects of this will range from temporary to permanent depending on storage location/duration and frequency.	Locate devices away from this these features and from areas of known erosion/accretion. It is likely that a seabed survey would be undertaken as part of the marine licensing process.	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
Cultural Heritage Scheduled Monument and Listed Buildings.	As no new site development works are proposed, no significant effects are likely. Storage of devices which are on or break the water surface is unlikely to affect the setting of the listed buildings or other historic features.	None.	None.	No residual effects are considered likely.
Wreck sites	Storage of devices could affect wreck sites through destruction of features.	Permanent loss of wreck features	Avoid storage on these areas.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Landscape / Seascape Residential developments within 100 m of site.	Residents are likely to have views of stored devices which are on or break the water surface.	Effects are likely to be local in nature and temporary, and are unlikely to be significant.	If necessary, locate devices in sheltered waters to the west or north of the site. This could affect the biodiversity features of	Assuming mitigation is implemented, the potential for significant adverse visual effects should be reduced.

ASSESSMENT – INVERNESS				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
			nearby SPAs and SACs, and locations should be selected to avoid this.	
Material Assets Harbour access	Possible effects on navigational safety, e.g. recreational vessels, Coastguard, etc. Devices could block access to the marina and displace harbour users.	Collisions could result in injury/death of human beings, oil spills etc. Inefficient operation of the marina. Potential displacement of harbour activities.	Ensure that devices are located away from access points to the marina. Wet storage site will need to be appropriately lit and/or marked. Liaison with MCA, Harbour Authority, Coastguard and other vessel operators to agree storage areas and navigable channels .	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Recreational areas	Possible disturbance and/or displacement of recreational areas by wet storage of devices.	Temporary loss of recreational areas during storage operations, with concomitant local economic loss.	Ensure that devices are located away from these areas. Liaison with Royal Yachting Association Scotland as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
OTHER DEVELOPMENTS Activities in proximity to the proposed site include Inverness Marina and Coastguard operations.				
Cumulative Effects	Possible cumulative effect with existing vessel traffic within Moray and Beauly Firths, and operations of the marina and Coastguard at the site. Potential for cumulative effects on birds using nearby SPA/SSSI habitat and on marine mammals (i.e. corkscrew seal injuries). Potential for cumulative effects on geological features (e.g. changes to sediment dynamics/coastal processes). However, significant adverse effects potentially arising from site operations could be avoided through appropriate mitigation.			

Implications for development:

The following requires further examination at the project level:

- effects on birds using nearby SPA/SSSI habitat. Early discussions should be held with SNH regarding timing, extent, location and duration of storage.
- effects on geological features in SAC habitats. Early discussions should be held with SNH regarding timing, extent, location and duration of storage.
- risk of disturbance to seal haul out locations and corkscrew injury to seals.
- need to alleviate flood risk through project planning and design.
- planning and design to avoid and/or reduce landscape/visual effects and effects on historic environment, including wrecks.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage

Early discussions should be held with SNH, SEPA, Historic Scotland, the Local Planning Authority, Harbour Authority, MCA, Inshore Fisheries Group and/or local fishermen, The Crown Estate, Royal Yachting Association Scotland and other vessel operators as required.

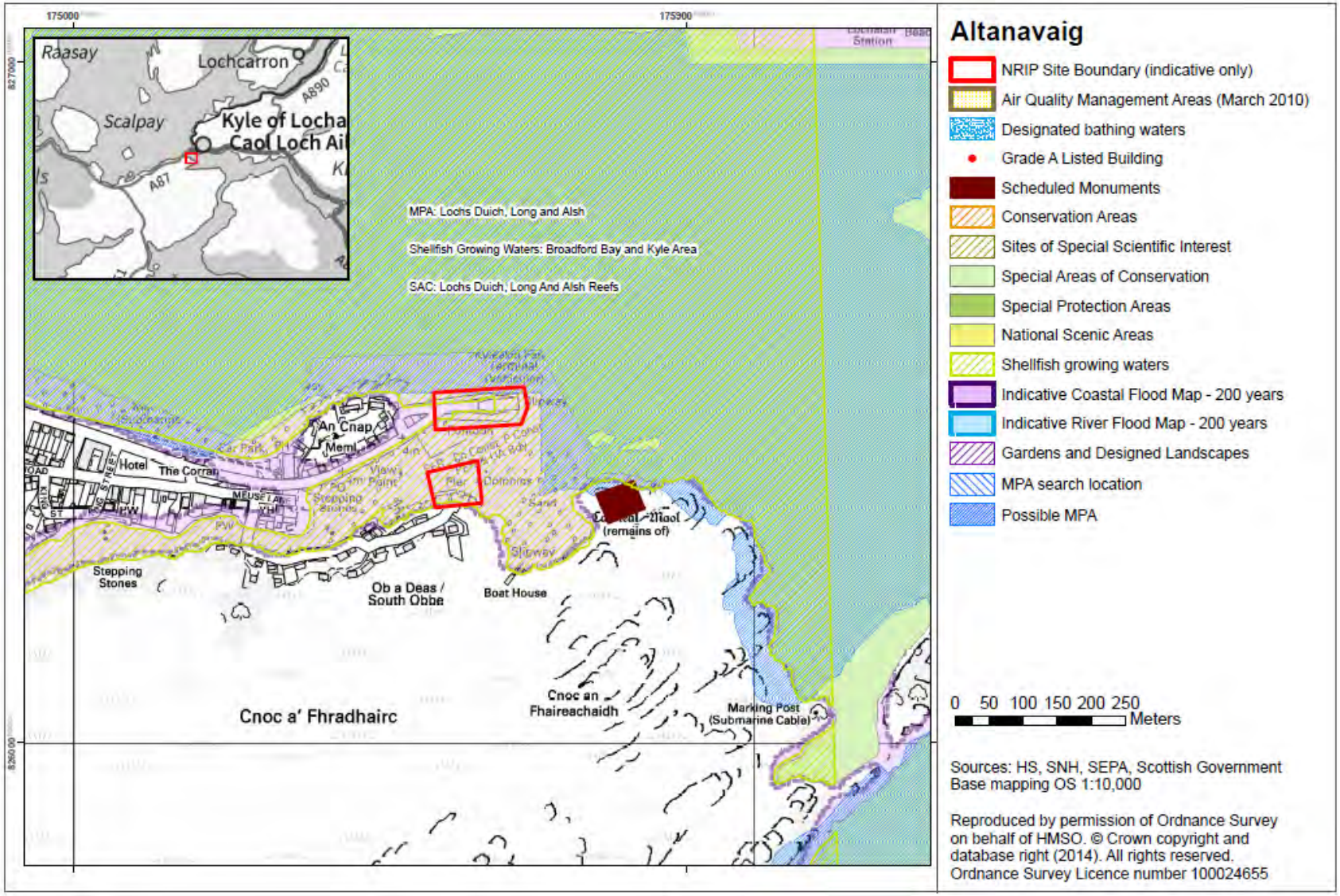
Habitats Regulations Appraisal

It is likely that Habitats Regulations Appraisal will be required at the project level, covering at least the following issues:

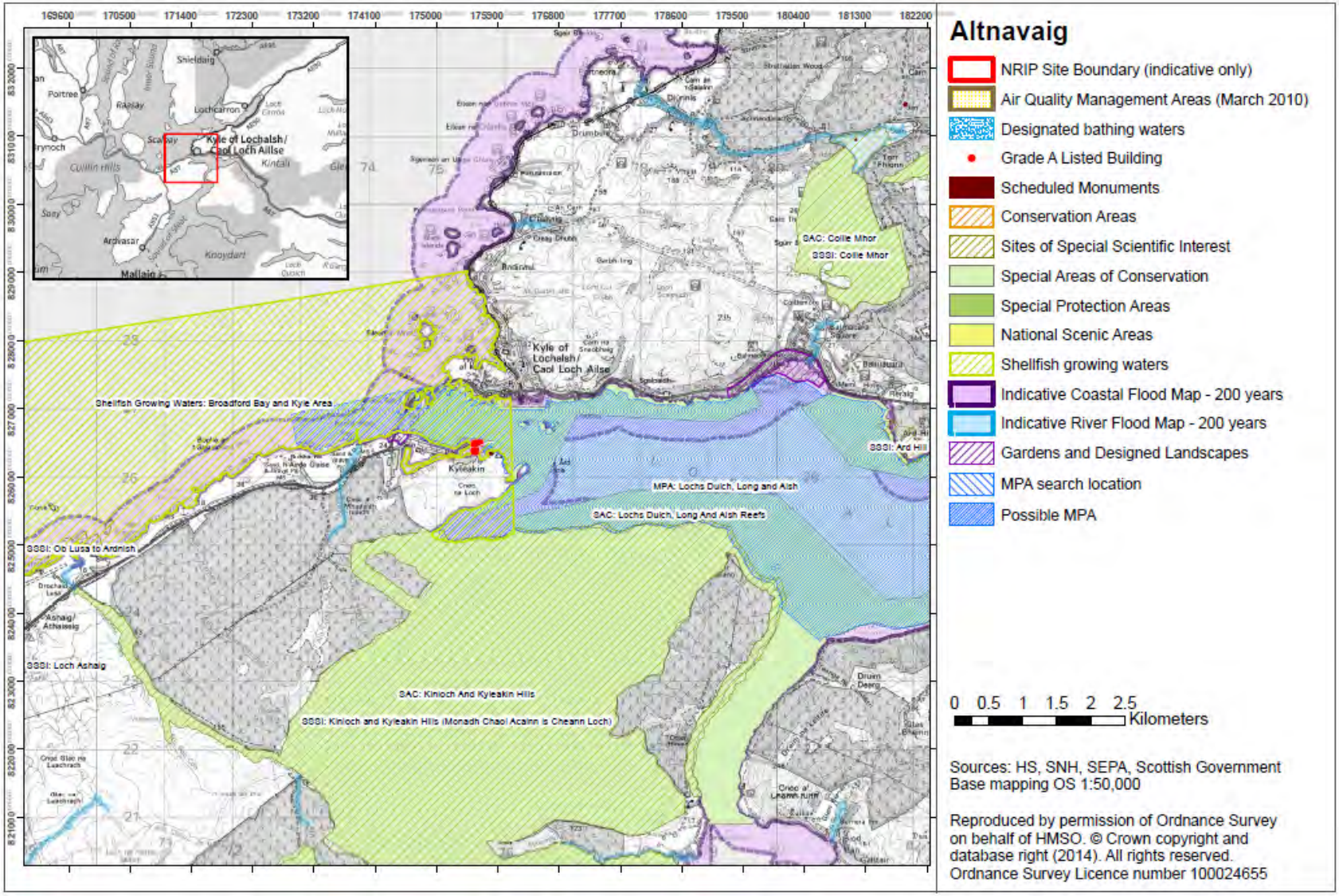
- effects on birds using nearby SPA habitats.
- effects on geological features in SAC habitats.

Early discussions should be held with SNH.

Site Map: Altanavaig



Wider Map: Altanavaig



Assessment Table: Altanavaig

SITE USE – Refuge/wet storage/unplanned maintenance

POTENTIAL DEVELOPMENT

Refuge/Wet Storage/Unplanned Maintenance
For unplanned maintenance, it may be necessary to provide a portacabin (or similar) within the existing port; there appear to be few, if any, buildings suitable for re-use. No further infrastructure upgrade required.

There are three scenarios for wet storage:
(a) Company that manufactures the devices cannot store them as it needs the laydown space so the developer needs to move the devices to a wet storage site which is both close to the lease site and sheltered.
(b) The developer wants to store the devices close to the lease site until the installation vessel they wish to use is available, which means they store them in the loch.
(c) Refuge site needed when devices are being towed to the installation site and need to take shelter during bad weather (for a day or two) before resuming progress.

See Section 3 of the Environmental Report for assumptions about wet storage.

ENVIRONMENTAL BASELINE – ALTANAVAIG

Biodiversity, flora and fauna –

Kinloch and Kyleakin Hills SAC – blanket bog, mixed woodland on base-rich soils associated with rocky slopes, western acidic oak woodland, dry heaths, wet heathland with cross-leaved heath, otter, alpine and subalpine heaths (around 1.5 km south of Kyleakin and extending around SW bank to Kylerhea)

Kinloch and Kyleakin Hills SSSI - blanket bog, upland oak woodland, bryophyte assemblage, subalpine wet heath, subalpine dry heath, lichen assemblage, otter, alpine heath, structural and metamorphic geology – Torridonian (around 1.5 km south of Kyleakin and extending around SW bank to Kylerhea)

Lochs Duich, Long and Alsh Reefs SAC –– reefs - inshore sublittoral rock (marine) - (can be found extensively within the Kyle of Lochalsh). Reefs' are habitat complexes which comprise an interdependent mosaic of subtidal (and intertidal) habitats. There is considerable diversity within the site, with areas of sheltered sublittoral rock supporting unusual assemblages of encrusting sponges and solitary ascidians, and, on shallower reefs, tide-swept kelp forests influenced by brackish water. The reefs in Kyle Akin (at the seaward end of Loch Alsh) are subject to some of the strongest tidal streams in the UK. Tide-swept reefs in Loch Alsh also support unusually dense beds of the brittlestar.

ENVIRONMENTAL BASELINE – ALTANAVAIG

Lochs Duich, Long and Alsh Marine Protected Area (MPA) – Protected biodiversity features - burrowed mud, flame shell beds. Burrowed mud is predominantly in Loch Duich. Flame shell beds lie under the Skye Bridge and in Loch Alsh between Kyleakin and Kyle of Lochalsh[23].

Ard Hill SSSI – Structural and metamorphic geology – moine (adjacent to northern bank of Loch Alsh, approximately 7 km east of Kyleakin). The intertidal part of Ard Hill SSSI is also part of Lochs Duich, Long and Alsh Reefs Special Area of Conservation.

Avernish SSSI - Structural and metamorphic geology – moine (adjacent to northern bank of Loch Alsh, 1 km east of Ard Hill SSSI). Part of Avernish SSSI is designated as part of Lochs Duich, Long and Alsh Reefs Special Area of Conservation.

Seals: potential designated haul-out site for harbour seals in Inner Raasay Sound, southeast of Scalpay. Indications are that this general area is well used by both harbour and grey seals, e.g. around Kyle Rhea[24].

European Protected Species – cetaceans are likely to be passing through the area. Otters may be found using this area of coast (see above).

Waterbirds – An Area of Search developed to identify a possible marine SPA is located to the north of the site. While these areas do not as yet represent formal designations, they provide additional information for identifying important aggregations of waterbirds in Scotland and complement the existing network of SPAs[25].

Population and Human Health – Residential locations in close proximity to the harbour. Residents likely have views of Loch Alsh and surrounds.

Water and marine environment – Shellfish growing waters[26] immediately adjacent to the west of the harbour. Coastal waters classification (2011): Good.

Climatic Factors – The site is within an Indicative 200 year Flood Zone.

Air – No air quality issues identified.

Soil, Geology & Coastal Processes – Nearest geological SSSI is Ard Hill, approximately 7 km east of the harbour. Avernish SSSI is adjacent to northern bank of Loch Alsh, 1 km east of Ard Hill SSSI.

[23] SNH. 2013. Marine Protected Areas – Lochs Duich, Long and Alsh Management Options Paper. Available at: http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/mpa-consultations/mpa-consultation-dla/
[24] Sea Generation (Kyle Rhea) Ltd. No date. The Kyle Rhea Tidal Stream Array Environmental Statement.
[25] The Scottish Government (2011) Special Protection Areas (SPAs) [online] Available at: http://www.scotland.gov.uk/Topics/Environment/Wildlife-Habitats/protectedareas/NATURA/SPAs (accessed 5/4/2014)
[26] Site 6 of Shellfish Water Designations 2012 – Broadford Bay and Kyle Area

ENVIRONMENTAL BASELINE – ALTANAVAIG

Much of the coastline in proximity to Kyleakin has been identified as having the potential for erosion or accretion (e.g. beaches, soft cliffs, etc.). Coastal erosion has been identified along the north-east coast of Skye including areas to the west and east of the pier. Accretion has been identified in Loch Duich (approximately 11 km east of the pier), Loch Carron (approximately 14 km north east of the pier) and to the south of Kyle Rhea (approximately 5 km to the south east of the pier).

Cultural heritage – Scheduled Monument Caisteal Maol (Castle Moyle) (951). Listed Buildings: Eilean Ban, Kyleakin lighthouse
Archaeological records indicate several sites of note in the vicinity including five wrecks in Kyle Akin, e.g. Bridal Rose (site number NG72NE.8008)

Landscape / Seascape – National Scenic Areas – Kintail (11 km to the east); The Cuillin Hills (approximately 13 km to the west)

Material Assets – Two finfish farms within Loch Alsh, four shellfish farms in Inner Raasay Sound near Scalpay. British Naval Underwater Test Evaluation Centre (operated by QinetiQ) at Kyle of Lochalsh. Wildlife tours, scuba diving, sea kayaking and recreational angling are also popular activities on the waters of Lochs Duich, Long and Alsh. Eilean Donan Castle is situated some 8 miles to the east of Kyle of Lochalsh. A tidal energy converter array is proposed in Kyle Rhea.

The waters around Kyleakin support the shellfish sector, both trawling (Nephrops) and static gear (Nephrops, crabs, lobsters); also some scallop diving, and fishing vessels use the harbour.

There is a RYA heavy recreational cruising route which runs from the Sound of Sleat through Loch Alsh into Raasay Sound. Kyleakin has a pontoon available for yachts and other small boats. There are also three moorings just outside the harbour between Kyleakin and the Skye Bridge[27].

Issues Scoped Out:
Population and Human Health – There is likely to be increased boat traffic due to the movement of devices, which could result in noise and disturbance to local residents. However, given existing levels of boat movements, this effect is unlikely to be significant.
Air – There is likely to be increased boat traffic due to the movement of devices, which could result in increased atmospheric emissions. However, given existing levels of boat movements, these additional emissions are unlikely to result in significant effects.

[27] Welcome Anchorages 2013, page 49

ASSESSMENT - ALTANAVAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Waterbirds – Area of Search	Potential disturbance (vessel noise and human presence) from wet storage activities. Presence of new features may disturb and possibly displace birds from feeding.	Temporary, depending on location, duration and frequency of activity.	Time storage activities and vessel movements to avoid bird breeding season, overwintering, etc.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Otter: Kinloch and Kyleakin Hills SAC; Kinloch and Kyleakin Hills SSSI and elsewhere (European Protected Species)	Potential disturbance of otters (noise during storage, physical presence of devices and human presence) from storage of devices.	Effects will be temporary but, depending on duration and frequency of storage, may be medium-term.	Devices should not be stored on or near habitat used by otters.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Burrowed mud, flame shell beds: Lochs Duich, Long and Alsh MPA	Risk of loss of and/or damage to sensitive benthic habitats, particularly flame shell beds around the harbour at Kyleakin, from anchorage or storage of gravity devices directly on the seabed. Storage elsewhere in the loch may affect burrowed mud.	The damage may be temporary or longer term, depending on the ability of the habitat to recover from disturbance. Recovery will also be dependent on the number of devices, the method of anchoring and the duration of storage.	The storage of devices in areas of sensitive benthic habitat should be avoided, including but not limited to the area in and around the harbour at Kyleakin.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Reefs - inshore sublittoral rock (marine): Lochs Duich, Long and Alsh Reefs SAC	Risk of loss of and/or damage to sensitive benthic habitats, from anchorage or storage of gravity devices directly on the seabed. Impacts may also result from increased turbidity and/or sediment disturbance.	The damage may be temporary or longer term, depending on the ability of the habitat to recover from disturbance. Recovery will also be dependent on the number of devices, the method of anchoring and the duration of storage.	The storage of devices in areas of sensitive benthic habitat should be avoided, including but not limited to the area immediately outside the harbour at Kyleakin.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Seals	Risk of corkscrew injury from slow-moving vessels with	Death of individual seals may affect overall population	Avoid using vessels with ducted propellers for slow-	Assuming mitigation is implemented, significant

ASSESSMENT - ALTANAVAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	certain types of ducted propeller or those using dynamic positioning; disturbance to seal haul-out locations.	numbers/ viability, given that the harbour species in particular is generally in decline; displacement of seals.	speed activities, e.g. manoeuvring, particularly during breeding season. Avoid storage of devices near seal haul out locations during moulting times and breeding season if relevant.	adverse environmental effects may be avoided.
European Protected Species: cetaceans (for otter see above)	Risk of collision with vessels; entanglement in mooring lines (e.g. minke whale); disturbance and displacement	Risk of these events occurring is unclear, thus significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/viability	Avoid cetacean habitat and migration routes. Use high-visibility mooring lines.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided
Water & Marine Environment	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed could affect shellfish growing waters.	Effects are likely to be localised and temporary, particularly in light of the tidal flows through Kyle Akin.	Developers should consider whether there are anchoring methods which would not result in increased turbidity.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
Designated Shellfish Growing Waters				
Coastal waters classification	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed. Introduction of devices into the waterbody.	Effects are likely to be localised and temporary	Increased turbidity: as above. No mitigation proposed for temporary morphological effects.	Increased turbidity: as above. Temporary morphological effects.
Climatic Factors	Potential for Kyleakin Harbour to be at risk of flooding from the sea	This will be a permanent issue given the long-term impacts of climate change.	Ensuring suitable design measures to increase defensibility and mitigate adverse effects of potential sea level rises	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
Site is within an Indicative 200 year Flood Zone.				
	Increase in GHG emissions due to vessel movements associated with wet storage.	Emissions from vessels are unlikely to contribute significantly to those from the existing Scottish fleet.	Vessel operators may wish to implement energy- and fuel-efficiency measures to reduce fuel consumption and consequent GHG emissions.	Emissions from vessels would continue but are unlikely to contribute significantly to those from the existing Scottish fleet.

ASSESSMENT - ALTANAVAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Soil, Geology & Coastal Processes Structural and metamorphic geology – moine Wave patterns and coastal processes	Given the vessel movements and numbers of devices assumed for this assessment, it is considered unlikely that changes to wave patterns would be such that they would result in significant alterations of coastal processes or in significant impacts on features such as either of the geological SSSIs.	No significant adverse effect	None required	None
Cultural Heritage Wreck sites	Storage of devices could affect wreck sites through destruction of features.	Permanent loss of wreck features	Avoid storage on these areas.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Scheduled Monument / Listed Buildings	Storage of devices which are on or break the water surface may affect the setting of the castle, given its location. Storage is unlikely to affect the setting of listed buildings.	Effects on the Scheduled Monument are likely to be localised and temporary	Avoid storage in the immediate vicinity of the castle.	Assuming mitigation is implemented, the potential for significant adverse effects should be reduced.
Landscape / Seascape Residential locations in close proximity to the harbour	Storage of devices which are on or break the water surface may have adverse local landscape and visual effects. It is unlikely that storage would affect the special qualities of the two National Scenic Areas, given their distance from the harbour.	Effects are likely to be local in nature and temporary, and are unlikely to be significant.	Locate devices in a sheltered bay away from overall views of Loch Alsh. This could affect the SAC and/or MPA biodiversity features and locations should be selected to avoid this.	Assuming mitigation is implemented, the potential for significant adverse local effects should be reduced.

ASSESSMENT - ALTANAVAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Material Assets Harbour access and Navigation	Possible effects on navigational safety, e.g. fishing and/or recreational vessels. Devices could block access to the harbour and displace harbour users.	Collisions could result in injury/death of human beings, oil spills etc. Potential displacement of harbour activities.	Ensure that devices are located away from access points to the harbour. Wet storage sites will need to be appropriately lit and/or marked. Liaison with MCA, Harbour Authority, aquaculture operators and other vessel operators to agree storage areas and navigable channels.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Fishing grounds	Possible disturbance and/or displacement of local fishing grounds by wet storage of devices.	Temporary loss of fishing grounds during storage operations. Potential displacement of fishing activities – adverse socio-economic and community effects; potential intensification of fishing elsewhere	Ensure that devices are located away from these areas. Liaison with Inshore Fisheries Group and/or local fishermen as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Recreational areas	Possible disturbance and/or displacement of recreational areas by wet storage of devices.	Temporary loss of recreational areas during storage operations, with concomitant local economic loss.	Ensure that devices are located away from these areas. Liaison with Royal Yachting Association Scotland as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Finfish interests	Possible damage to existing aquaculture infrastructure, e.g. in the event of devices breaking loose.	Permanent loss of equipment/facilities	Storage sites will need to be located away from aquaculture sites. Liaison with The Crown Estate and aquaculture operators to agree a suitable distance.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
OTHER DEVELOPMENT Proposed tidal energy converter array in Kyle Rhea				

ASSESSMENT - ALTANAVAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Cumulative Effects	Significant adverse effects potentially arising from wet storage of devices could be avoided through appropriate mitigation. Accordingly, cumulative effects with other development such as the proposed tidal energy converter array in Kyle Rhea are not anticipated.			

Implications for development:
The following requires further examination at the project level:

- effects on otters using adjacent SAC habitat; effects on reefs in SAC. Early discussions should be held with SNH regarding timing, extent, location and duration of storage.
- effects on protected biodiversity features of the MPA.
- risk of disturbance to seal haul out locations and corkscrew injury to seals
- need to alleviate flood risk through project planning and design.
- planning and design to avoid and/or reduce landscape/visual effects and effects on historic environment, including wrecks.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage

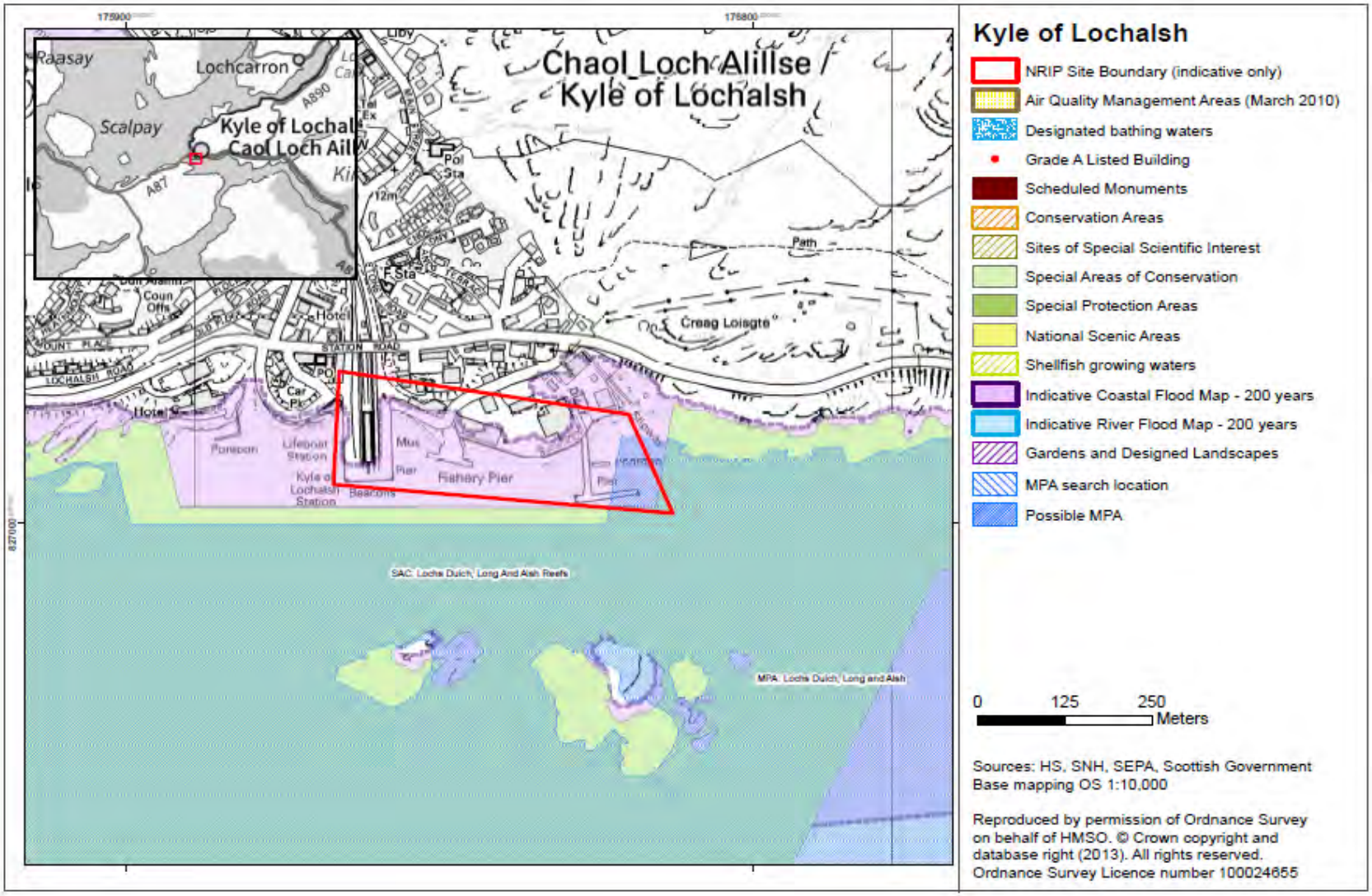
Early discussions should be held with SNH, SEPA, Historic Scotland, the Local Planning Authority, Harbour Authority, MCA, Inshore Fisheries Group and/or local fishermen, The Crown Estate, aquaculture operators, Royal Yachting Association Scotland and other vessel operators as required.

Habitats Regulations Appraisal
It is likely that Habitats Regulations Appraisal will be required at the project level, covering at least the following issues:

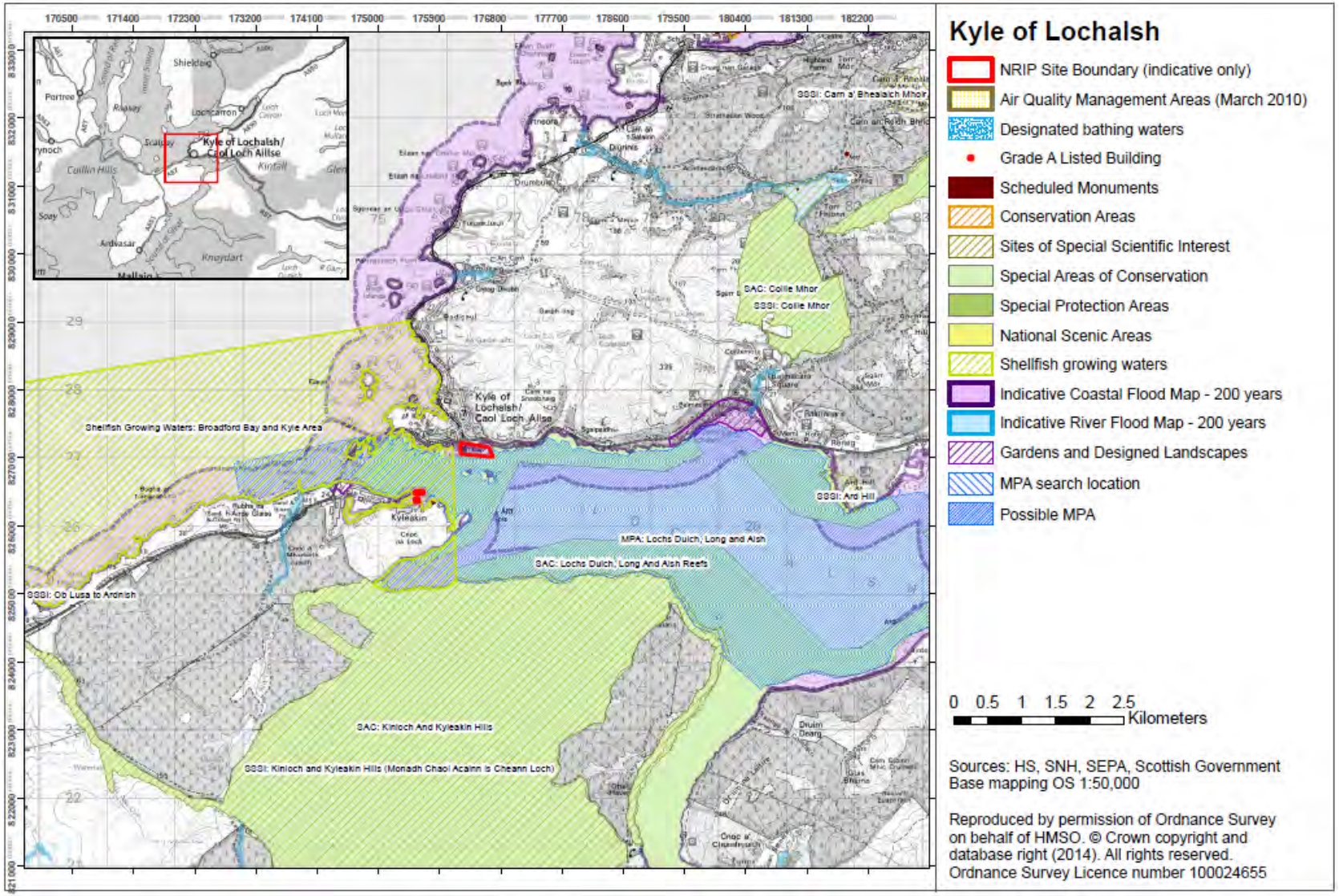
- effects of storage on otters
- effects of storage on reefs

Early discussions should be held with SNH.

Site Map: Kyle of Lochalsh



Wider Map: Kyle of Lochalsh



Assessment Table: Kyle of Lochalsh

SITE USE – Operations and Maintenance

POTENTIAL DEVELOPMENT

Operations & Maintenance

- Within the existing port, re-use existing buildings, where possible, or provide new ones. No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

See Section 3 of the Environmental Report for assumptions about wet storage.

ENVIRONMENTAL BASELINE – KYLE OF LOCHALSH

Biodiversity, Flora and Fauna –

Kinloch and Kyleakin Hills (Monadh Chaol Acainn is Cheann Loch) SSSI - Blanket bog, upland oak woodland, bryophyte assemblage, subalpine wet heath, subalpine dry heath, lichen assemblage, otter, alpine heath and torridonian (approximately 3 km south of pier)

Kinloch and Kyleakin Hills SAC - Blanket bog, western acidic oak woodland, mixed woodland on base-rich soils associated with rocky slopes, dry heaths, wet heathland with cross-leaved heath, otter and alpine and subalpine heaths (approximately 3 km south of pier)

Lochs Duich, Long and Alsh Reefs SAC – Inshore sublittoral rock (marine) – reefs (can be found extensively within the Kyle of Lochalsh)

Lochs Duich, Long and Alsh Marine Protected Area (MPA) – Protected biodiversity features - burrowed mud, flame shell beds. Burrowed mud is predominantly in Loch Duich. Flame shell beds lie under the Skye Bridge and in Loch Alsh between Kyleakin and Kyle of Lochalsh[28].

Seals – Potential designated haul-out site for harbour seals in Inner Raasay Sound, southeast of Scalpay[29]. Indications are that this general area is well used by both harbour and grey seals[30], e.g. around Kyle Rhea[31].

European Protected Species – Cetaceans are likely to be passing through the area. Otters likely to be found using this area of coast (see also SAC/SSSI descriptions).

[28] SNH. 2013. Marine Protected Areas – Lochs Duich, Long and Alsh Management Options Paper. Available at: http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/mpa-consultations/mpa-consultation-dla/

[29] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.

[30] SMRU (2013) Marine Mammal Scientific Support Research Programme MMSS/001/11, Grey and harbour seal usage maps [online] Available at: http://www.scotland.gov.uk/Resource/0043/00437053.pdf [accessed 5/12/2013]

[31] Sea Generation (Kyle Rhea) Ltd. No date. The Kyle Rhea Tidal Stream Array Environmental Statement.

ENVIRONMENTAL BASELINE – KYLE OF LOCHALSH

Waterbirds – An Area of Search developed to identify a possible marine SPA is located to the north of the site. While these areas do not as yet represent formal designations, they provide additional information for identifying important aggregations of waterbirds in Scotland and complement the existing network of SPAs[32].

Population and Human Health – Pier within residential area.

Water and marine environment – Shellfish licencing consents have been approved within Kyle of Lochalsh[33]. Coastal waters classification (2011): Good.

Climatic Factors – The site is within an Indicative 200 year Flood Zone.

Air – No air quality issues identified.

Soil, Geology & Coastal Processes – Lochs Duich, Long and Alsh Reefs SAC – Inshore sublittoral rock (marine) – reefs (can be found extensively within the Kyle of Lochalsh), Ard Hill SSSI – Structural and metamorphic geology – moine (adjacent to northern bank of loch alsh, 1km SE of Balmacara), Avernish SSSI - Structural and metamorphic geology – moine (adjacent to northern bank of loch alsh, 1km E of Ard Hill SSSI).
Much of the coastline in proximity to Kyle Akin and Loch Alsh has been identified as having the potential for erosion or accretion (e.g. beaches, soft cliffs, etc.). Coastal erosion has been identified along the north-east coast of Skye including areas to the west, south and east of the pier. Accretion has been identified in Loch Duich (approximately 11 km east of the pier), Loch Carron (approximately 14 km north east of the pier) and to the south of Kyle Rhea (approximately 5 km to the south east of the pier).

Cultural Heritage –
Listed Buildings include Kyle of Lochalsh Railway Station and pier (Category B Index Number 6954) situated on the western pier. Other recorded features include historic buildings such as the Station Hotel located to the west of the site, and several other features within the Kyle of Lochalsh to the north of the site. A National Scheduled Monument comprising an unknown wreck (NG72NE.8030.) is located immediately adjacent to the eastern pier. Several other recorded wreck sites are located within Kyle Akin, including several located approximately 500 m to the south-west of the site.

Landscape / Seascape – No national designation.

Material Assets – Shellfish and fish farm interests have been identified in the area. The harbour is currently utilised by other marine users (e.g. cargo, fisheries, recreational users, cruiseliners, etc.) with nearby waters important to both fishing and recreational water users in particular. A number of commercial leisure craft that also operate out of the Harbour[34].

[32] The Scottish Government (2011) Special Protection Areas (SPAs) [online] Available at: http://www.scotland.gov.uk/Topics/Environment/Wildlife-Habitats/protectedareas/NATURA/SPAs (accessed 5/4/2014)
[33] Site 6 of Shellfish Water Designations 2012 – Broadford Bay and Kyle Area

ENVIRONMENTAL BASELINE – KYLE OF LOCHALSH
Issues Scoped out: *Air* – There is likely to be increased boat traffic due to O&M activities, which could result in increased atmospheric emissions. However, given existing levels of boat movements, these additional emissions are unlikely to result in significant effects.

ASSESSMENT – KYLE OF LOCHALSH				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Waterbirds – Area of Search	Potential disturbance (vessel noise and human presence) from wet storage activities. Presence of new features may disturb and possibly displace birds from feeding.	Temporary, depending on location, duration and frequency of activity.	Time storage activities and vessel movements to avoid bird breeding season, overwintering, etc.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Otters – Kinloch and Kyleakin Hills (Monadh Chaol Acainn is Cheann Loch) SSSI, Kinloch and Kyleakin Hills SAC, and elsewhere (European Protected Species)	Potential disturbance (noise and human presence) from site operations to otters . Due to the scale of the development and existing activities in the harbour it is unlikely this will be significant.	Localised but unlikely to be significant	None required	None
Otter (as above)	Potential disturbance of otters (noise during storage, physical presence of devices and human presence) from storage of devices.	Effects will be temporary but, depending on duration and frequency of storage, may be medium-term.	Devices should not be stored on or near habitat used by otters.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Reefs, Burrowed mud and Flame shell beds - Lochs Duich, Long and Alsh Reefs SAC and Lochs Duich, Long and Alsh MPA	Risk of loss of and/or damage to sensitive benthic habitats from anchoring or storage of gravity devices directly on the seabed.	Effects may be temporary or longer term, depending on the ability of the habitat to recover from disturbance. Recovery will also be dependent on the number of devices, the methods of	Where vulnerable benthic habitats have been identified, the storage of devices should be avoided.	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.

[34] Highland Council (2013) Kyle Harbour [online] Available at: http://www.highland.gov.uk/yourenvironment/roadsandtransport/harbours/kyleharbour.htm [accessed 10/1/2013]

ASSESSMENT – KYLE OF LOCHALSH				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
		anchoring and storage location/duration.		
Seals	Risk of corkscrew injury from slow-moving vessels with certain types of ducted propeller or those using dynamic positioning; disturbance to seal haul-out locations.	Death of individual seals may affect overall population numbers/ viability, given that the harbour species in particular is generally in decline; displacement of seals.	Avoid using vessels with ducted propellers for slow-speed activities, e.g. manoeuvring, particularly during breeding season. Avoid storage of devices near seal haul out locations during moulting times and breeding season if relevant.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
European Protected Species: cetaceans(for otter see above)	Risk of collision with vessels; entanglement in mooring lines (e.g. minke whale); disturbance and displacement	Risk of these events occurring is unclear, thus significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/viability	Avoid cetacean habitat and migration routes. Use high-visibility mooring lines.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided
Population and Human Health Residential developments within 100 m of site.	Noise disturbance during site operations. Due to the nature of existing activities in the harbour, it is unlikely this will add significantly to existing levels of noise and disturbance.	Localised	Site protocols and/or good neighbour agreements would set out conditions for controlling noise and/or disturbance from construction activities and site operations.	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
Water & Marine Environment Shellfish licencing consents have been approved for Broadford Bay and Kyle Area	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed could affect shellfish growing waters.	Effects are likely to be localised and temporary.	Developers should consider whether there are anchoring methods which would not result in increased turbidity.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
Coastal waters classification	Increased turbidity from the anchorage or storage of gravity devices directly on the	Effects likely to be localised and temporary.	Increased turbidity: as above. No mitigation proposed for temporary morphological	Increased turbidity: as above. Temporary morphological effects.

ASSESSMENT – KYLE OF LOCHALSH				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	seabed. Introduction of devices into the waterbody..		effects.	
Climatic Factors Site is within the Indicative 200 year Flood Zone.	Potential for the Kyle of Lochalsh and the Kyleakin coastline to be at risk of flooding from the sea.	This will be a permanent issue given the long-term impacts of climate change.	Ensuring suitable design measures to increase defensibility and mitigate adverse effects of potential sea level rises	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
	Increase in GHG emissions due to vessel movements associated with O&M operations.	Emissions from vessels are unlikely to contribute significantly to those from the existing Scottish fleet.	Vessel operators may wish to implement energy- and fuel-efficiency measures to reduce fuel consumption and consequent GHG emissions.	Emissions from vessels would continue but are unlikely to contribute significantly to those from the existing Scottish fleet.
Soil, Geology & Coastal Processes Structural and metamorphic geology – moine, burrowed mud. Wave patterns and coastal processes	Given the vessel movements and numbers of devices assumed for this assessment, it is considered unlikely that changes to wave patterns would be such that they would result in significant alterations of coastal processes or in significant impacts on features such as either of the geological SSSIs.	No significant adverse effect	None required	None
Cultural Heritage Wreck sites including the Scheduled Monument comprising an unknown wreck (NG72NE.8030)	Device storage could affect wreck site through destruction of features.	Permanent loss of wreck features	Avoid storage on this area.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Listed Buildings and historic features in the environs of the site.	As no new infrastructure is required, effects on the site or setting of these features are not anticipated.	No effect	None required	None

ASSESSMENT – KYLE OF LOCHALSH				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Landscape / Seascape Residential developments within 100 m of site.	Residents in Kyle of Lochalsh and Kyle Akin are likely to have views of stored devices which are on or break the water surface.	Effects are likely to be local in nature and temporary, and are unlikely to be significant.	If necessary, locate devices in a sheltered bay away from overall views of Kyle Akin. This could affect the MPA and SAC biodiversity features and locations should be selected to avoid this.	Assuming mitigation is implemented, the potential for significant adverse visual effects should be reduced.
Material Assets	Possible effects on navigational safety, e.g. fishing, recreation and cargo vessels, etc. Devices could block access to the harbour and displace harbour users.	Collisions could result in injury/death of human beings, oil spills etc. Potential displacement of harbour activities.	Ensure that devices are located away from access points to the harbour. Wet storage site will need to be appropriately lit and/or marked. Liaison with MCA, Harbour Authority and other vessel operators to agree storage areas and navigable channels .	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Harbour access				
Fishing grounds and	Possible disturbance and/or displacement of local fishing grounds by wet storage of devices.	Temporary loss of fishing grounds during storage operations. Potential displacement of fishing activities – adverse socio-economic and community effects; potential intensification of fishing elsewhere	Ensure that devices are located away from these areas. Liaison with Inshore Fisheries Group and/or local fishermen as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Recreational areas	Possible disturbance and/or displacement of recreational areas by wet storage of devices.	Temporary loss of recreational areas during storage operations, with concomitant local economic loss.	Ensure that devices are located away from these areas. Liaison with Royal Yachting Association Scotland as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.

ASSESSMENT – KYLE OF LOCHALSH				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Shellfish and finfish interests	Possible damage to existing aquaculture infrastructure, e.g. in the event of devices breaking loose.	Permanent loss of equipment/facilities	Storage sites will need to be located away from aquaculture sites. Liaison with The Crown Estate and aquaculture operators to agree a suitable distance.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
OTHER DEVELOPMENTS None known.				
Cumulative Effects	Possible cumulative effect with harbour activities and vessel traffic (e.g. fishing, cargo, recreational, etc.) within Loch Alsh. Potential for cumulative effects on biodiversity features within the MPA/SAC, otters using the harbour areas and seals (i.e. corkscrew seal injuries). However, significant adverse effects potentially arising from site operations could be avoided through appropriate mitigation.			

Implications for development:

The following requires further examination at the project level:

- effects on protected biodiversity features of the SAC and MPA.
- risk of disturbance to seal haul out locations and corkscrew injury to seals.
- review of potential effects on otters from the nearby SAC and other areas using the harbour area.
- preparation and agreement of construction protocols/good neighbour agreements.
- need to alleviate flood risk through project planning and design.
- planning and design to avoid and/or reduce landscape/visual effects and effects on historic environment, including wrecks.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage

Early discussions should be held with SNH, SEPA, Historic Scotland, the Local Planning Authority, Harbour Authority, MCA, Inshore Fisheries Group and/or local fishermen, aquaculture operators, Royal Yachting Association Scotland and other vessel operators as required.

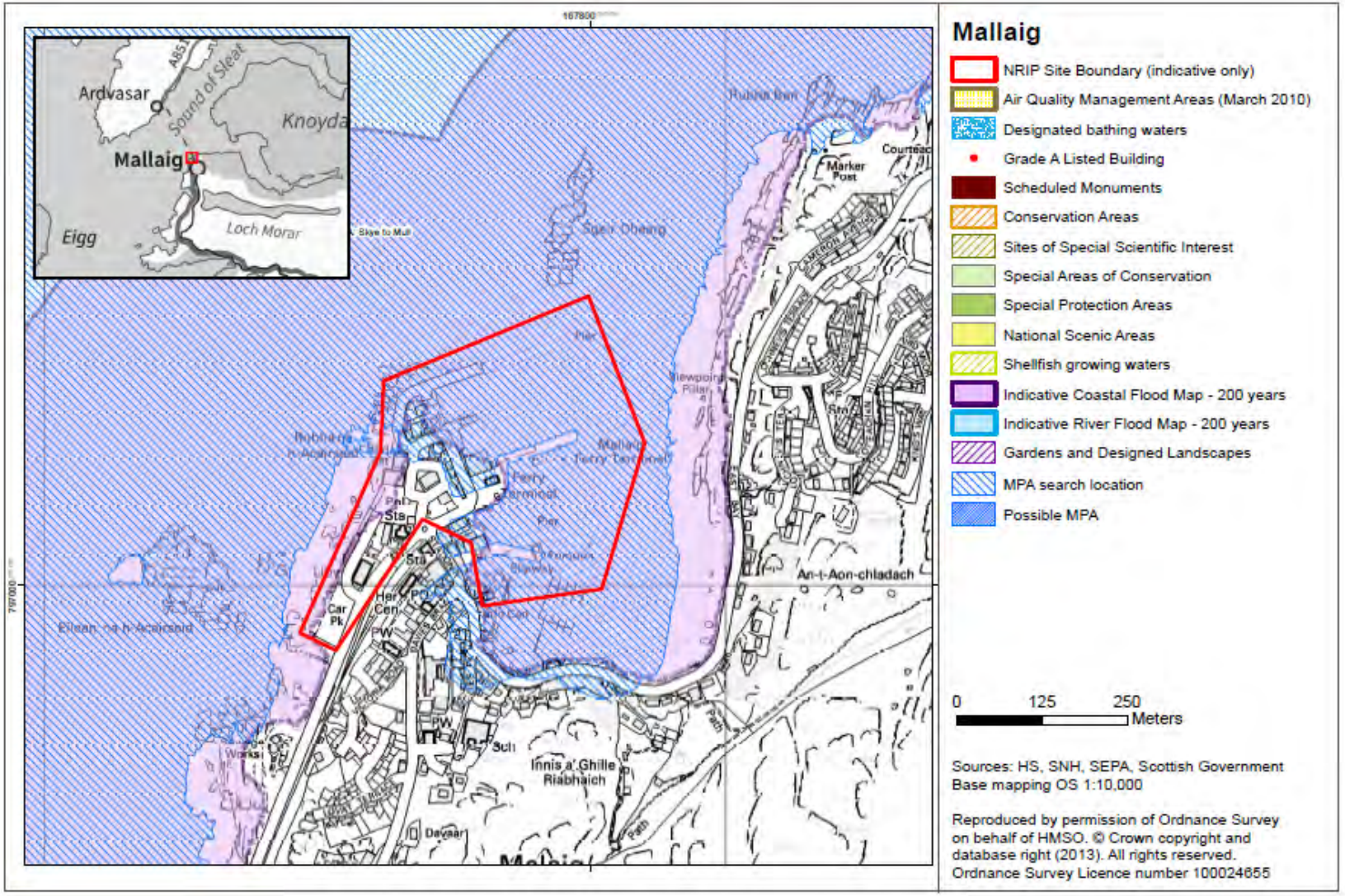
Habitats Regulations Appraisal

It is likely that Habitats Regulations Appraisal will be required at the project level, covering at least the following issues:

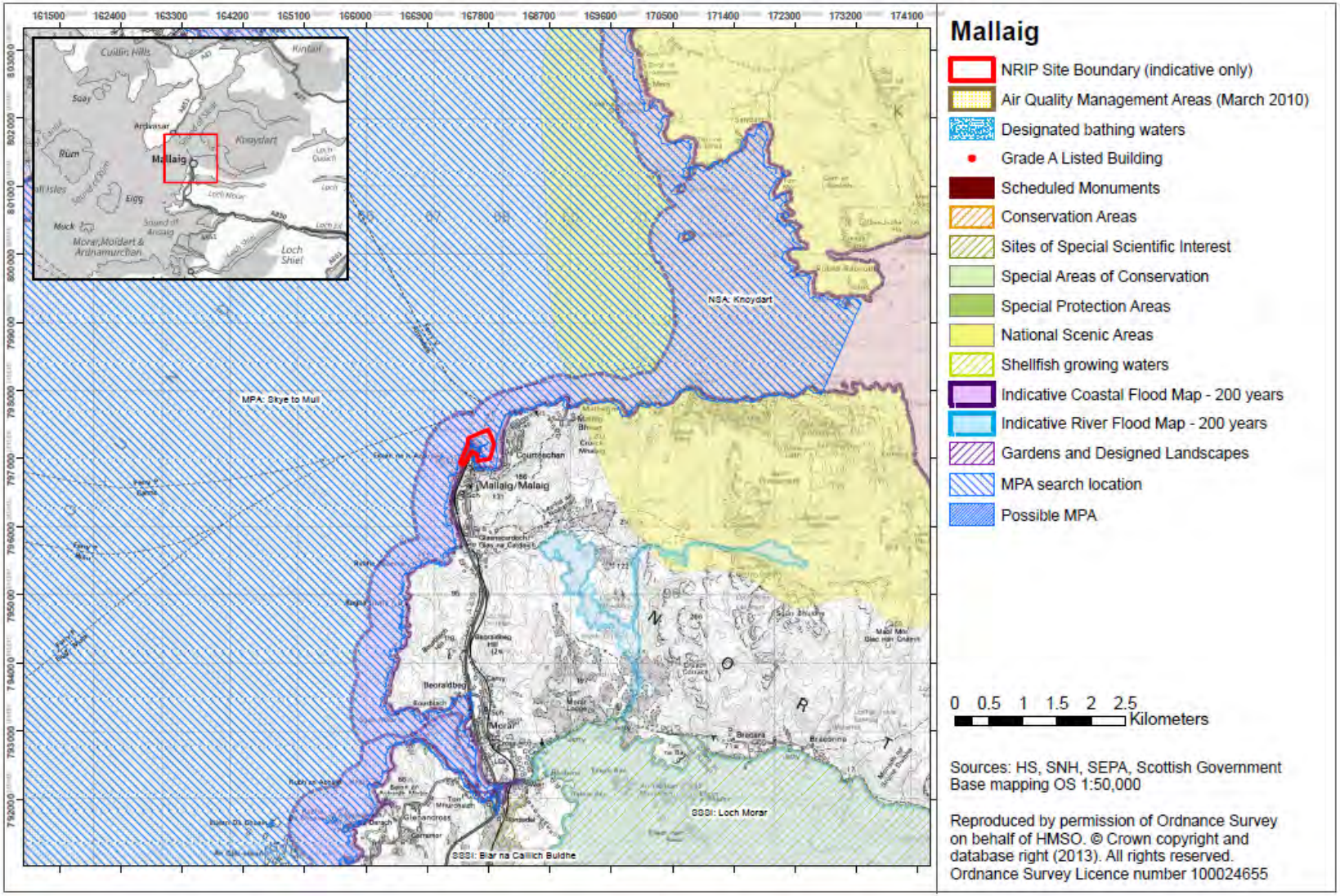
- effects on protected biodiversity features of the SAC and MPA.
- review of potential effects on otters from SAC using the harbour area.

Early discussions should be held with SNH.

Site Map: Mallaig



Wider Map: Mallaig



Assessment Table: Mallaig

SITE USE – Operations and Maintenance

POTENTIAL DEVELOPMENT

Operations & Maintenance

- Within the existing port, re-use existing buildings, where possible, or provide new ones (although space appears to be constrained). No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

See Section 3 of the Environmental Report for assumptions about wet storage.

ENVIRONMENTAL BASELINE – MALLAIG

Biodiversity, flora and fauna – No designated sites near the potential development site.

Rum SPA – aggregations of breeding birds – golden eagle, guillemot, kittiwake, manx shearwater and red-throated diver (approximately 20 km west of the harbour).

Skye to Mull MPA search location – basking shark; fronts; minke whale.

Seals – Potential designated haul-out site for grey and harbour seals are located to the south-west and south of Mallaig near Eigg and Arisaig (e.g. Luinga Bheag, Snidhe Eilean) respectively[35]. Indications are that the waters off Scotland's west coast are well used by both grey and harbour seals[36].

European Protected Species – Cetaceans are likely to be passing through the area. Otters may be found using this area of coast.

Population and Human Health – Mallaig Harbour is located adjacent to a residential area.

Water & Marine Environment – Coastal waters classification (2011): Good.

Climatic Factors – The site is within an Indicative 200 year Flood Zone.

Air – No air quality issues identified.

[35] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.

[36] SMRU (2013) Marine Mammal Scientific Support Research Programme MMSS/001/11, Grey and harbour seal usage maps [online] Available at: http://www.scotland.gov.uk/Resource/0043/00437053.pdf [accessed 5/12/2013]

ENVIRONMENTAL BASELINE – MALLAIG

Soil, Geology & Coastal Processes – Skye to Mull MPA search location – marine geomorphology of the Scottish Shelf Seabed (components to be confirmed) Sections of Scotland's west coast near Mallaig have been identified as having the potential for erosion or accretion (e.g. beaches, soft cliffs, etc.), particularly those near Sgeir Mhor and around Arisaig. Accretion has been observed at Sgeir Mohr (approximately 4 km south of the harbour) and coastal erosion identified near Rubh' Arisaig, particularly that facing the Sound of Arisaig (approximately 13 km south of the harbour).

Cultural heritage – Mallaig Pier (MHG22393) is recorded as a historic monument by the Highland Council, along with the Mallaig and Courteachan Townships (MHG27334 and MHG23748 respectively). Listed Buildings in [proximity of the harbour include Mallaig railway station (Category C Index Number 43567) located immediately south of harbour, and the Roman Catholic church of St Patrick (Category C Index Number 7230) and Railway houses (1-4, 5-8. 9-12, 13-16 Victoria Place, Mallaig) (Category B, Index Number 13037) located approximately 250m south-west of harbour. Several recorded wrecks are located near to the harbour, the nearest being a cluster of three wrecks located near SgeirDhearg approximately 100 m north of the harbour. Other recorded wrecks have been identified to the north and west of the harbour in the Sound of Sleat.

Landscape / Seascape – Knoydart NSA is approximately 2 km north-east of the harbour.

Material Assets – A range of marine users utilise harbour facilities in Mallaig including commercial, fishing and recreational vessels, amongst others. Ferry services operating between Mallaig and Skye, the Western Isles and ports along the Scottish mainland operate from the Mallaig Ferry Terminal.

Issues Scoped Out:

Air – There is likely to be increased boat traffic due to O&M activities, which could result in increased atmospheric emissions. However, given existing levels of boat movements, these additional emissions are unlikely to result in significant effects.

ASSESSMENT – MALLAIG

Environmental Receptor	Effect	Characteristic	Mitigation	Residual Effects
Biodiversity, Flora and Fauna Birds – Rum SPA	There is likely to be increased boat traffic due to the movement of devices, which could result in additional noise and light disturbance to some species (e.g. Manx shearwater from Rum SPA). However, given existing levels of boat movements and activities within Mallaig, any such effect is unlikely to be significant.	No significant adverse effect	None required	None

ASSESSMENT – MALLAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Seals	Risk of corkscrew injury from slow-moving vessels with certain types of ducted propeller or those using dynamic positioning; disturbance to seal haul-out locations.	Death of individual seals may affect overall population numbers/ viability, given that the harbour species in particular is generally in decline; displacement of seals.	Avoid using vessels with ducted propellers for slow-speed activities, e.g. manoeuvring, particularly during breeding season. Avoid storage of devices near seal haul out locations during moulting times and breeding season if relevant.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
European Protected Species: Otters	Potential disturbance of otters (noise during storage, physical presence of devices and human presence) from storage of devices.	Effects will be temporary but, depending on duration and frequency of storage, may be medium-term.	Devices should not be stored on or near habitat used by otters.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
European Protected Species: cetaceans (minke whale are also an MPA search location feature)	Risk of collision with vessels; entanglement in mooring lines (e.g. minke whale); disturbance and displacement	Risk of these events occurring is unclear, thus significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/ viability	Avoid cetacean habitat and migration routes. Use high-visibility mooring lines.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided
basking shark (MPA search location feature)	Risk of collision with vessels; disturbance and displacement	Risk of these events occurring is unclear, thus significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/ viability.	Avoid basking shark “hot spot” areas.	Assuming mitigation is implemented, significant adverse effects may be avoided.
fronts (MPA search location feature)	Fronts may be sensitive to changes in tidal currents/ removal of hydrodynamic energy (e.g. from marine renewables arrays). Wet storage of one or two devices	None	None needed	None

ASSESSMENT – MALLAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	in the environs of Mallaig Harbour is unlikely to result in such effects.			
Population / Human Health Residential areas located adjacent to the harbour	Noise disturbance during site operations. Due to the nature of existing activities in the harbour, it is unlikely this will add significantly to existing levels of noise and disturbance.	Localised	Site protocols and/or good neighbour agreements would set out conditions for controlling noise and/or disturbance from construction activities and site operations.	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
Water & Marine Environment Coastal waters classification	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed. Introduction of devices into the waterbody.	Effects are likely to be localised and temporary	Increased turbidity: as above. No mitigation proposed for temporary morphological effects.	Increased turbidity: as above. Temporary morphological effects.
Climatic Factors Site is within the Indicative 200 year Flood Zone.	Potential for the ferry terminal and pier to be at risk of flooding from the sea.	This will be a permanent threat given the long-term impacts of climate change and the potential volatility this could have on micro-climates.	Ensuring suitable design measures to increase defensibility and mitigate adverse effects of potential sea level rises	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
	Increase in GHG emissions due to vessel movements associated with O&M.	Emissions from vessels are unlikely to contribute significantly to those from the existing Scottish fleet.	Vessel operators may wish to implement energy- and fuel-efficiency measures to reduce fuel consumption and consequent GHG emissions.	Emissions from vessels would continue but are unlikely to contribute significantly to those from the existing Scottish fleet.
Soil, Geology & Coastal Processes Skye to Mull MPA search location – protected geodiversity features.	O&M activities on land will not affect the protected features of the MPA search location. Short-term anchorage or storage of devices directly on the seabed during O&M is unlikely to result in significant adverse effects on protected geodiversity features.	No significant adverse effect	None required	None

ASSESSMENT – MALLAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Wave patterns and coastal processes	Given the vessel movements and numbers of devices assumed for this assessment, it is considered unlikely that changes to wave patterns would be such that they would result in significant alterations of coastal processes or in significant impacts on coastal or marine geology.	No significant adverse effect	None required	None
Cultural Heritage Listed Buildings and historic features in the environs of the site.	O&M operations are unlikely to affect the setting of the listed buildings and historic features.	No effect	None required	None
Wreck sites	It is unlikely that O&M works would affect existing wreck sites, given their location. Storage of devices could affect wreck sites through destruction of features.	Permanent loss of wreck features	Avoid storage on these areas.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Landscape/Seascape Knoydart NSA Residential areas located adjacent to the harbour	Storage of devices which are on or break the water surface may have adverse local landscape and visual effects. It is unlikely that storage would affect the special qualities of the NSA, given their distance from the harbour.	Effects are likely to be local in nature and temporary, and are unlikely to be significant.	If necessary, locate devices in a sheltered bay away from overall views Mallaig Harbour and surrounding areas. This could affect the MPA search location biodiversity features and locations should be selected to avoid this.	Assuming mitigation is implemented, the potential for significant adverse effects at the local level should be reduced.

ASSESSMENT – MALLAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Material Assets Harbour access	Possible effects on navigational safety, e.g. fishing vessels. Devices could block access to the harbour/ferry terminal and displace harbour users (e.g. require ferries to be re-routed).	Collisions could result in injury/death of human beings, oil spills etc. Inefficient operation of ferry terminal and/or ferries. Potential displacement of harbour activities.	Ensure that devices are located away from access points to the harbour. Wet storage site will need to be appropriately lit and/or marked. Liaison with MCA, Harbour Authority and other vessel operators to agree storage areas and navigable channels .	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Fishing grounds	Possible disturbance and/or displacement of fishing from local grounds by wet storage of devices.	Temporary loss of fishing grounds during storage operations. Potential displacement of fishing activities – adverse socio-economic and community effects; potential intensification of fishing elsewhere	Ensure that devices are located away from these areas. Liaison with Inshore Fisheries Group and/or local fishermen as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Recreational areas	Possible disturbance and/or displacement of recreational areas by wet storage of devices.	Temporary loss of recreational areas during storage operations, with concomitant local economic loss.	Ensure that devices are located away from these areas. Liaison with Royal Yachting Association Scotland as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
OTHER DEVELOPMENT Users of Mallaig Harbour including fishing, commercial and recreational vessels, and ferry services.				
Cumulative Effects	Possible cumulative effect with existing activities in Mallaig Harbour including commercial, fishing and recreational vessels, and ferry services, etc. Potential for cumulative effects on basking shark and minke whale (in the MPA area of search) and on marine mammals (i.e. corkscrew seal injuries). However, significant adverse effects potentially arising from site operations could be avoided through appropriate mitigation.			

Implications for development:
The following requires further examination at the project level:

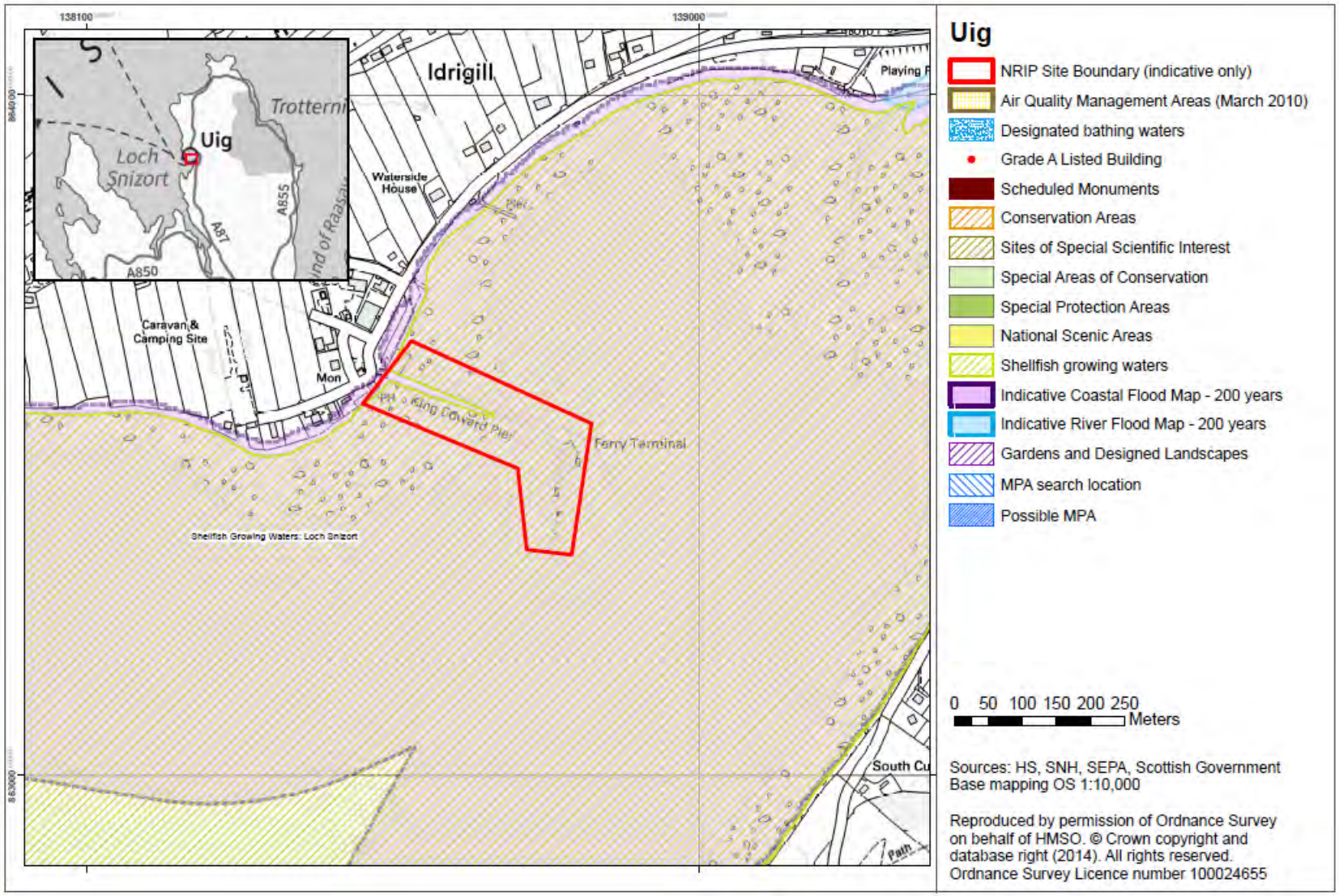
- potential effect on benthic habitat within the MPA.
- risk of disturbance to seal haul out locations and corkscrew injury to seals.
- need to alleviate flood risk through project planning and design.
- planning and design to avoid and/or reduce landscape/visual effects and effects on historic environment, including wrecks.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage

Early discussions should be held with SNH, SEPA, Historic Scotland, the Local Planning Authority, Harbour Authority, MCA, Inshore Fisheries Group and/or local fishermen, ferry operators, Royal Yachting Association Scotland and other vessel operators as required.

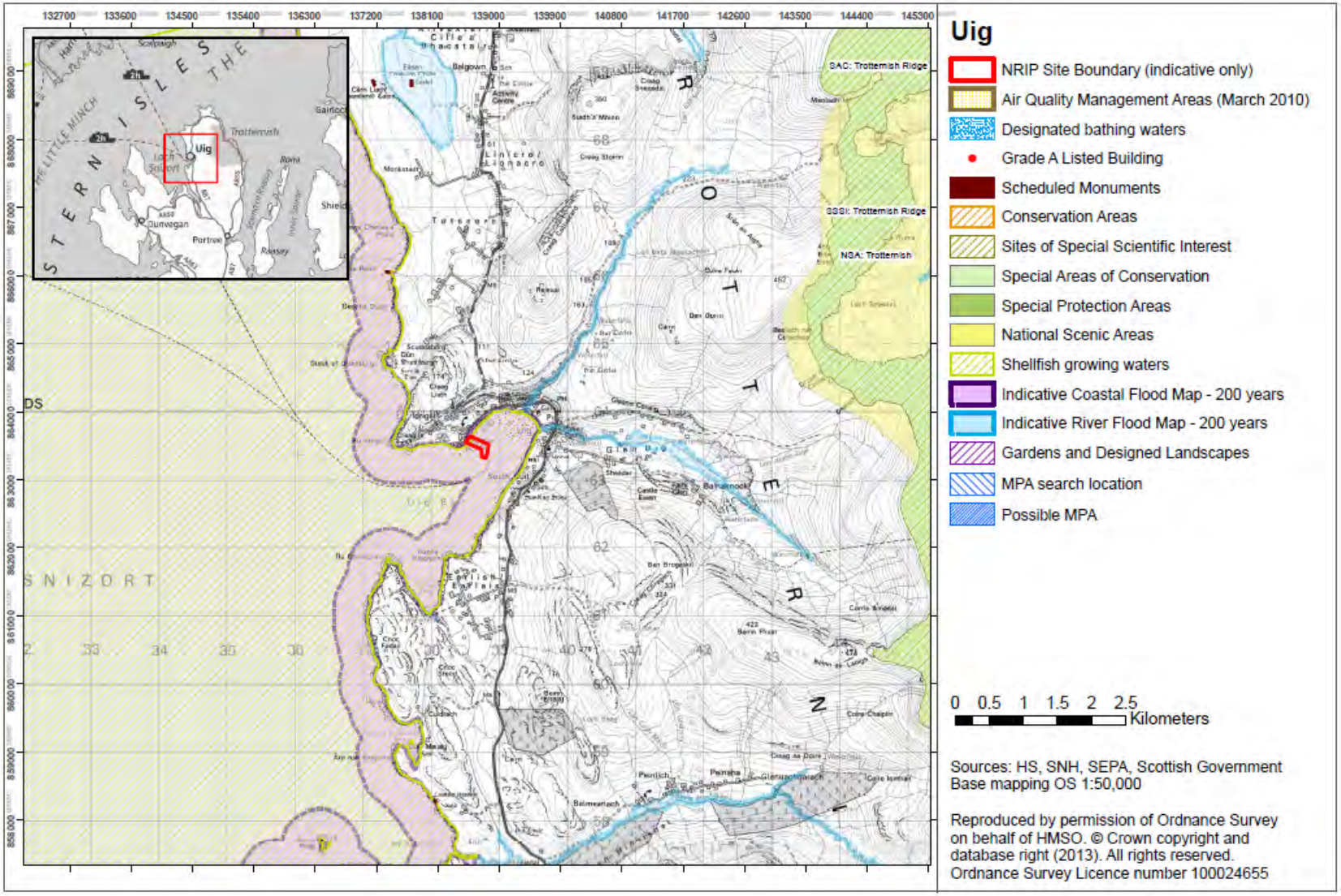
Habitats Regulations Appraisal

It is likely that Habitats Regulations Appraisal will not be required at the project level, as there are no Natura interests in the vicinity of this harbour that are likely to be affected.

Site Map: Uig


Uig
NRIP Site Boundary (indicative only)
Air Quality Management Areas (March 2010)
Designated bathing waters
Grade A Listed Building
Scheduled Monuments
Conservation Areas
Sites of Special Scientific Interest
Special Areas of Conservation
Special Protection Areas
National Scenic Areas
Shellfish growing waters
Indicative Coastal Flood Map - 200 years
Indicative River Flood Map - 200 years
Gardens and Designed Landscapes
MPA search location
Possible MPA
0 50 100 150 200 250
Meters
Sources: HS, SNH, SEPA, Scottish Government
Base mapping OS 1:10,000
Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right (2014). All rights reserved. Ordnance Survey Licence number 100024655
Idrigill
Uig
Loch Snizort
A850
A87
A855
Waterside House
Caravan & Camping Site
Mon
Ferry Terminal
Shellfish Growing Waters: Loch Snizort
138100
139000

Wider Map: Uig



Assessment Table: Uig (Isle of Skye)

SITE USE – Refuge/wet storage/unplanned maintenance

POTENTIAL DEVELOPMENT

Refuge/Wet Storage/Unplanned Maintenance
For unplanned maintenance, it may be necessary to provide a portacabin (or similar) within the existing port; few, if any, existing buildings appear to be available for re-use. No further infrastructure upgrade required.

There are three scenarios for wet storage:
(a) Company that manufactures the devices cannot store them as it needs the laydown space so the developer needs to move the devices to a wet storage site which is both close to the lease site and sheltered.
(b) The developer wants to store the devices close to the lease site until the installation vessel they wish to use is available, which means they store them in the loch.
(c) Refuge site needed when devices are being towed to the installation site and need to take shelter during bad weather (for a day or two) before resuming progress.

See Section 3 of the Environmental Report for assumptions about wet storage.

ENVIRONMENTAL BASELINE - UIG

Biodiversity, flora and fauna –

Seals – There is an SAC designated for harbour seals to the west of Uig, Ascrib, Isay and Dunvegan SAC, which comprises three discrete areas. Potential designated haul-out sites for grey seals to the north – Fladdachuain (115) and Sgeir nam Maol (117) – and harbour seals in the Western Isles to the west and the Sound of Raasay to the east[37]. Indications are that Loch Snizort and the Minches are well used by both harbour and grey seals[38].

European Protected Species – Cetaceans are likely to be passing through the area. Otters may be found using this area of coast.

Population and human health – The harbour is located in Uig, a village which stretches around Uig Bay in Loch Snizort and is the terminal for ferries from Lochmaddy and Tarbert (Western Isles). Residents in Uig likely have views of the bay.

Water and marine environment – Site is located within an area of shellfish growing waters[39]. Coastal waters classification (2011): Good.

[37] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.
[38] SMRU (2013) Marine Mammal Scientific Support Research Programme MMSS/001/11, Grey and harbour seal usage maps [online] Available at: http://www.scotland.gov.uk/Resource/0043/00437053.pdf [accessed 5/12/2013]
[39] Site 57 of Shellfish Water Designations 2012 – Loch Snizort

ENVIRONMENTAL BASELINE - UIG

Climatic Factors – Site is within an Indicative 200 year Flood Zone.

Air – No air quality issues identified.

Soil, Geology & Coastal Processes – The nearest site with geological interests is **Trotternish Ridge SSSI**, approximately 4 km east of Uig. Geological features include geomorphology (mass movement); Igneous Petrology (Tertiary Igneous); Mineralogy of Scotland; and Stratigraphy (Bathonian, Callovian, Kimmeridgian, and Oxfordian).
Much of the coastline of the Isle of Skye has been identified as having the potential for erosion or accretion (e.g. beaches, soft cliffs, etc.), including several areas on the west and east coasts of Loch Snizort. Coastal erosion has been identified in Uig Bay and at several locations to the north and south of the Bay. Accretion has been identified in Loch Snizort Beag and Loch Greshornish to the south (approximately 8 km south of the pier).

Cultural Heritage – The existing King Edward Pier was upgraded in the mid-1980s[40]. The pier is identified on the Canmore website (ID 160442), as is the monument beside the pier (ID 11200) which commemorates the landing on the pier of King Edward VII and Queen Mary in September 1902.[41] There are three Listed Buildings in Uig village: Uig Church (Ref: 13977), which is Category B-listed and includes the building, walls and gatepiers; Uig Free Church (Ref: 13978), a Category-C listed building; and Uig Round Tower (Ref: 13976), a Category B-listed roofless round tower. There is a Scheduled Monument, a cairn (Index No 900) at North Cuil near Uig Church. The wreck of the Irlanda, a steamship, is some distance west of the harbour at Ru Idrigill.

Landscape / Seascape – Trotternish National Scenic Area (approximately 3.5 km east of Uig).

Material Assets – Ferry services to Lochmaddy and Tarbert use the ro-ro pier. The fishery pier is used for mooring, landing fish and storing; fish landings include prawns, brown crabs, scallops and farmed salmon[42]. There is a suitable anchorage for recreational vessels to the north of the pier, and there is a caravan campsite to the west of the pier. An active finfish aquaculture site is located at the mouth of Loch Greshornish.

Issues Scoped Out:
Population and Human Health – There is likely to be increased boat traffic due to the movement of devices, which could result in noise and disturbance to local residents. However, given existing levels of boat movements, this effect is unlikely to be significant.
Air – There is likely to be increased boat traffic due to the movement of devices, which could result in increased atmospheric emissions. However, given existing levels of boat movements, these additional emissions are unlikely to result in significant effects.

[40] http://www.shipsofcalmac.co.uk/crossing_ut.asp
[41] http://warmemscot.s4.bizhat.com/warmemscot-post-38548.html
[42] Ports of Scotland Yearbook 2013, page 222.

ASSESSMENT – UIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Seals – including Uig, Ascrib, Isay and Dunvegan SAC	Risk of corkscrew injury from slow-moving vessels with certain types of ducted propeller or those using dynamic positioning; disturbance to seal haul-out locations.	Death of individual seals may affect overall population numbers/ viability, given that the harbour species in particular is generally in decline; displacement of seals.	Avoid using vessels with ducted propellers for slow-speed activities, e.g. manoeuvring, particularly during breeding season. Avoid storage of devices near seal haul out locations during moulting times and breeding season if relevant.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
European Protected Species: Otters	Potential disturbance of otters (noise during storage, physical presence of devices and human presence) from storage of devices.	Effects will be temporary but, depending on duration and frequency of storage, may be medium-term.	Devices should not be stored on or near habitat used by otters.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
European Protected Species: cetaceans	Risk of collision with vessels; entanglement in mooring lines (e.g. minke whale); disturbance and displacement	Risk of these events occurring is unclear, thus significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/viability	Avoid cetacean habitat and migration routes. Use high-visibility mooring lines.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided
Water & Marine Environment Site is located within area of shellfish growing waters.	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed could affect shellfish growing waters.	Effects are likely to be localised and temporary.	Developers should consider whether there are anchoring methods which would not result in increased turbidity.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
Coastal waters classification	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed. Introduction of devices into the waterbody.	Effects are likely to be localised and temporary	Increased turbidity: as above. No mitigation proposed for temporary morphological effects.	Increased turbidity: as above. Temporary morphological effects.

ASSESSMENT – UIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Climatic Factors Site is within an Indicative 200 year Flood Zone	Potential for King Edward Pier and the ferry terminal to be at risk of flooding from the sea.	This will be a permanent issue given the long-term impacts of climate change.	Ensuring suitable design measures to increase defensibility and mitigate adverse effects of potential sea level rises	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
	Increase in GHG emissions due to vessel movements associated with wet storage operations.	Emissions from vessels are unlikely to contribute significantly to those from the existing Scottish fleet.	Vessel operators may wish to implement energy- and fuel-efficiency measures to reduce fuel consumption and consequent GHG emissions.	Emissions from vessels would continue but are unlikely to contribute significantly to those from the existing Scottish fleet.
Soil, Geology & Coastal Processes Wave patterns and coastal processes	Given the vessel movements and numbers of devices assumed for this assessment, it is considered unlikely that changes to wave patterns would be such that they would result in significant alterations of coastal processes or in significant impacts on coastlines vulnerable to erosion/accretion.	No significant adverse effect	None required	None
Cultural Heritage Scheduled Monuments	There is potential for effects on the setting of the monument, if devices are stored in the bay near the cairn. However, this is unlikely, as this area is shallow. In consequence, no significant effects on the Scheduled Monument are anticipated.	No effects	None required	None

ASSESSMENT – UIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Listed Buildings	There is potential for effects on the settings of Uig Free Church and the Round Tower, if devices are stored in the bay nearby. However, this is unlikely, as this area is shallow. In consequence, no significant effects are anticipated.	No effects	None required	None
Wreck sites	It is unlikely that devices would be stored on the existing wreck site, given its location.	No effects	None required	None
Landscape/Seascape Trotternish NSA Local residents around the bay	Storage of devices which are on or break the water surface may have adverse local landscape and visual effects. It is unlikely that storage would affect the special qualities of the National Scenic Area, given its distance from the harbour.	Effects are likely to be local in nature and temporary, and are unlikely to be significant.	At the local level, it may be desirable to locate devices in a sheltered bay away from overall views of Uig Bay.	Assuming mitigation is implemented, the potential for significant adverse effects at the local level should be reduced.
Material Assets Harbour access	Possible effects on navigational safety, e.g. fishing vessels, vessels servicing aquaculture sites. Devices could block access to the harbour/ferry terminal and displace harbour users (e.g. require ferries to be re-routed).	Collisions could result in injury/death of human beings, oil spills etc. Inefficient operation of ferry terminal and/or ferries. Potential displacement of harbour activities.	Ensure that devices are located away from access points to the harbour. Wet storage site will need to be appropriately lit and/or marked. Liaison with MCA, Harbour Authority and other vessel operators to agree storage areas and navigable channels .	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.

ASSESSMENT – UIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Fishing grounds	Possible disturbance and/or displacement of local fishing grounds by wet storage of devices.	Temporary loss of fishing grounds during storage operations. Potential displacement of fishing activities – adverse socio-economic and community effects; potential intensification of fishing elsewhere.	Ensure that devices are located away from these areas. Liaison with Inshore Fisheries Group and/or local fishermen as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Recreational areas	Possible disturbance and/or displacement of recreational areas by wet storage of devices.	Temporary loss of recreational areas during storage operations, with concomitant local economic loss.	Ensure that devices are located away from these areas. Liaison with Royal Yachting Association Scotland as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Shellfish and finfish interests	Possible damage to existing aquaculture infrastructure, e.g. in the event of devices breaking loose.	Permanent loss of equipment/facilities	Storage sites will need to be located away from aquaculture sites. Liaison with The Crown Estate and aquaculture operators to agree a suitable distance.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
OTHER DEVELOPMENT None known.				
Cumulative Effects	Adverse cumulative effects are unlikely at this site.			

Implications for development:

The following requires further examination at the project level:

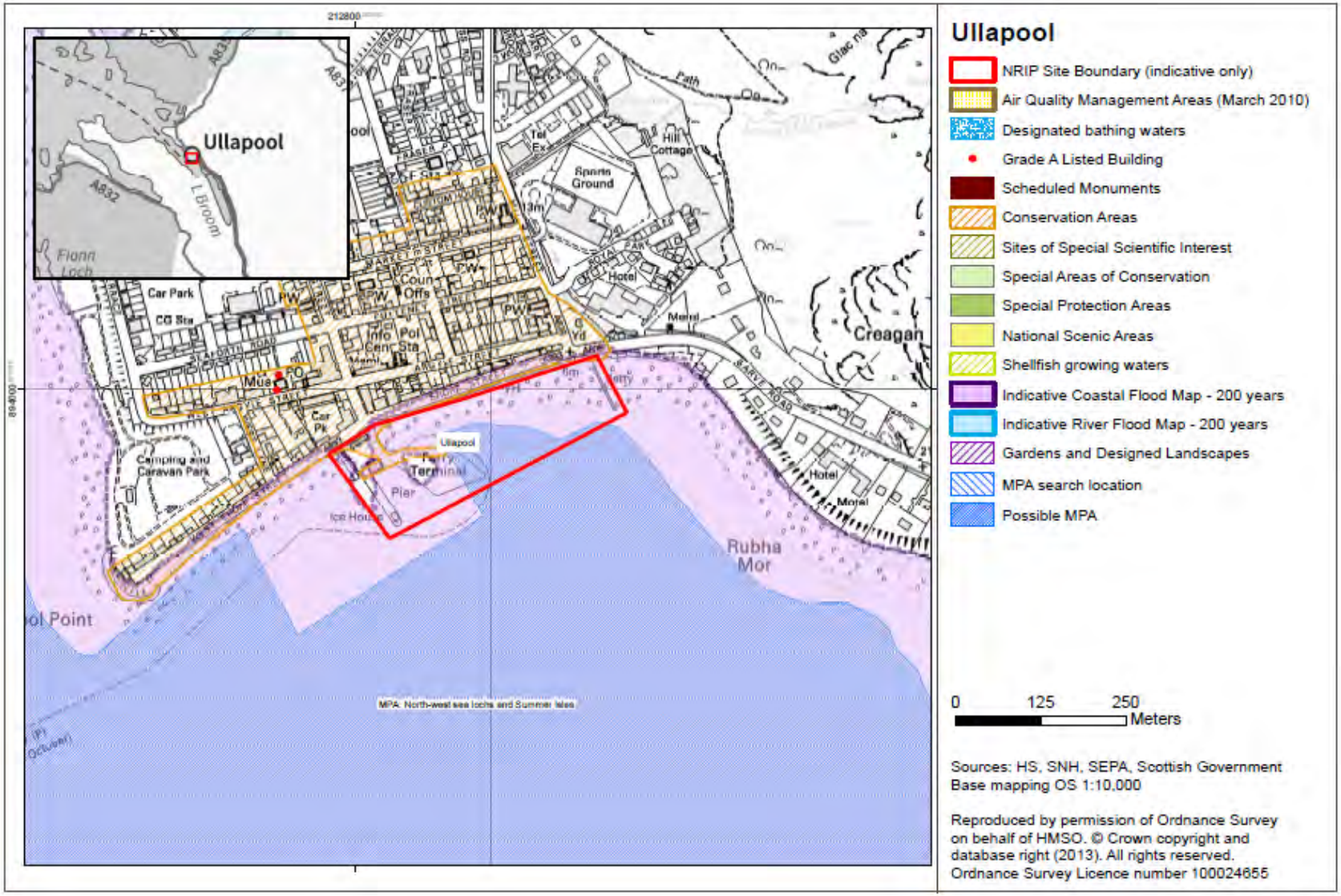
- risks of disturbance to seal haul out locations and corkscrew injury to seals.
- need to alleviate flood risk through project planning and design.
- planning and design to avoid and/or reduce effects on landscape/seascape.

Early discussions should be held with SNH, SEPA, the Local Planning Authority, Harbour Authority, MCA, Inshore Fisheries Group and/or local fishermen, aquaculture operators, Royal Yachting Association Scotland and other vessel operators as required.

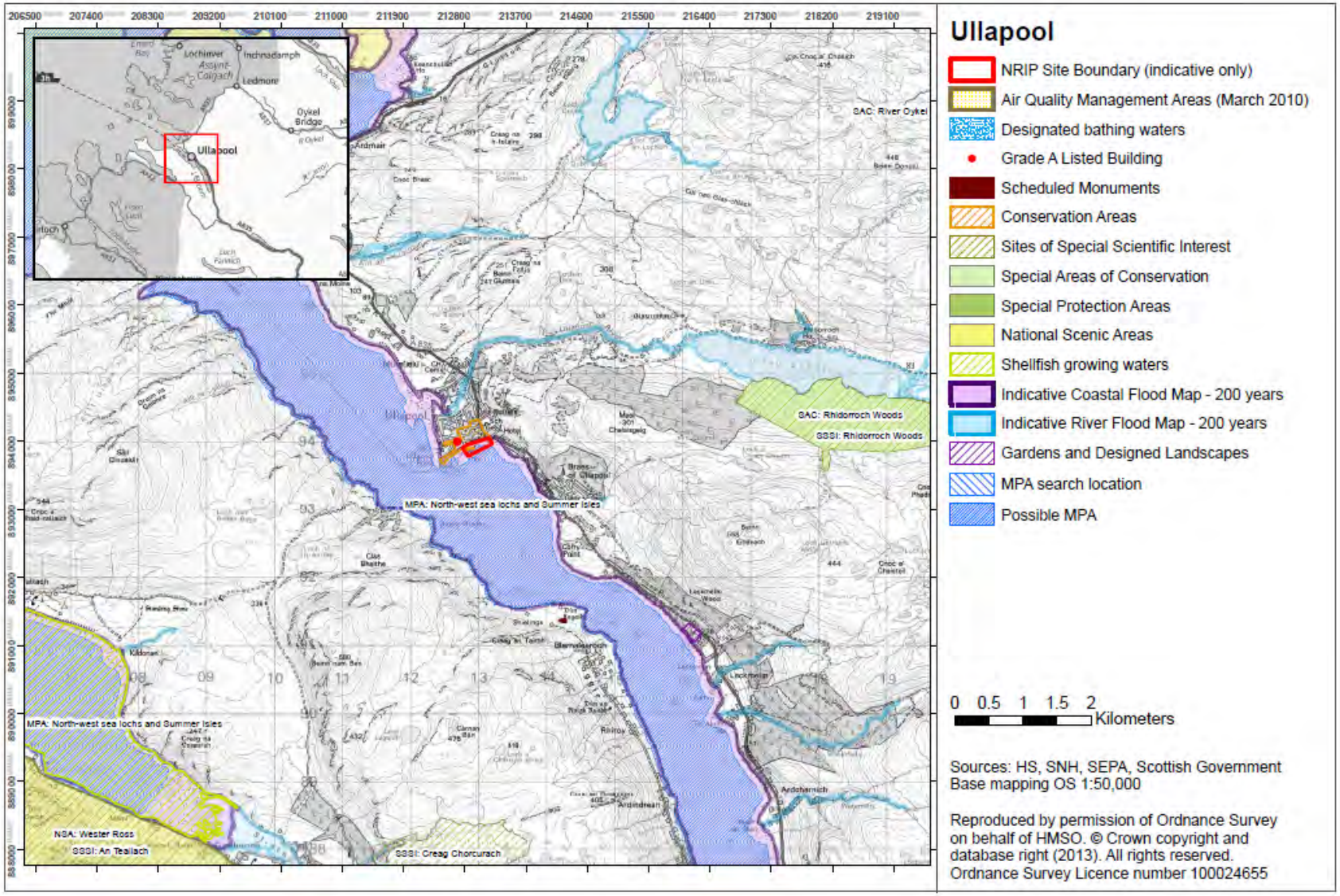
Habitats Regulations Appraisal

It is likely that Habitats Regulations Appraisal will be required at the project level, given the potential to affect harbour seals (corkscrew injuries) from the Ascrib, Isay and Dunvegan SAC. Early discussions should be held with SNH.

Site Map: Ullapool



Wider Map: Ullapool



Assessment Table: Ullapool

SITE USE – Possible Assembly/Construction and Installation; Operations and Maintenance

POTENTIAL DEVELOPMENT

Assembly/Construction & Installation

- Within the existing port, re-use existing buildings, if possible, or provide new ones. (Note that re-use of existing buildings may be difficult, and that space appears to be constrained.) No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

Operations & Maintenance

- Within the existing port, re-use existing buildings, if possible, or provide new ones. (Note that re-use of existing buildings may be difficult, and that space appears to be constrained.) No further infrastructure upgrade required.
- Wet storage of devices may be employed at this location.

See Section 3 of the Environmental Report for assumptions about wet storage.

ENVIRONMENTAL BASELINE – ULLAPOOL

Biodiversity, flora and fauna –

Wester Ross Marine Protected Area (MPA) – Protected biodiversity features – Burrowed mud, circalittoral muddy sand communities, flame shell beds, kelp and seaweed communities on sublittoral sediments, maerl beds, maerl or coarse shell gravel with burrowing sea cucumbers, and northern feather star aggregations on mixed substrata. Known features in the vicinity of the harbour comprise burrowed mud, kelp and seaweed communities on sublittoral sediment and flame shell beds.

Beinn Dearg SPA – breeding dotterel. Diet consists primarily of insects and worms.[43]

Inverpolly, Loch Urigill and nearby Lochs SPA – breeding black-throated diver. Diet consists of fish. Birds may feed in and around Ullapool, but there is suitable feeding habitat closer to the SPA.

Wester Ross Lochs SPA - breeding black-throated diver. Diet consists of fish. Birds may feed in and around Ullapool, but there is suitable feeding habitat closer to the SPA.

Loch Maree SPA - breeding black-throated diver. Diet consists of fish. Birds may feed in and around Ullapool, but there is suitable feeding habitat closer to the SPA.

[43] https://www.rspb.org.uk/wildlife/birdguide/name/d/dotterel/index.aspx

ENVIRONMENTAL BASELINE – ULLAPOOL

Priest Island SPA – breeding storm petrel. Diet consists of fish, plankton and crustaceans; they have been observed to follow trawlers. Birds may feed in and around Ullapool, but there is suitable feeding habitat closer to the SPA.

Seals – Potential designated haul-out sites for grey and harbour seals within the Summer Isles and around Horse Bay to the north-west of Ullapool - Sgeirean Glasa (030) and Carn nan Sgeir (032) for harbour seals, Glas-Leac Mor (121) and Iolla Mhor (123) for grey seals[44]. Indications are that the waters off the north-west coast of the Scottish mainland are well used by both harbour and grey seals[45].

European Protected Species – Cetaceans are likely to be passing through the area. Otters may be found using this area of coast.

Waterbirds – An Area of Search developed to identify a possible marine SPA is located to the west of the site. While these areas do not as yet represent formal designations, they provide additional information for identifying important aggregations of waterbirds in Scotland and complement the existing network of SPAs[46].

Population and human health – Residential area located in close proximity to harbour.

Water & Marine Environment – Coastal waters classification (2011): Good. Nearest shellfish growing waters are in Little Loch Broom[47].

Climatic Factors – The site is within an Indicative 200 year Flood Zone.

Air – No air quality issues identified.

Soil, Geology & Coastal Processes – Site is not within an area designated as a geological SSSI; nearest geological SSSIs are **Cailleach Head** (structural and metamorphic geology) and **Creag Chorcurach** (structural and metamorphic geology). The MPA includes the following protected geodiversity features: marine geomorphology of the Scottish Shelf Seabed, Seabed Fluid and Gas Seep, Submarine Mass Movement, Quaternary of Scotland.
Large sections of coastline in proximity to Ullapool have been identified as having the potential for erosion or accretion (e.g. beaches, soft cliffs, etc.), particularly within Loch Broom to the north and south of Ullapool. Coastal erosion has been identified along the east and west coasts of the, including areas near to the pier. Accretion has been identified at the south-west and innermost part of the Loch (approximately 10 km south east of the pier) and in neighbouring Little Loch Broom (approximately 7 km south west of the pier).

[44] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.
[45] SMRU (2013) Marine Mammal Scientific Support Research Programme MMSS/001/11, Grey and harbour seal usage maps [online] Available at: http://www.scotland.gov.uk/Resource/0043/00437053.pdf [accessed 5/12/2013]
[46] The Scottish Government (2011) Special Protection Areas (SPAs) [online] Available at: http://www.scotland.gov.uk/Topics/Environment/Wildlife-Habitats/protectedareas/NATURA/SPAs (accessed 5/4/2014)
[47] Site 26 of Shellfish Water Designations 2012 – Little Loch Broom

ENVIRONMENTAL BASELINE – ULLAPOOL

Cultural heritage – There are a number of Category A listed buildings in the environs of the harbour, including Ullapool Argyle Street Former Ullapool Parish Church and Burial Ground (Ref:7764). Several piers in the harbour are included on the Canmore website – the harbour pier (ID 281212), including the ice house (Canmore ID 281213); the (now replaced) ferry pier (Canmore ID 281211); and the pier beacons (Canmore ID 281214 and 281215). There are two wrecks to the east of the harbour and two to the south.

Landscape / Seascape – Wester Ross NSA is approximately 5 km to the south-west of Ullapool. Assynt-Coigach NSA is approximately 5.5 km to the north of Ullapool.

Material Assets – Stornaway to Ullapool ferry operates from the harbour. Ullapool is also an important port for commercial fishing, tourism (including cruise ships) and recreational sailing. There is a significant local fleet of small vessels catching shellfish[48]. A dedicated leisure pontoon has been installed and Ullapool Harbour Turst manages eight moorings for visiting vessels[49]. Several aquaculture sites, both finfish and shellfish, are located in Loch Broom to the south-east and Loch Kanaird to the north of the site. Ullapool Harbour Trust dredge within Loch Broom and dispose of dredged arisings in a licensed disposal site not far from the harbour within the loch.[50]

Issues Scoped Out:
Shellfish Growing Waters – Nearest designated are in Little Loch Broom. As this loch is physically separated from Loch Broom, no effects are anticipated.
Air – There is likely to be increased boat traffic due to O&M activities, which could result in increased atmospheric emissions. However, given existing levels of boat movements, these additional emissions are unlikely to result in significant effects.

ASSESSMENT - ULLAPOOL

Environmental Receptor	Effect	Characteristic	Mitigation	Residual Effects
Biodiversity, Flora and Fauna Wester Ross Marine Protected Area (MPA)	O&M activities on land will not affect the protected features of the MPA. Should O&M involve anchorage or storage of devices directly on the seabed, there is a risk of loss of and/or damage to sensitive benthic habitats.	Effects may be temporary or longer term, depending on the ability of the habitat to recover from disturbance. Recovery will also depend on the number of devices, the methods of anchoring and storage location/duration.	Where vulnerable benthic habitats have been identified the storage of devices should be avoided.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.

[48] Ports of Scotland Yearbook 2013, page 232
[49] Welcome Anchorages 2013, page 50
[50] SNH 2013 Scottish MPA Project Management Options: North-West Sea Lochs and Summer Isles

ASSESSMENT - ULLAPOOL				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Beinn Dearg SPA	Dotterel's dietary needs should be satisfied locally, and no feeding at Ullapool is anticipated.	No effect	None required	None
Black-throated diver - Inverpolly, Loch Urigill and nearby Lochs; Wester Ross Lochs; and Loch Maree SPAs Storm petrel - Priest Island SPA Area of Search	There is suitable feeding habitat closer to the SPA, but birds may feed in and around Ullapool and could therefore be disturbed and/or displaced by noise and new devices in the water, should wet storage be employed. As this is a busy working port, effects from additional human presence/ activity are not anticipated.	No effects. However, it is likely that pre-storage bird survey will be a requirement of the marine licensing process.	If necessary, avoid black-throated diver breeding season. If necessary, avoid storm petrel breeding season. If necessary, avoid overwintering.	None
Seals	Risk of corkscrew injury from slow-moving vessels with certain types of ducted propeller or those using dynamic positioning; disturbance to seal haul-out locations.	Death of individual seals may affect overall population numbers/ viability, given that the harbour species in particular is generally in decline; displacement of seals.	Avoid using vessels with ducted propellers for slow-speed activities, e.g. manoeuvring, particularly during breeding season. Avoid storage of devices near seal haul out locations during moulting times and breeding season if relevant.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.
European Protected Species: Otters	It is unlikely that proposed activities will add significantly to existing levels of noise and disturbance, due to the nature of existing activities in the harbour. Unlikely that otters will be affected (if they are using the harbour area).	No effects	None required.	None.

ASSESSMENT - ULLAPOOL				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Other European Protected Species: cetaceans	Risk of collision with vessels; entanglement in mooring lines (e.g. minke whale); disturbance and displacement	Risk of these events occurring is unclear, thus significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/viability	Avoid cetacean habitat and migration routes. Use high-visibility mooring lines.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided
Population / Human Health Residential areas adjacent to the harbour	Noise disturbance during site operations. Due to the nature of existing activities in the harbour, it is unlikely this will add significantly to existing levels of noise and disturbance.	Localised	Site protocols and/or good neighbour agreements would set out conditions for controlling noise and/or disturbance from construction activities and site operations.	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
Water & Marine Environment Coastal waters classification	Increased turbidity from the anchorage or storage of gravity devices directly on the seabed. Introduction of devices into the waterbody.	Effects are likely to be localised and temporary	Increased turbidity: as above. No mitigation proposed for temporary morphological effects.	Increased turbidity: as above. No mitigation proposed for temporary morphological effects.
Climatic Factors Site is within an Indicative 200 year Flood Zone	Potential for Ullapool Ferry Terminal and Pier to be at risk of flooding from the sea	This will be a permanent threat given the long-term impacts of climate change.	Ensuring suitable design measures to increase defensibility and mitigate adverse effects of potential sea level rises	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.
	Increase in GHG emissions due to vessel movements associated with O&M.	Emissions from vessels are unlikely to contribute significantly to those from the existing Scottish fleet.	Vessel operators may wish to implement energy- and fuel-efficiency measures to reduce fuel consumption and consequent GHG emissions.	Emissions from vessels would continue but are unlikely to contribute significantly to those from the existing Scottish fleet.
Soil, Geology & Coastal Processes Wester Ross MPA – protected geodiversity features	O&M activities on land will not affect the protected features of the MPA. Short-term anchorage or storage of devices directly on the	No significant adverse effect	None required	None

ASSESSMENT - ULLAPOOL				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	seabed during O&M is unlikely to result in significant adverse effects on protected geodiversity features.			
Wave patterns and coastal processes	Given the vessel movements and numbers of devices assumed for this assessment, it is considered unlikely that changes to wave patterns would be such that they would result in significant alterations of coastal processes or in significant impacts on coastlines vulnerable to erosion/accretion.	No significant adverse effect	None required	None
Cultural Heritage Listed Buildings and historic features in the environs of the site.	O&M operations are unlikely to affect the setting of the listed buildings and historic features.	No effect	None required	None
Wreck sites	It is unlikely that O&M works would affect existing wreck sites, given their location. Storage of devices could affect wreck sites through destruction of features.	Permanent loss of wreck features	Avoid storage on these areas.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Landscape/Seascape Wester Ross NSA and Assynt-Coigach NSA Residential areas adjacent to the harbour	Storage of devices which are on or break the water surface may have adverse local landscape and visual effects. It is unlikely that storage would affect the special qualities of the National	Effects are likely to be local in nature and temporary, and are unlikely to be significant.	If necessary, locate devices in a sheltered bay away from overall views of Loch Broom. This could affect the MPA biodiversity features and locations should be selected to avoid this.	Assuming mitigation is implemented, the potential for significant adverse effects at the local level should be reduced.

ASSESSMENT - ULLAPOOL				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	Scenic Areas, given their distance from the harbour.			
Material Assets Harbour access	Possible effects on navigational safety, e.g. fishing vessels. Devices could block access to the harbour/ferry terminal and displace harbour users (e.g. require ferries to be re-routed).	Collisions could result in injury/death of human beings, oil spills etc. Inefficient operation of ferry terminal and/or ferries. Potential displacement of harbour activities.	Ensure that devices are located away from access points to the harbour. Wet storage site will need to be appropriately lit and/or marked. Liaison with MCA, Harbour Authority and other vessel operators to agree storage areas and navigable channels .	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Fishing grounds	Possible disturbance and/or displacement of fishing from local grounds by wet storage of devices.	Temporary loss of fishing grounds during storage operations. Potential displacement of fishing activities – adverse socio-economic and community effects; potential intensification of fishing elsewhere	Ensure that devices are located away from these areas. Liaison with Inshore Fisheries Group and/or local fishermen as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Recreational areas	Possible disturbance and/or displacement of recreational areas by wet storage of devices.	Temporary loss of recreational areas during storage operations, with concomitant local economic loss.	Ensure that devices are located away from these areas. Liaison with Royal Yachting Association Scotland as required.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.
Shellfish and finfish interests	Possible damage to existing aquaculture infrastructure, e.g. in the event of devices breaking loose.	Permanent loss of equipment/facilities	Storage sites will need to be located away from aquaculture sites. Liaison with The Crown Estate and aquaculture operators to agree a suitable distance.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.

ASSESSMENT - ULLAPOOL				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
OTHER DEVELOPMENT No known proposed development.				
Cumulative Effects	Possible cumulative effect with existing recreational moorings and anchorages. Otherwise no cumulative effects are anticipated.			

Implications for development:

The following requires further examination at the project level:

- potential effect on benthic habitat within the MPA.
- effects on breeding birds, particularly disturbance and/or displacement from feeding habitat. Early discussions should be held with SNH regarding timing, extent, location and duration of storage.
- risk of disturbance to seal haul out locations and corkscrew injury to seals.
- effects on protected biodiversity features of the MPA.
- need to alleviate flood risk through project planning and design.
- planning and design to avoid and/or reduce effects on wrecks. If wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage

Early discussions should be held with SNH, SEPA, Historic Scotland, the Local Planning Authority, Harbour Authority, MCA, Inshore Fisheries Group and/or local fishermen, aquaculture operators, Royal Yachting Association Scotland and other vessel operators as required.

Habitats Regulations Appraisal

Habitats Regulations Appraisal may be required at the project level, if there are potentially significant effects on breeding birds. Early discussions should be held with SNH.