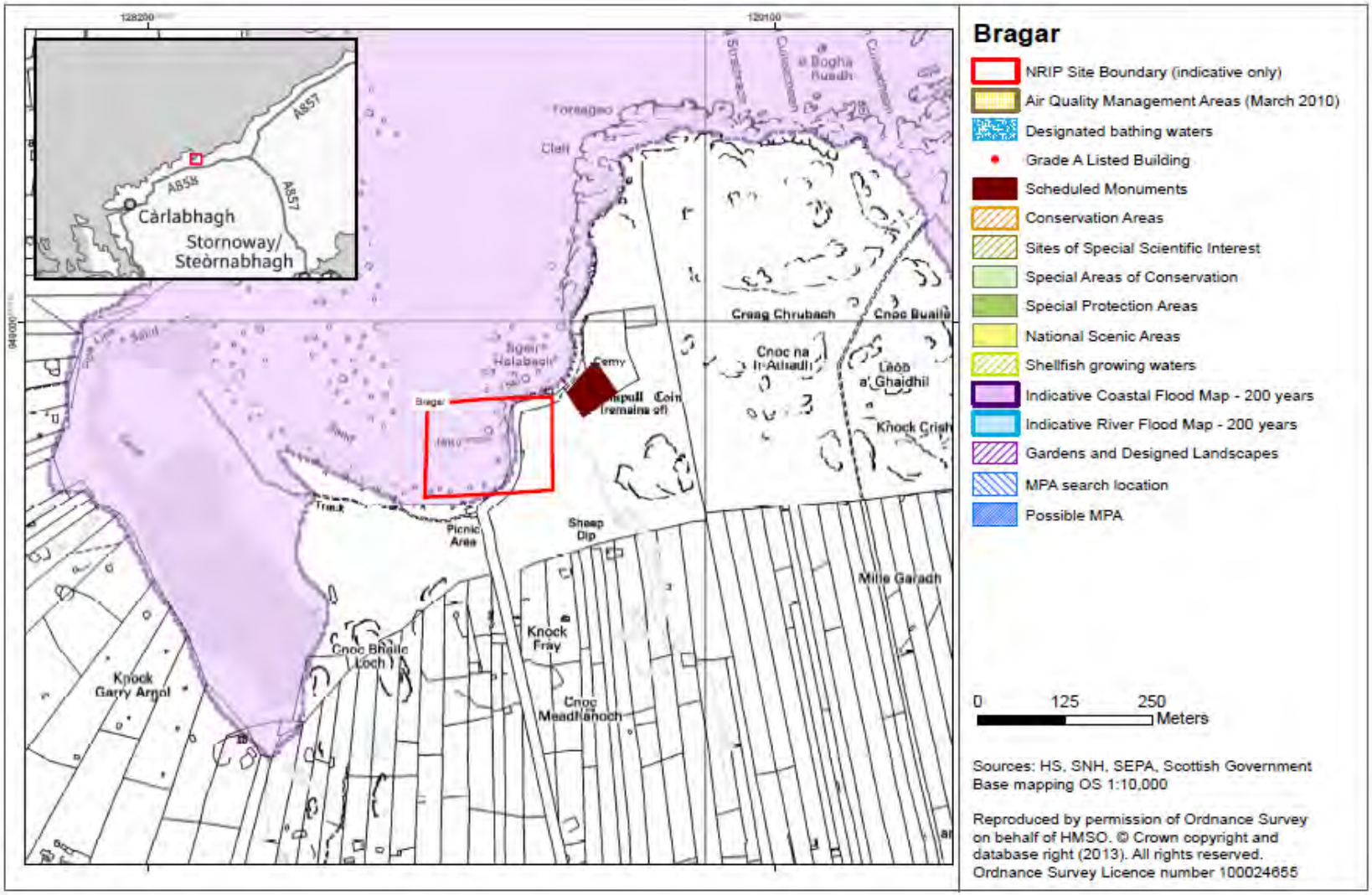
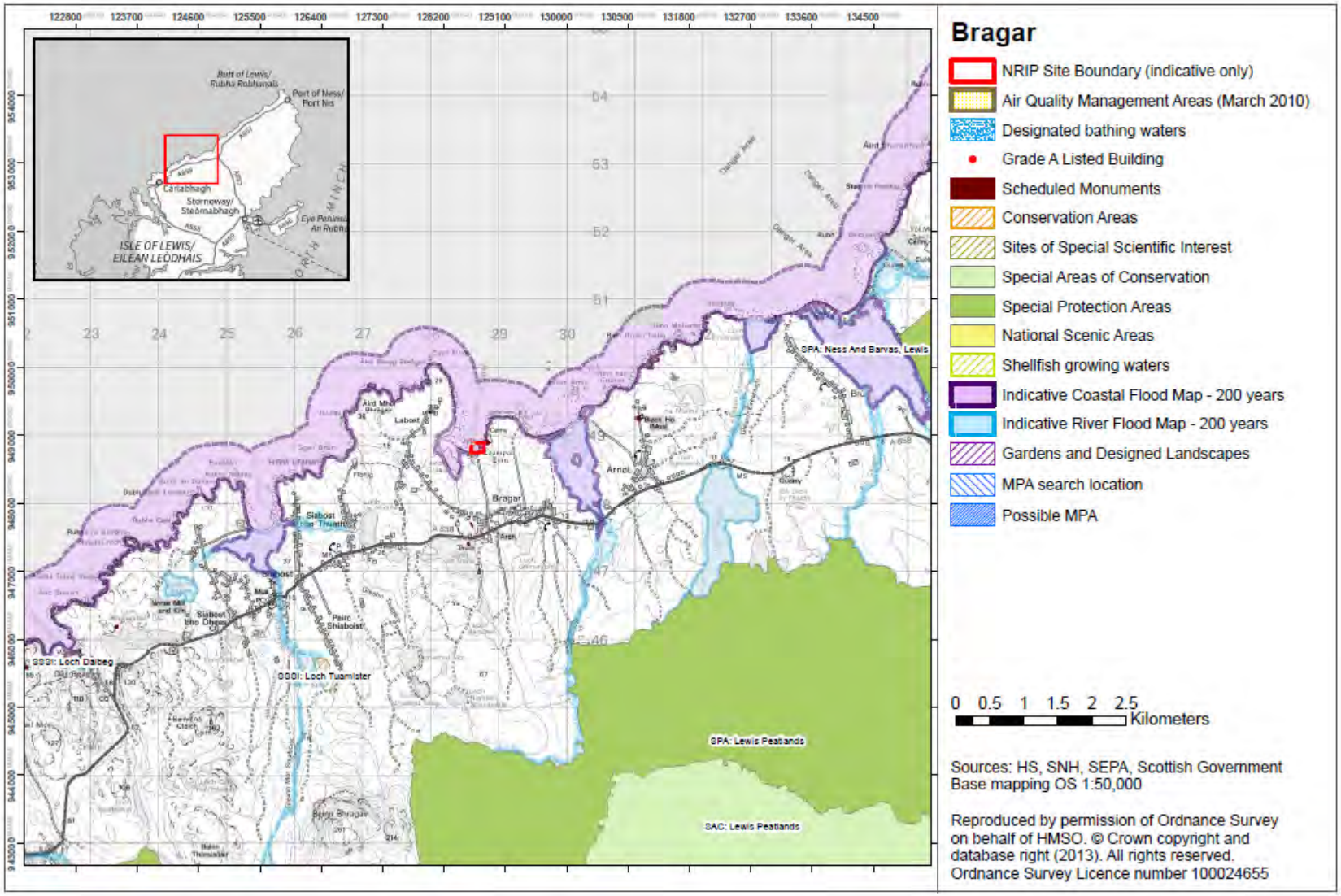
Appendix 3. MRIP Support Sites – Maps & Assessment Tables – Western Isles

1. **Arnish** assessed in NRIP 2010 SEA
2. **Bragar**
3. **Breasclete**
4. **Brevig**
5. **Callanish**
6. **Carloway**
7. **Kirkibost**
8. **Loch Roag**
9. **Lochboisdale**
10. **Miavhaig**
11. **Skigersta**
12. **Stornoway**

Site Map: Bragar



Wider Map: Bragar



Assessment Table: Bragar

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 existing buildings appear available to 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 bay.
(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 - BRAGAR

Biodiversity, flora and fauna – The bay (Port Mhòr Bhràgair) is not within an area designated for its nature conservation interests. However, several designations have been identified in its environs including:

Lewis Peatlands SAC and Ramsar – Breeding birds - Black-throated diver, Dunlin, Golden eagle, Golden plover, Greenshank, Merlin and Red-throated diver (approximately 4 km south-east of the bay).

Lewis Peatlands SAC – Blanket bog, depressions on peat substrates, wet heathland with cross-leaved heaths, otter, acid peat-stained lakes and ponds and clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels (approximately 4 km south-east of the bay).

Seals – Potential designated haul-out site for grey seals in Gasker Barra Head and for harbour seals further south, e.g. near Uist[1]. Indications are that the west coast of the Western Isles is used by both grey and harbour seals[2].

European Protected Species – Cetaceans are likely to be passing through the area. It is likely that otters are using the coast in the Bragar area.

[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]

ENVIRONMENTAL BASELINE - BRAGAR

There is an RSPB reserve At Loch na Muilne, approximately 20 km to the east of Bragar, whose "star species" comprise dunlin, lapwing, red-necked phalarope, redshank and Whooper swan[3].

Population and Human Health –the bay is remote from housing, which is approximately 1 km to the south (Bragar) and to the west (Labost).

Water and marine environment – Coastal waters classification (2011): High.

Climatic Factors – The bay 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.
Sections of Lewis' west coast has been identified as having the potential for erosion or accretion, particularly the more vulnerable coastlines (e.g. beaches, soft cliffs, etc.) interspersed with rocky headlands to the north east and south west of Bragar. While no significant coastal erosion has been identified in proximity to the site, accretion has been identified to the north east of the site in the vicinity of Rinn Druim Tallig.

Cultural Heritage –
There is a Scheduled Monument to the east of the jetty/slipway: Teampull Eoin (St John's Chapel; No 3926), comprising the ruins of a later medieval church and its graveyard, the extended pre-20th century graveyard and an underlying prehistoric settlement mound, is situated close to the shore. There are two Scheduled Monuments in the environs of Bragar village: Allt na Muilne, horizontal water-mills (No 5412) and a broch in Dun Loch an Duna (No 1671). There is also one Scheduled Monument in Arnol, blackhouses no. 39 and no. 42 and associated croft houses (No 90022), which comprises a group of domestic buildings and ancillary enclosures lying at the north end of Arnol township. The buildings include two blackhouses, one roofed and one unroofed, and two stone-and-mortar-built croft houses.

There are no listed buildings or known wrecks in the environs of Port Mhòr Bhràgair. Several historic environment features close to the bay are identified on the Canmore website. As well as Teampull Eoin, these include enclosures and field walls, and objects. The Western Isles Sites and Monuments Record also identifies the remains of a traditional boat in the vicinity of the bay (Port Mhor Bragar; ID 6423).

Landscape / Seascape – No national or local designations have been identified. Residents of Bragar and Labost likely have views of Port Mhòr Bhràgair.

Material Assets – A jetty/slipway is located in Port Mhòr Bhràgair. There is also a car park and picnic site to the south of the bay.

There are no fish farms (finfish or shellfish) in Port Mhòr Bhràgair or its environs. The waters around Port Mhòr Bhràgair support demersal fishing, scallop dredging and prawn (trawling) and shellfish (static gear) fishing. The jetty does not appear to be used for fishing vessels.

[3] http://www.rspb.org.uk/reserves/guide/l/lochnamuilne/about.aspx

ENVIRONMENTAL BASELINE - BRAGAR

The bay does not support a marina. A RYA light recreational cruising route runs up the west coast of the Western Isles.

The exposed beach break at Bragar is occasionally used by surfers. From an examination of satellite imagery of the area, it appears that breaks occur on the west of the bay, opposite the proposed N-RIP site which lies on the east. Potential surfing spots at their closest lie approximately 300 m from the proposed site.

Issues Scoped Out:

Population and Human Health – There is likely to be increased boat traffic due to O&M activities, which could result in noise and disturbance to local residents. However, given current levels of harbour and vessel activity, there is unlikely to be a significant effect on population and human health.

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.

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 - BRAGAR

Environmental Receptor	Effect	Characteristic	Mitigation	Residual Effects
Biodiversity, Flora and Fauna Breeding birds, otters and habitat designations in Lewis Peatlands SAC and SPA.	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.
Otters: Lewis 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;	Death of individual seals may affect overall population numbers/ viability, given that the harbour species in particular is generally in	Avoid using vessels with ducted propellers for slow-speed activities, e.g. manoeuvring, particularly during breeding season.	Assuming mitigation is implemented, significant adverse environmental effects may be avoided.

ASSESSMENT - BRAGAR				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	disturbance to seal haul-out locations.	decline; displacement of seals.	Avoid storage of devices near seal haul out locations during moulting times and breeding season if relevant.	
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
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: Developers should consider whether there are anchoring methods which would not result in increased turbidity. No mitigation proposed for temporary morphological effects.	Increased turbidity: Assuming mitigation is implemented, significant adverse environmental effects may be avoided. Temporary morphological effects.
Climatic Factors Port Mhòr Bhràgair is within an Indicative 200 year Flood Zone	Potential for the jetty/slipway 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 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.

ASSESSMENT - BRAGAR				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Cultural Heritage Scheduled Monument: Teampull Eoin	Storage of devices which are on or break the water surface may affect the setting of Teampull Eoin, given its location. Given their location and distance from the bay, no effects are anticipated on the other Scheduled Monuments.	Effects on the Scheduled Monument are likely to be localised and temporary	Avoid storage in the immediate vicinity of Teampull Eoin.	Assuming mitigation is implemented, the potential for significant adverse effects should be reduced.
other historic environment features	Wet storage of devices is unlikely to affect the setting of these historic features.	No effect	None required	None
Landscape / Seascape residents 1 km to the south (Bragar) and to the west (Labost).	Residents in Bragar and Larbost 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 Port Mhòr Bhràgair.	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. 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, and other vessel operators to agree storage areas and navigable channels.	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 Bragar beach (specifically surfers), with potential adverse socio-economic and community effects.	Temporary loss of recreational areas with concomitant local economic loss. Siting of infrastructure could adversely impact on the wave resource.	Liaison with the Scottish Surfing Federation and Scottish Canoe Association to be undertaken as required. Ensure that devices are located away from these areas.	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.

ASSESSMENT - BRAGAR				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
OTHER DEVELOPMENT None known				
Cumulative Effects	No cumulative effects are anticipated.			

Implications for development:

- The following requires further examination at the project level:
- effects on birds using nearby SPA; otters (including those from nearby SAC). Early discussions should be held with SNH regarding timing, extent, anchoring methods, 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
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage
- planning and design to avoid and/or reduce effects on Scheduled Monument

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, Scottish Surfing Federation, Scottish Canoe Association and other vessel operators as required.

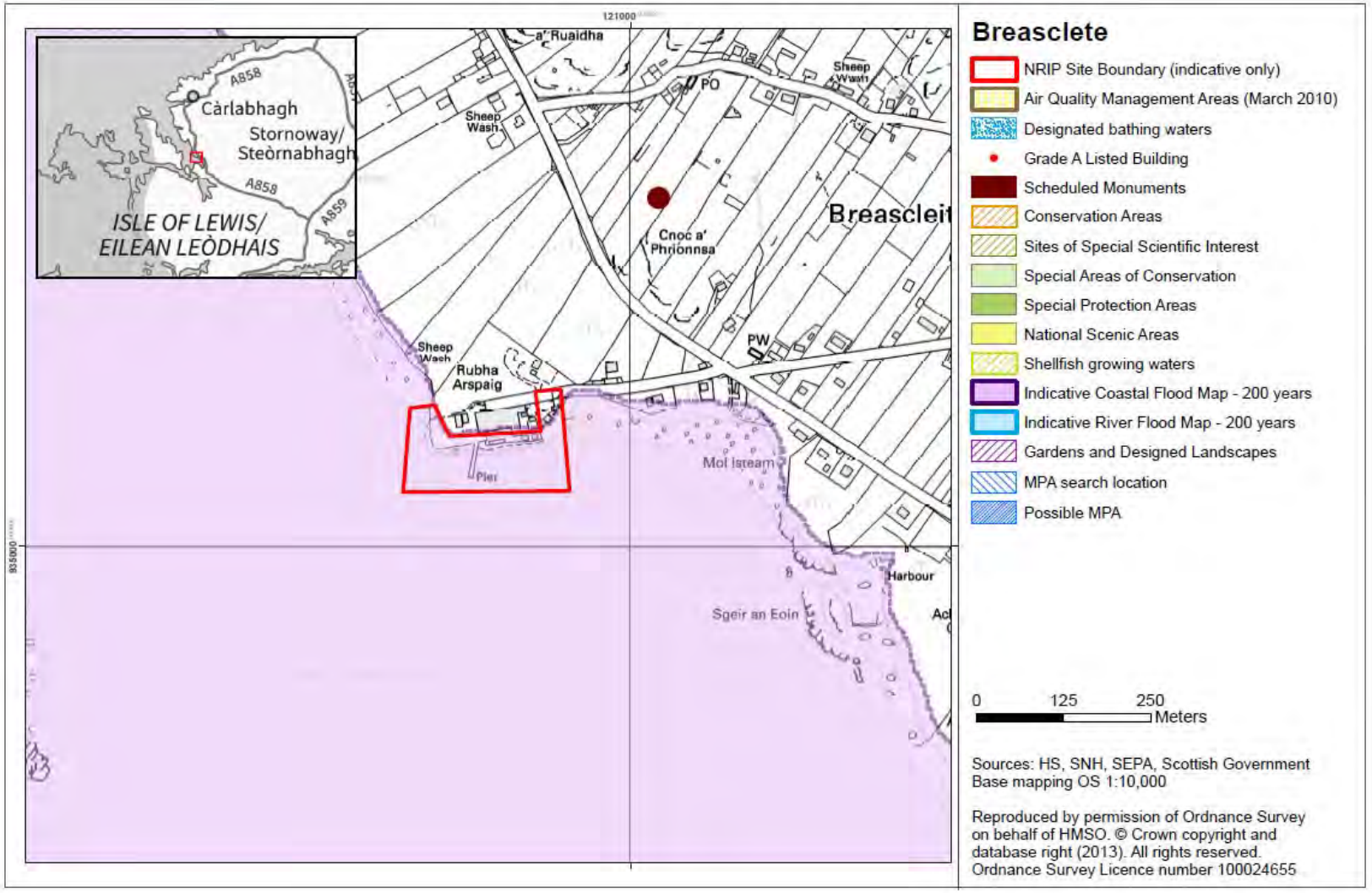
Habitats Regulations Appraisal

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

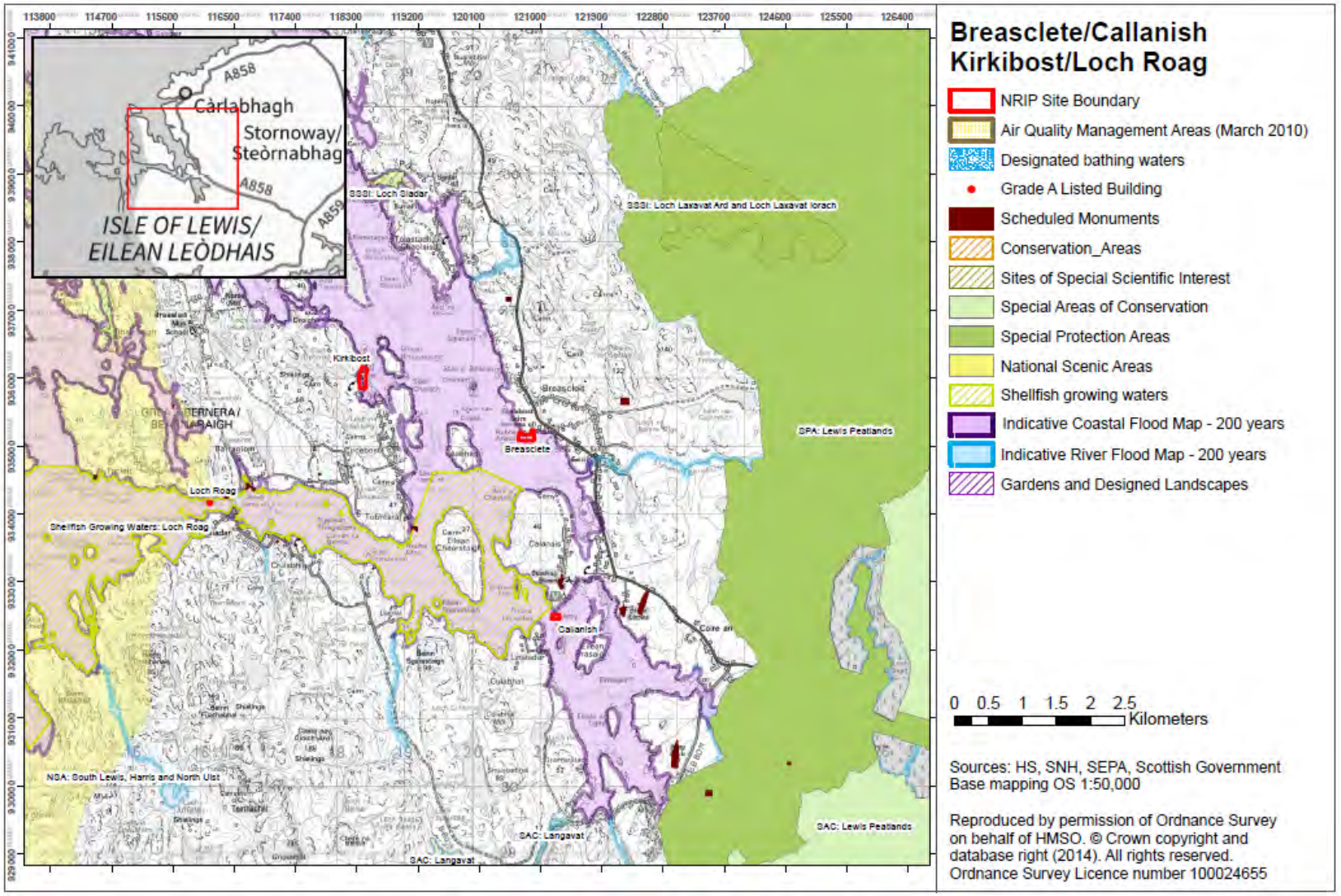
- effects of wet storage of devices on birds and otters from the Lewis Peatlands SPA and SAC, respectively.

Early discussions should be held with SNH.

Site Map: Breasclete



Wider Map: Breasclete



Assessment Table: Breasclete

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; re-use existing buildings if possible. 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 - BREASCLETE

Biodiversity, flora and fauna –

Lewis Peatlands SPA & Ramsar- Breeding and migratory birds – red throated diver, merlin, golden eagle, golden plover, greenshank, black throated diver and dunlin (approximately 3 km east of pier).

Lewis Peatlands SAC - Blanket bog, depressions on peat substrates, wet heathland with cross-leaved heaths, otter, acid peat-stained lakes and ponds and clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels (approximately 4 km south-east of pier).

Loch Laxavat Ard and Loch Laxavat Lorach SSSI - Oligotrophic loch with wooded (scrub) islands; supports breeding bird assemblage. Part of Lewis Peatlands SPA for bird species identified above (approximately 4 km north-east of pier).

Loch Roag Lagoons SAC – Coastal lagoons (approximately 3 km north-west of pier).

Loch Siadar SSSI – Saline lagoon and tidal rapids (approximately 3 km north-west of pier)

ENVIRONMENTAL BASELINE - BREASCLETE

Seals – Potential designated haul-out site for grey seals in Gasker Barra Head and for harbour seals further south, e.g. near Uist[4]. Indications are that the west coast of the Western Isles is used by both grey and harbour seals[5].

European Protected Species – Cetaceans are likely to be passing through the area. It is likely that otters are using the coast around Breasclete.

Population and Human Health – The village of Breasclete is located to the east of the harbour. The nearest housing is approximately 200 m to the east.

Water and marine environment – Site is located immediately east of an area of shellfish growing waters[6]. 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 – No geological SSSI in the area.
Much of the Loch Roag coastline has been identified as having the potential for erosion or accretion, with several sections of vulnerable coastline (e.g. beaches, soft cliffs, etc.) identified near and to the south of Breasclete. Coastal erosion has been identified in this area and accretion has also been identified in the southern end of the Loch.

Cultural heritage – There is a Scheduled Monument north of the pier area: the remains of a chambered cairn of Neolithic date situated on the summit of Cnoc a'Phrionnsa overlooking East Loch Roag (No 5382). Further away there are three Scheduled Monuments: a prehistoric burial chamber at Loch Sgardam (No 5877); a small burial cairn of prehistoric date 230 m south of Cnoc Leathan (No 5461); and a standing stone and remains of several others, together with the remains of 2 burial cairns and a group of later shieling huts (No 5499). There is one Listed Building in Breasclete, east of the pier area: light house keeper's house (Category B, Ref: 18655). There are several wreck sites in the environs of Breasclete: Emperor (island of Cebhagh); unknown; wreck off Kirkibost; and Wyre Corsair (off Aird a'Chaeolais).

There is inter-visibility between the standing stones at Callanish (south of Breasclete) and Breasclete harbour.

Landscape / Seascape – South Lewis, Harris and North Uist NSA approximately 5 km west of the harbour. Residents of Breasclete likely have views of East Loch Roag.

[4] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.
[5] 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]
[6] Site 52 Shellfish Water Designations 2012: Loch Roag

ENVIRONMENTAL BASELINE - BREASCLETE

Material Assets – There is an existing pharmaceutical works at this site. There are two piers at Breasclete, both immediately adjacent to the works, one to the south and one to the south-east.

There are four shellfish and one finfish farms in East Loch Roag between Breasclete and Great Bernera. Elsewhere there are numerous aquaculture sites: 2 finfish and 1 shellfish off the east coast of Great Bernera, and 4 finfish and 22 shellfish in West Loch Roag (most of these within the Shellfish Growing Waters). In 2005, Loch Roag supported almost one-quarter of the Western Isles aquaculture tonnage[7].

The waters around East and West Loch Roag support demersal fishing, scallop divers and prawn (trawling) and shellfish (static gear) fishing.

The harbour is used by both fishing and leisure vessels[8]. A RYA light recreational cruising route runs up the west coast of the Western Isles.

The Loch Roag Zoning Plan[9] identifies a designated anchorage in East Loch Roag (north of Loch Riosaigh, two emergency anchorages (one in East Loch Roag and one in West Loch Roag) and corridors of non-development. Much of the bay adjacent to Breasclete has been designated as part of a non-development corridor.

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.

[7] Western Isles Aquaculture Association. December 2005. A proposed rationale for the ratification of the Site Optimisation Plan for salmon farming in Loch Roag, Lewis, Western Isles.

[8] http://www.ports.org.uk/port.asp?id=487

[9] available at http://www.cne-siar.gov.uk/harbourmaster/lochroag.asp

ASSESSMENT – BREASCLETE				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Birds - Lewis Peatlands SPA/RAMSAR; Loch Laxavat Ard and Loch Laxavat Lorach SSSI	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.
Otters - Lewis 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.
Loch Roag Lagoons SAC & Loch Siadar SSSI	No mobile species interests. Sites will not be affected due to distance from harbour.	No effect	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: 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 – BREASCLETE				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Water & Marine Environment Site is located east 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.
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.
	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 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

ASSESSMENT – BREASCLETE				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Cultural Heritage Scheduled Monuments and Listed Buildings in the environs of the harbour.	Storage of devices which are on or break the water surface may have adverse local visual effects. It is unlikely that wet storage operations will affect the setting of the scheduled monuments and listed buildings.	No effect	If necessary, locate devices in a sheltered bay away from overall views of East Loch Roag (e.g. should not be visible from sites such as the standing stones).	Assuming mitigation is implemented, the potential for significant adverse visual effects should be reduced.
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 Residents within 200 m of 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 Scenic Area, given its distance from the harbour, and the nature of the devices.	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 East Loch Roag.	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. 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.

ASSESSMENT – BREASCLETE				
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 Wet storage at other sites in Loch Roag: Callanish, Carloway, Kirkibost, Miavhaig and Loch Roag itself. Existing aquaculture (finfish and shellfish) in Loch Roag.				
Cumulative Effects	The following adverse cumulative effects may occur: • disturbance/displacement of birds, particularly red-throated diver • corkscrew seal injuries • effects on the setting of the standing stones at Callanish (Scheduled Monument) • effects on navigational safety • possible disturbance and/or displacement of fishing from local grounds • possible disturbance and/or displacement of recreational sailing • possible damage to existing aquaculture infrastructure Adverse cumulative effects on otters and the NSA are not anticipated. The harbours are sufficiently distant from one another that otters could find alternative habitat; the distance between the harbours and from the NSA means that significant cumulative effects are unlikely.			

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

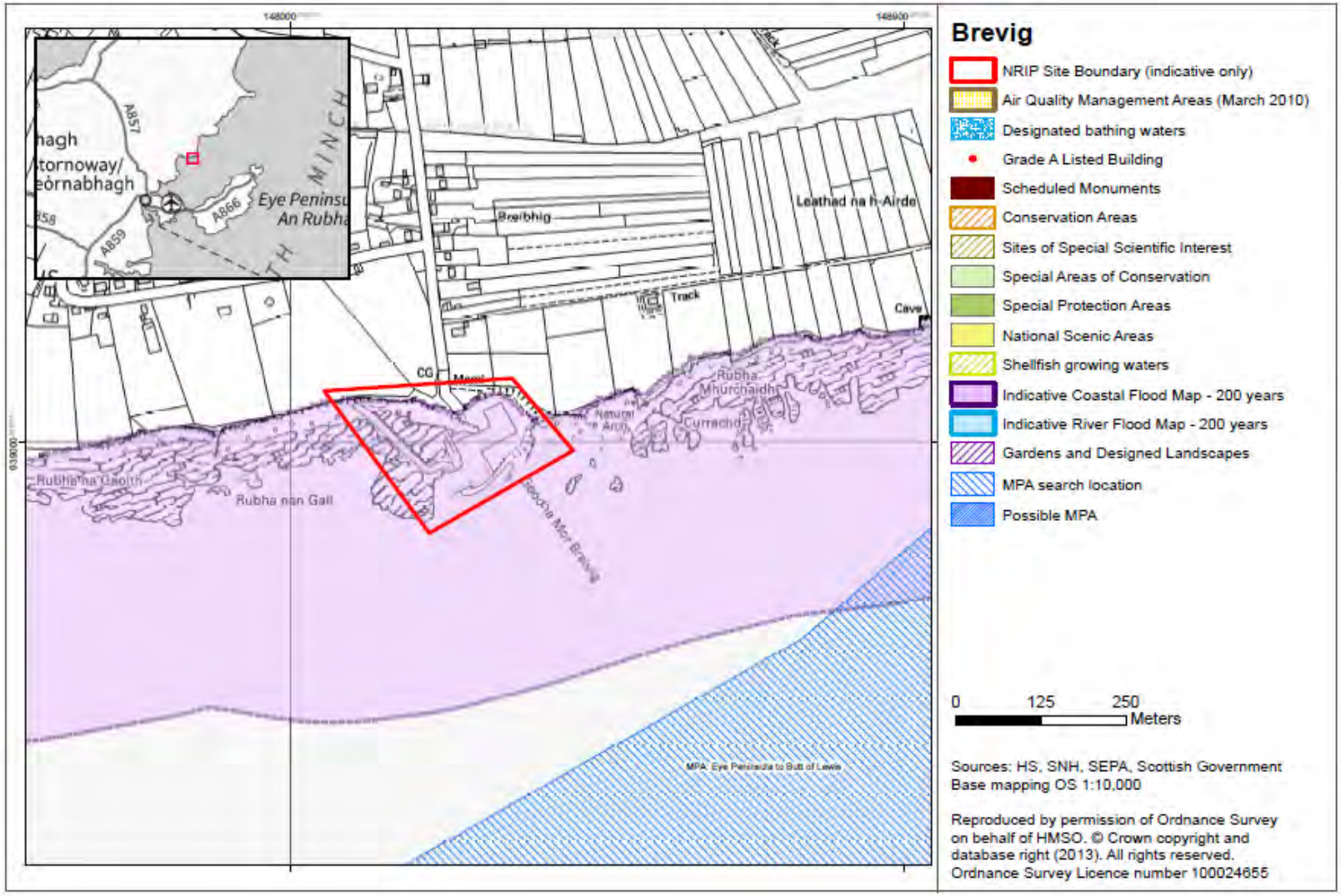
- effects on otters; breeding birds, particularly disturbance and/or displacement from feeding habitat. Early discussions should be held with SNH regarding timing, extent, location and duration of storage.
- risk of disturbance to seal haul out locations and corkscrew injury to seals.
- need to alleviate flood risk through project planning and design.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage
- planning and design to avoid and/or reduce landscape/visual effects and effects on wrecks.

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

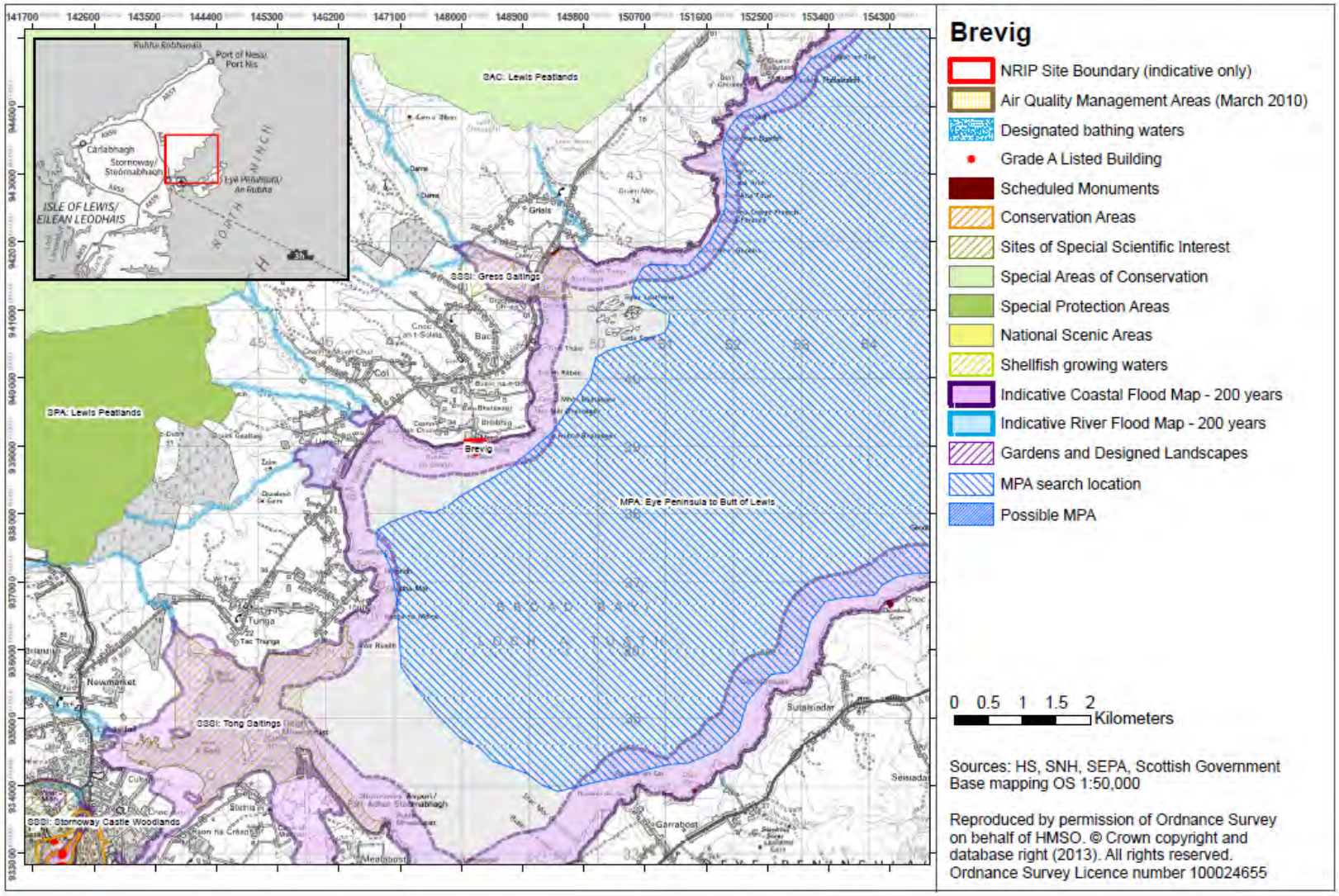
- disturbance of birds from noise and human presence
- disturbance of birds from wet storage of devices
- review of potential effects on otters from SAC

Early discussions should be held with SNH.

Site Map: Brevig



Site Map: Brevig



Assessment Table: Brevig

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 existing buildings appear available to 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 – BREVIG
Biodiversity, Flora and Fauna – **Lewis Peatlands SPA & RAMSAR-** Breeding and migratory birds – red throated diver, merlin, golden eagle, golden plover, greenshank, black throated diver and dunlin (approximately 3 km west of harbour). **Lewis Peatlands SAC -**Blanket bog, depressions on peat substrates, wet heathland with cross-leaved heaths, otter, acid peat-stained lakes and ponds and clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels (approximately 4 km north/north-west of harbour). **Gress Saltings SSSI –** Saltmarsh (approximately 3 km north-east of harbour). **Tong Saltings SSSI -** Breeding bird assemblage, saltmarsh, mudflats and sand dunes (approximately 4 km south-west of harbour) **Eye Peninsula to Butt of Lewis MPA search location** – The proposal is being put forward for the protection of Risso's dolphin and sand eels. Seals – Potential designated haul-out site for harbour seals located at Sgeir Leathann (Broad Bay) in Northern Lewis to the north-east of Stornoway[10]. Potential designated haul-outs for both grey and harbour seals are located along the north-west coast of Scotland's mainland (e.g. Eilean Chrona, Am Balg

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

ENVIRONMENTAL BASELINE – BREVIG

near Cape Wrath, etc.), and harbour seals on the coast of Southern Lewis. Indications are that the waters around Lewis and North Minch are used by both grey and harbour seals[11].

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

Waterbirds – An Area of Search developed to identify a possible marine SPA is located in Broad Bay and to its north east. 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[12].

Population and Human Health – The harbour lies to the south of the village of Brevig; the closest building is approximately 0.5 km to the 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 – Gress Saltings SSSI – Saltmarsh and Tong Saltings SSSI - Saltmarsh, mudflats and sand dunes. Eye Peninsula to the Butt of Lewis MPA search location – geodiversity features associated with the Quaternary of Scotland and Marine Geomorphology of the Scottish Shelf Seabed.
Sections of Lewis' north east coast have been identified as having the potential for erosion or accretion, including Broad Bay located adjacent to the site and several locations further north (i.e. Traigh Mhor located approximately 11 km north east of the site). While no significant coastal erosion has been identified in proximity to the site, accretion has been identified in many of these locations, particularly in Broad Bay.

Cultural Heritage – There are three Scheduled Monuments approximately 3 km to the north-east of Brevig: a souterrain buried below the surface of the land in front of Gress Lodge (No 5701); a souterrain beneath the roadside verge immediately to the east of Gress Cemetery (No 5740); and the ruins of St Aula's Church (No 5343). Gress Lodge, including outbuilding to the rear, is also a Category B-listed Building (Ref: 18674). Gress Old Church (Category B; Ref 18673) is approximately 1-2 km north-east of the harbour.

There are also two Scheduled Monuments approximately 1-2 km south-west of Brevig harbour: chambered cairns 40 m N of Allt an-t-Sniomh (No 5330) and at Dunan, SE of Allt and Sniomh (No 1663).

[11] 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]
[12] 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 – BREVIG

There are about 30 wrecks in Broad Bay / Loch a Tuath: New Light; J B Brown; and 28 others.

Landscape / Seascape – No national designation. Residents of the village of Brevig likely have views over Broad Bay/ Loch a Tuath.

Material Assets – There are no aquaculture sites in Broad Bay/ Loch a Tuath.

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

There are several RYA medium recreational cruising routes in The Minch, which terminate in Stornoway. Stornoway generally marks the limit of cruising endeavour unless vessels are bound past the Butt of Lewis or for the Faroes[13]. It is likely that some recreational vessels sail along the coast past Brevig.

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.

ASSESSMENT - BREVIG

Receptor	Effect	Characteristic	Mitigation	Residual Effects
Biodiversity, Flora and Fauna Birds - Lewis Peatlands SPA/RAMSAR, Tong Saltings SSSI, Area of Search	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, overwintering, etc.	Assuming mitigation is implemented, significant adverse environmental effects should be avoided.
Otters – Lewis 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.

[13] Welcome Anchorages 2013, page 42

ASSESSMENT - BREVIG				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Gress Saltings SSSI	No mobile species interests. Sites will not be affected due to distance from harbour.	No effect	None required	None
European Protected Species: cetaceans (including Risso's dolphin, one of the MPA search location features) 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
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.
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 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 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	Emissions from vessels would continue but are unlikely to contribute significantly to those from the existing Scottish fleet.

ASSESSMENT - BREVIG				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
			consequent GHG emissions.	
Soil, Geology & Coastal Processes 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 Scheduled Monuments and Listed Buildings in the environs of the harbour.	Wet storage operations are unlikely to affect the setting of the scheduled monuments and listed buildings.	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 Residents within 500 m of the harbour	Residents in Brevig may 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 the harbour and/or 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. 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, 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 - BREVIG				
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.
OTHER DEVELOPMENT 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 otters; 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.
- need to alleviate flood risk through project planning and design.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage
- planning and design to avoid and/or reduce landscape/visual effects and effects on wrecks.

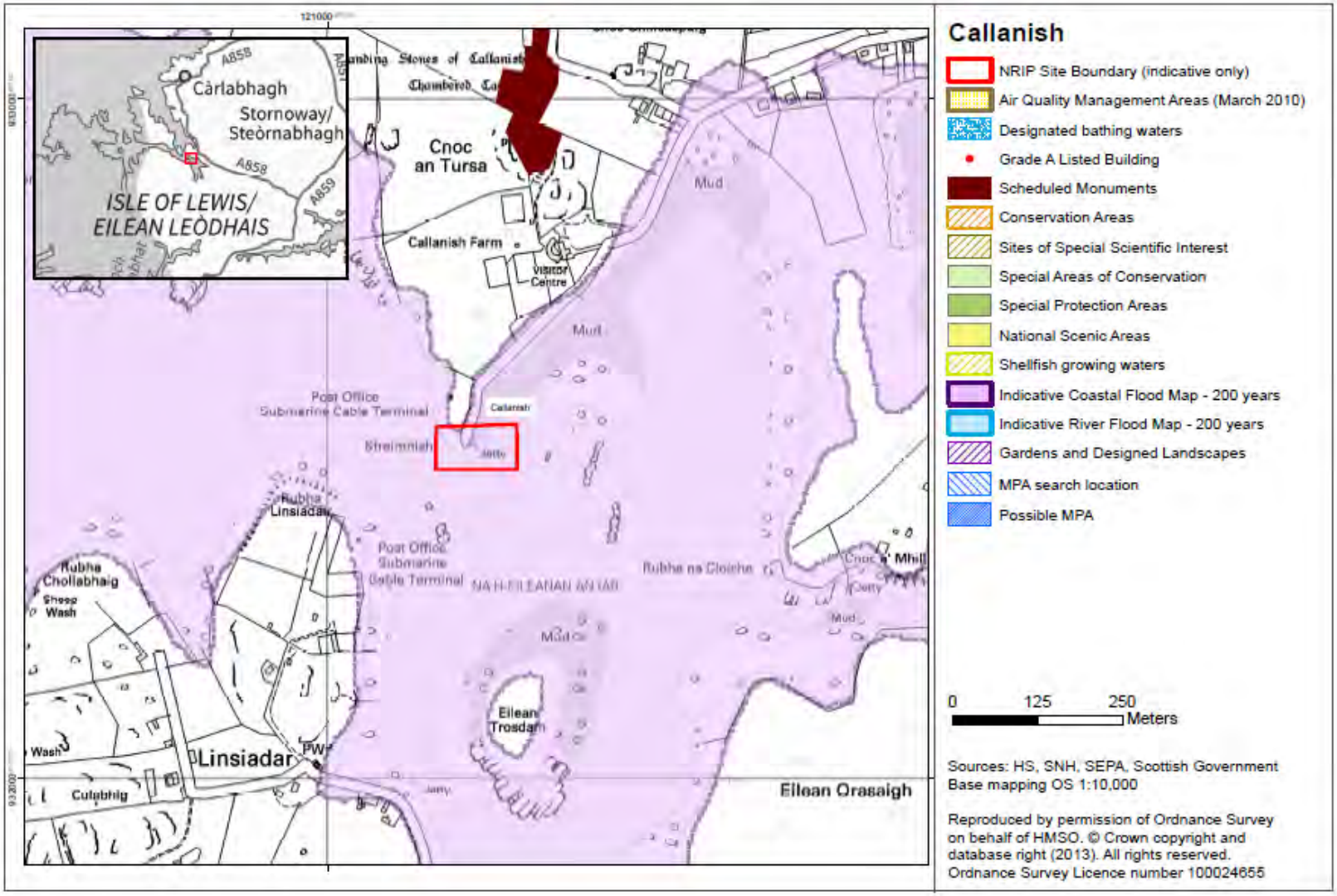
Habitats Regulations Appraisal

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

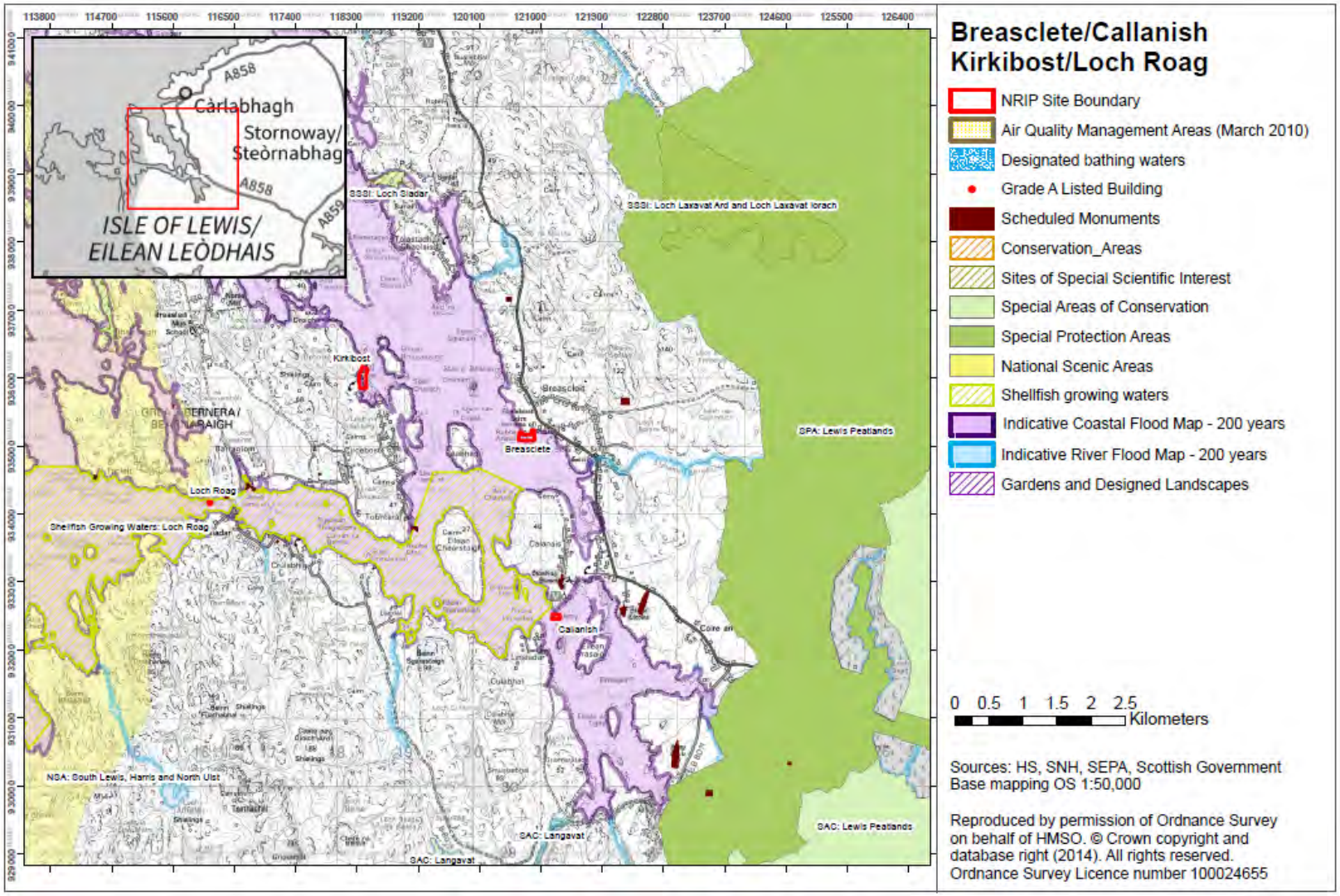
- disturbance of birds from noise and human presence; and from wet storage of devices
- review of potential effects on otters from SAC

Early discussions should be held with SNH.

Site Map: Callanish



Wider Map: Callanish



Assessment Table: Callanish

SITE USE – Refuge/wet storage/unplanned maintenance

POTENTIAL DEVELOPMENT

Refuge/Wet Storage/Unplanned Maintenance
For unplanned maintenance, few existing buildings appear available to re-use. It may be necessary to provide a portacabin (or similar) within the existing port. However, space appears to be constrained at this location, so this may not be feasible. 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 - CALLANISH

Biodiversity, flora and fauna –

Lewis Peatlands SPA & RAMSAR – Breeding and migratory birds – red throated diver, merlin, golden eagle, golden plover, greenshank, black throated diver and dunlin (approximately 3 km east of the pier, and further to the north-east and south of the pier).

Lewis Peatlands SAC – Blanket bog, depressions on peat substrates, wet heathland with cross-leaved heaths, otter, acid peat-stained lakes and ponds and clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels (approximately 4 km east of the pier).

Loch Laxavat Ard and Loch Laxavat Lorach SSSI - Oligotrophic loch with wooded (scrub) islands; supports breeding bird assemblage. Part of Lewis Peatlands SPA for bird species identified above (approximately 4 km north-east of pier).

Langavat SAC – Atlantic salmon river (approximately 3 km south of the pier).

ENVIRONMENTAL BASELINE - CALLANISH

Seals – Potential designated haul-out site for grey seals in Gasker Barra Head and for harbour seals further south, e.g. near Uist[14]. Indications are that the west coast of the Western Isles is used by both grey and harbour seals[15].

European Protected Species – Cetaceans are likely to be passing through the area. It is likely that otters are using the coast around Callanish.

Population and Human Health – Pier is isolated with closest building approximately 0.3 km to the north-east, and the village of Callanish located approximately 600 m to the north-east.

Water and marine environment – Site is located immediately east of an area of shellfish growing waters[16]. 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.
Much of the Loch Roag coastline has been identified as having the potential for erosion or accretion, with several sections of vulnerable coastline (e.g. beaches, soft cliffs, etc.) identified to the north and west of the pier at Callanish. Coastal erosion has been identified across this area, with accretion also identified in the southern end of the Loch to the south of the pier.

Cultural heritage –
The Callanish Standing Stones, a scheduled monument (No 90054), are located approximately 0.5 km north of the pier. There are two other Scheduled Monuments east of the pier, a stone circle and cairn 250 m north of Ceann a'Gharaodh (No 5433) and a stone circle at Cnoc Fillibhir (No 5437). These latter two monuments are part of the Callanish group of megalithic monuments, centred on Callanish, which is of European significance.[17] There is a tearoom in Callanish village which is a Category B-listed building (Ref: 18656). There are no wreck sites in the waters around Callanish pier.

Landscape / Seascape – No national designation in environs of site. South Lewis, Harris and North Uist NSA is approximately 6 km west of Callanish. It is likely that residents of Callanish have views of East Loch Roag.

[14] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.
[15] 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]
[16] Site 52 Shellfish Water Designations 2012: Loch Roag
[17] http://data.historic-scotland.gov.uk/pls/htmldb/f?p=2300:35:4228806829846621::::P35_SELECTED_MONUMENT:05437

ENVIRONMENTAL BASELINE - CALLANISH

Material Assets – There are four shellfish and one finfish farms in East Loch Roag between Breasclete and Great Bernera. Elsewhere there are numerous aquaculture sites: 2 finfish and 1 shellfish off the east coast of Great Bernera, and 4 finfish and 22 shellfish in West Loch Roag (most of these within the Shellfish Growing Waters). In 2005, Loch Roag supported almost one-quarter of the Western Isles aquaculture tonnage[18].

The waters around East and West Loch Roag support demersal fishing, scallop divers and prawn (trawling) and shellfish (static gear) fishing.

The existing harbour is a popular destination for visiting cruise ships[19]. It does not appear to be used by fishing or leisure vessels[20]. A RYA light recreational cruising route runs up the west coast of the Western Isles.

The Loch Roag Zoning Plan[21] identifies a designated anchorage in East Loch Roag (north of Loch Riosaigh, two emergency anchorages (one in East Loch Roag and one in West Loch Roag) and corridors of non-development. Much of the bay adjacent to Breasclete has been designated as part of a non-development corridor.

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.

ASSESSMENT – CALLANISH

Environmental Receptor	Effect	Characteristic	Mitigation	Residual Effects
Biodiversity, Flora and Fauna	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-	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.
Birds - Lewis Peatlands SPA/RAMSAR; Loch Laxavat Ard and Loch Laxavat Lorach SSSI				

[18] Western Isles Aquaculture Association. December 2005. A proposed rationale for the ratification of the Site Optimisation Plan for salmon farming in Loch Roag, Lewis, Western Isles.
[19] Ports of Scotland Yearbook 2013, page 227.
[20] http://www.ports.org.uk/port.asp?id=487
[21] available at http://www.cne-siar.gov.uk/harbourmaster/lochroag.asp

ASSESSMENT – CALLANISH				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	throated divers, from feeding.			
Otters - Lewis 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.
Langavat SAC	It is unlikely that wet storage would affect SAC fish.	No effect	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: 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
Water & Marine Environment Site is located east 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 – CALLANISH				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
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.
	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 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 Callanish standing stones, Scheduled Monument and other Scheduled Monuments in the group	Storage of devices which are on or break the water surface are likely to affect the setting of the standing stones.	Significant adverse	Avoid wet storage of devices in area around Callanish	Assuming mitigation is implemented, significant adverse effects on the monument's setting will be reduced.
Listed Building in the environs of the harbour	It is unlikely that wet storage operations will affect the setting of listed building.	No effect	None required – but see mitigation for Scheduled Monuments	None
Landscape / Seascape Local residents in Callanish	Storage of devices which are on or break the water surface may have adverse local	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 East Loch	Assuming mitigation is implemented, the potential for significant adverse visual effects

ASSESSMENT – CALLANISH				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	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.		Roag - but see mitigation for Scheduled Monuments	should be reduced.
Material Assets Harbour access and Navigation	Possible effects on navigational safety, e.g. 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.
Shellfish and finfish interests	Possible damage to existing aquaculture infrastructure, e.g. in the event of devices	Permanent loss of equipment/facilities	Storage sites will need to be located away from aquaculture sites. Liaison	Assuming mitigation is implemented, the risk of significant adverse effects

ASSESSMENT – CALLANISH				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	breaking loose.		with The Crown Estate and aquaculture operators to agree a suitable distance.	should be reduced.
OTHER DEVELOPMENT Wet storage at other sites in Loch Roag: Breasclete, Carloway, Kirkibost, Miavhaig and Loch Roag itself. Existing aquaculture (finfish and shellfish) in Loch Roag.				
Cumulative Effects	The following adverse cumulative effects may occur: • disturbance/displacement of birds, particularly red-throated diver • corkscrew seal injuries • effects on navigational safety • possible disturbance and/or displacement of fishing from local grounds • possible disturbance and/or displacement of recreational sailing • possible damage to existing aquaculture infrastructure Adverse cumulative effects on otters and the NSA are not anticipated. The harbours are sufficiently distant from one another that otters could find alternative habitat; the distance between the harbours and from the NSA means that significant cumulative effects are unlikely.			

Implications for development:

The following requires further examination at the project level:

- effects on otters; 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.
- need to alleviate flood risk through project planning and design.
- need to avoid significant adverse effects on the Callanish group of standing stones. Early discussion with Historic Scotland is needed.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage
- planning and design to avoid and/or reduce landscape/visual effects and effects on wrecks.

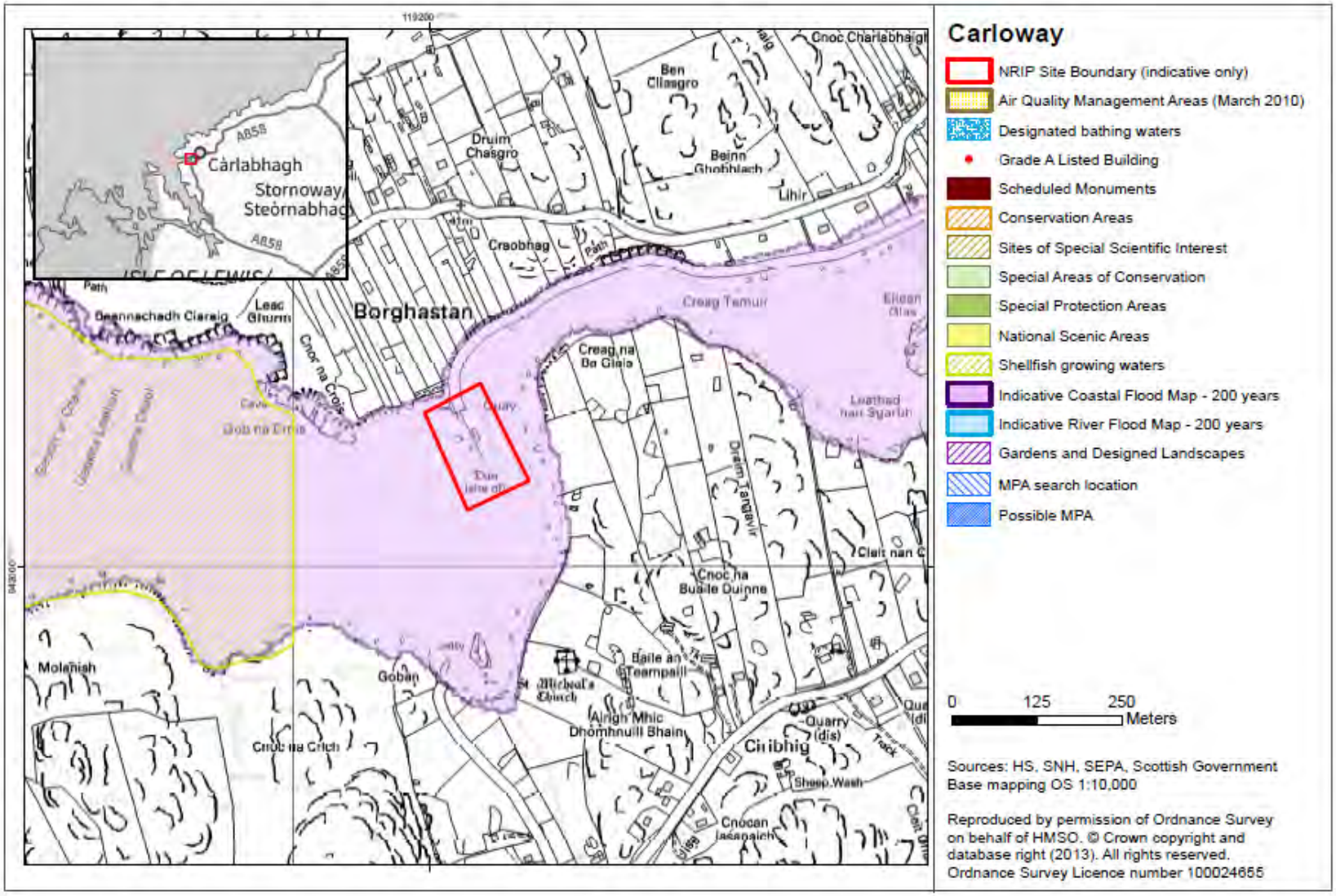
Habitats Regulations Appraisal

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

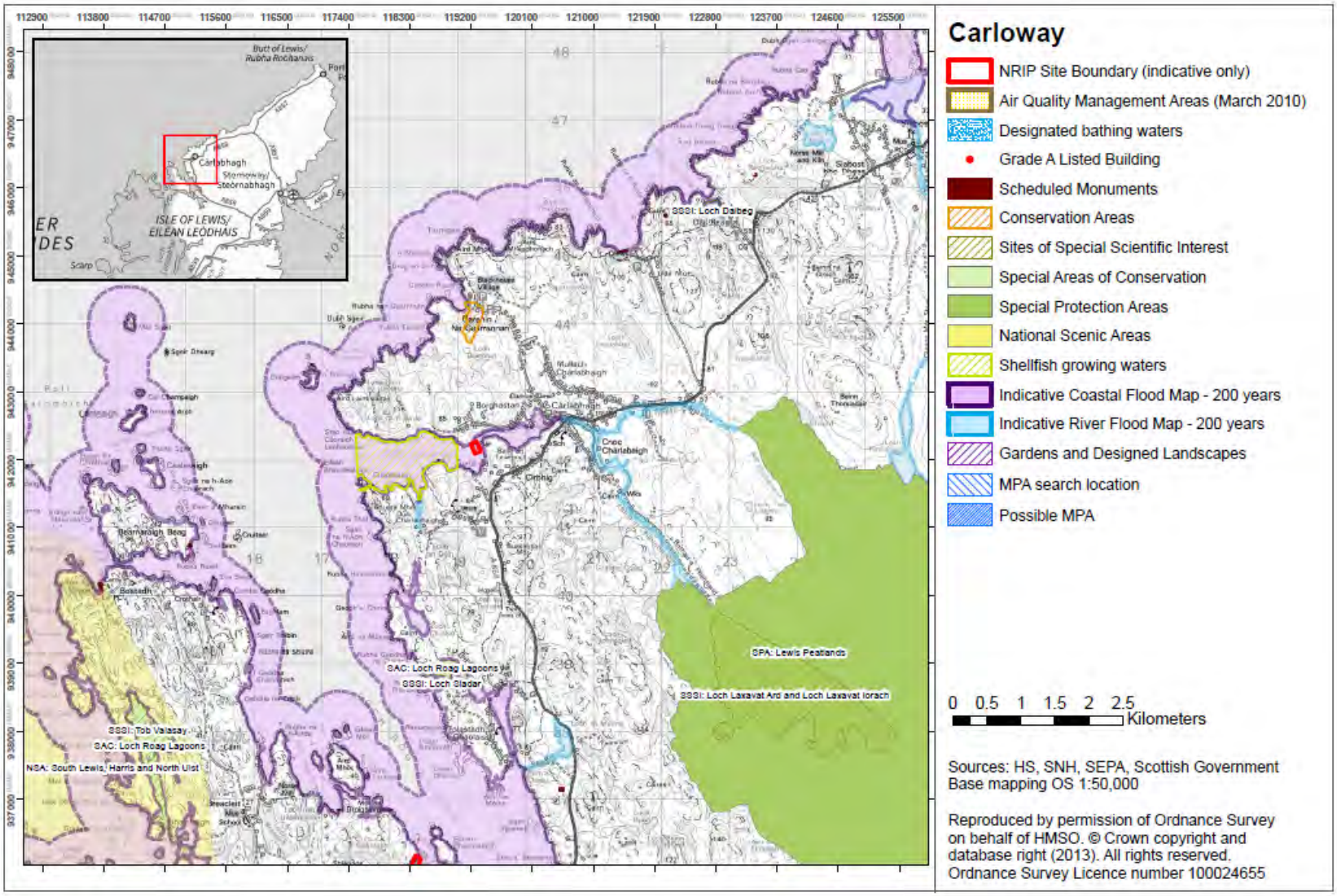
- disturbance of birds from noise and human presence
- disturbance of birds from wet storage of devices
- review of potential effects on otters from SAC

Early discussions should be held with SNH.

Site Map: Carloway



Wider Map: Carloway



Assessment Table: Carloway

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; re-use existing buildings if possible. 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 - CARLOWAY

Biodiversity, Flora and Fauna –

Lewis Peatlands SPA & RAMSAR- Breeding and migratory birds – red throated diver, merlin, golden eagle, golden plover, greenshank, black throated diver and dunlin (approximately 3 km south-east of pier)

Loch Laxavat Ard and Loch Laxavat Lorach SSSI - Oligotrophic loch with wooded (scrub) islands; supports breeding bird assemblage. Part of Lewis Peatlands SPA for bird species identified above (approximately 3 km south-east of pier).

Lewis Peatlands SAC -Blanket bog, depressions on peat substrates, wet heathland with cross-leaved heaths, otter, acid peat-stained lakes and ponds and clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels.

Loch Roag Lagoons SAC – Coastal lagoons (approximately 3 km south-west of pier).

Loch Siadar SSSI – Saline lagoon and tidal rapids (approximately 3 km south-west of pier)

ENVIRONMENTAL BASELINE - CARLOWAY

Seals – Potential designated haul-out site for grey seals in Gasker Barra Head and for harbour seals further south, e.g. near Uist[22]. Indications are that the west coast of the Western Isles is used by both grey and harbour seals[23].

European Protected Species – Cetaceans are likely to be passing through the area. It is likely that otters are using the coast around Carloway.

Population and Human Health – Pier is isolated with closest building approximately 0.5 km to the east.

Water & Marine Environment – Designated Shellfish Growing Waters are located within Loch Charlabhaigh, approximately 200 m west of the pier. Coastal waters classification (2011): Good.

Soil, Geology & Coastal Processes – Site is not within an area designated as a geological SSSI
The coastline to the west of the pier, at the entrance to Loch Carloway, has been identified as having the potential for erosion or accretion (e.g. beaches, soft cliffs, etc.). However, no significant coastal erosion or accretion has been identified in proximity to the site.

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

Air – No air quality issues identified.

Cultural Heritage – No Scheduled Monuments in the immediate environs of the harbour. The nearest is a site of standing stone at Clach an Tursa (No 1662), approximately 2 km east of the pier, and a broch at Dun Carloway (No 90110), approximately 1 km south of the pier.

There is one Listed Building in Carloway (Free Carloway Church; Category B; Ref: 18657), and two on the hill south of the pier: a house shell below Dun Carloway broch (Category C; Ref: 18659) and a clapper bridge (Category B; Ref: 18660).

There are several wreck sites in Loch Chàrlabhaigh.

Landscape / Seascape – No national designation in environs of site. South Lewis, Harris and North Uist NSA is 6.5 km west of Carloway. It is likely that residents of Carloway have views of East Loch Roag.

Material Assets – There is one finfish farm in the environs of Carloway, at the north end of Great Bernera. Further south in East Loch Roag are four shellfish and one finfish farms between Breasclete and Great Bernera. Elsewhere there are numerous aquaculture sites: 2 finfish and 1 shellfish off the east coast of

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

Great Bernera, and 4 finfish and 22 shellfish in West Loch Roag (most of these within the Shellfish Growing Waters). In 2005, Loch Roag supported almost one-quarter of the Western Isles aquaculture tonnage[24].

The waters around East and West Loch Roag support demersal fishing, scallop divers and prawn (trawling) and shellfish (static gear) fishing. Carloway's pier is used by local fishing vessels and small leisure craft[25]. A RYA light recreational cruising route runs up the west coast of the Western Isles.

The Loch Roag Zoning Plan[26] identifies a designated anchorage in East Loch Roag (north of Loch Riosaigh, two emergency anchorages (one in East Loch Roag and one in West Loch Roag) and corridors of non-development. Much of the bay adjacent to Breasclete has been designated as part of a non-development corridor.

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.
Soil, Geology & 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.
Cultural Heritage – No historic environment features on or in the environs of the site.

ASSESSMENT – CARLOWAY

Receptor	Effect	Characteristic	Mitigation	Residual Effects
Biodiversity, Flora and Fauna Birds and otters - Lewis Peatlands SPA/RAMSAR & SAC surrounding area.	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.
Otters - Lewis Peatlands SAC and elsewhere	Potential disturbance of otters (noise during storage,	Effects will be temporary but, depending on duration and	Devices should not be stored on or near habitat used by	Assuming mitigation is implemented, significant

[24] Western Isles Aquaculture Association. December 2005. A proposed rationale for the ratification of the Site Optimisation Plan for salmon farming in Loch Roag, Lewis, Western Isles.
[25] http://www.ports.org.uk/port.asp?id=490
[26] available at http://www.cne-siar.gov.uk/harbourmaster/lochroag.asp

ASSESSMENT – CARLOWAY				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
(European Protected Species)	physical presence of devices and human presence) from storage of devices.	frequency of storage, may be medium-term.	otters.	adverse environmental effects should be avoided.
Loch Roag Lagoons SAC & Loch Siadar SSSI	No mobile species interests. Sites will not be affected due to distance from harbour.	No effect	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: 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
Water & Marine Environment Site is located east 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.
Climatic Factors	Potential to be at risk of	This will be a permanent	Ensuring suitable design	Assuming mitigation is

ASSESSMENT – CARLOWAY				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Site is within an Indicative 200 year Flood Zone	flooding from the sea	threat given the long-term impacts of climate change.	measures to increase defensibility and mitigate adverse effects of potential sea level rises	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 Scheduled Monuments / Listed Buildings in harbour environs	Wet storage operations are unlikely to affect the setting of the scheduled monuments and listed buildings.	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 Residents at least 500 m from 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 Scenic Area, given its 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 of East Loch Roag.	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. 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,	Assuming mitigation is implemented, the risk of significant adverse effects should be reduced.

ASSESSMENT – CARLOWAY				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
			aquaculture operators and other vessel operators to agree storage areas and navigable channels.	
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 Wet storage at other sites in Loch Roag: Breasclete, Callanish, Kirkibost, Miavhaig and Loch Roag itself. Existing aquaculture (finfish and shellfish) in Loch Roag.				
Cumulative Effects	The following adverse cumulative effects may occur: • disturbance/displacement of birds, particularly red-throated diver • corkscrew seal injuries • effects on navigational safety • possible disturbance and/or displacement of fishing from local grounds • possible disturbance and/or displacement of recreational sailing • possible damage to existing aquaculture infrastructure			

ASSESSMENT – CARLOWAY				
Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	Adverse cumulative effects on otters and the NSA are not anticipated. The harbours are sufficiently distant from one another that otters could find alternative habitat; the distance between the harbours and from the NSA means that significant cumulative effects are unlikely.			

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

- effects on otters; 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.
- need to alleviate flood risk through project planning and design.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage
- planning and design to avoid and/or reduce landscape/visual effects and effects on wrecks.

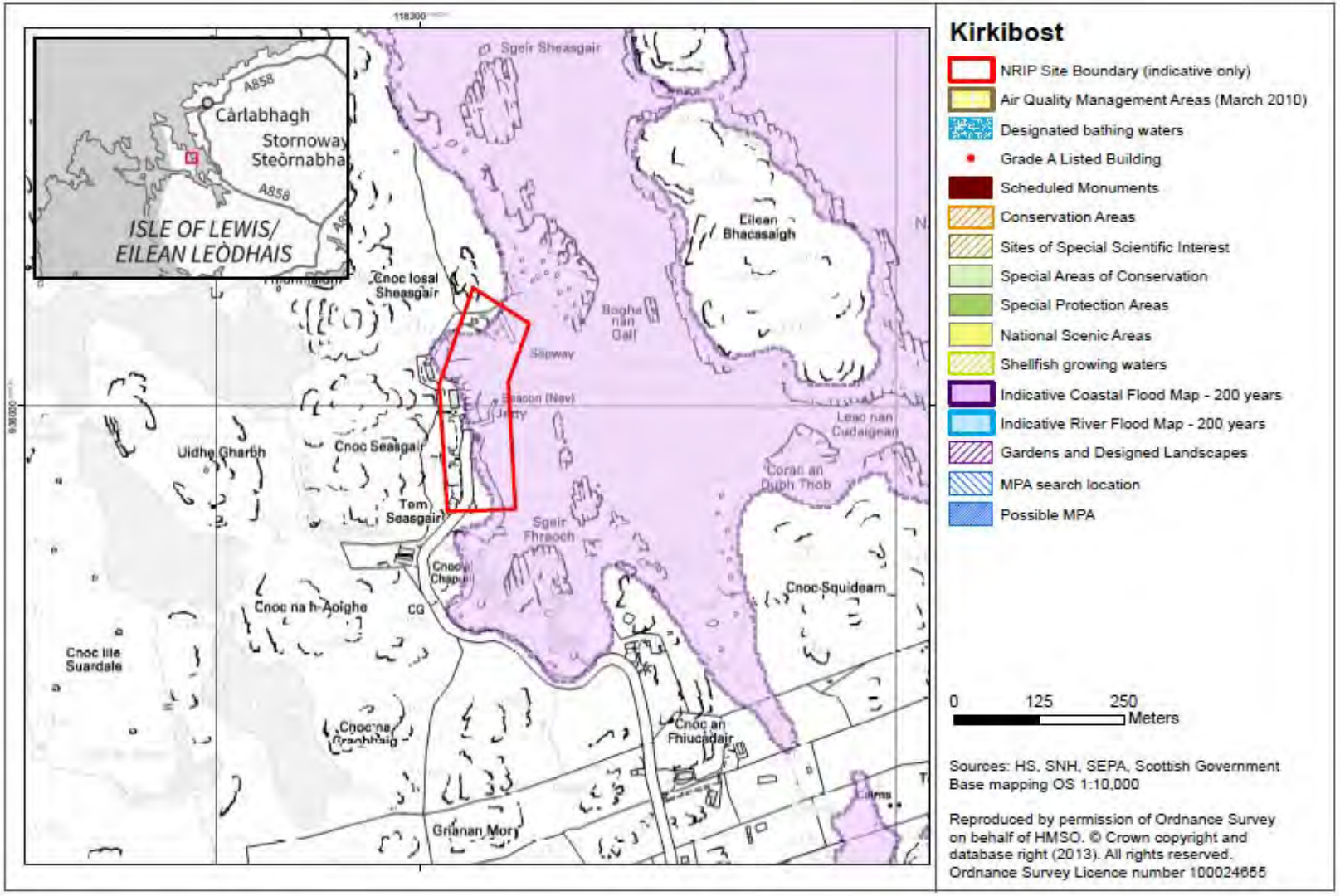
Habitats Regulations Appraisal

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

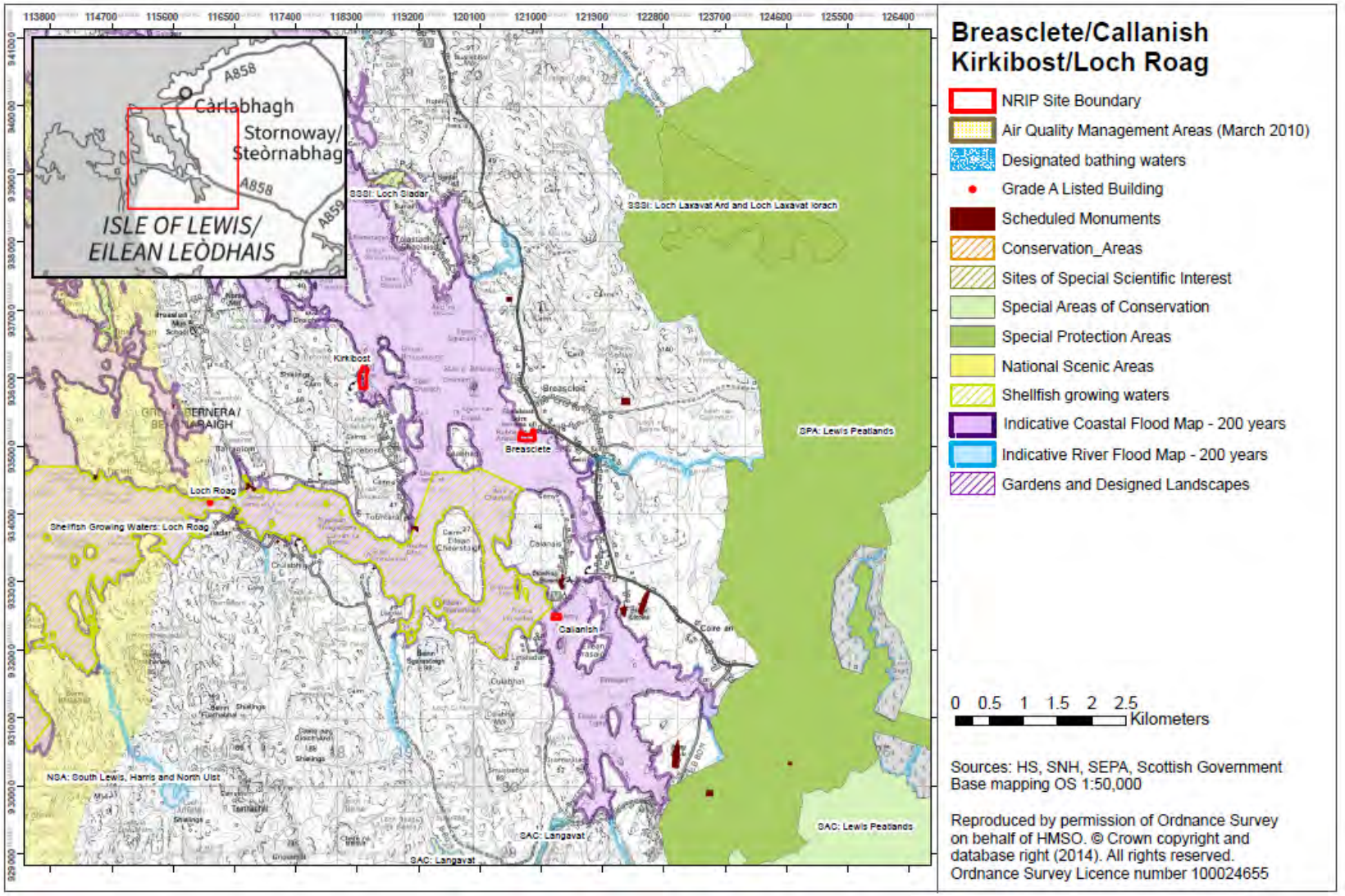
- disturbance of birds from noise and human presence
- disturbance of birds from wet storage of devices
- review of potential effects on otters from SAC

Early discussions should be held with SNH.

Site Map: Kirkibost



Wider Map: Kirkibost



Assessment Table: Kirkibost

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; re-use existing buildings if possible. 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 – KIRKIBOST
Biodiversity, flora and fauna – **Lewis Peatlands SPA & Ramsar-** Breeding and migratory birds – red throated diver, merlin, golden eagle, golden plover, greenshank, black throated diver and dunlin (approximately 5 km east of pier). Seals – Potential designated haul-out site for grey seals in Gasker Barra Head and for harbour seals further south, e.g. near Uist[27]. Indications are that the west coast of the western isles is used by both grey and harbour seals[28]. 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* – A few scattered residential properties with views of the harbour. *Water & Marine Environment* – Coastal waters classification (2011): Good.

[27] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.
[28] 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 – KIRKIBOST

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.
Much of the Loch Roag coastline is identified as having the potential for erosion or accretion, with several sections of vulnerable coastline (e.g. beaches, soft cliffs, etc.) identified to the south of the site. While coastal erosion and accretion have been identified within the southern parts of the Loch, no significant coastal erosion or accretion has been identified in proximity to the pier.

Cultural Heritage – A number of historic environment features have been identified in the general vicinity of the site including Great Bernera Farmstead (Canmore ID 137123) and Mill (Canmore ID 137125) located north and west of the site respectively. Several other historic features, including those with records held by Comhairle nan Eilean Siar, are located around the coastline to the north and south of the site.

Landscape & Seascape – No national designation.

Material Assets – Local fishing and recreational sailing interests use local pier facilities.

The Loch Roag Zoning Plan[29] identifies a designated anchorage in East Loch Roag to the north of Loch Riosaigh, two emergency anchorages (one in East Loch Roag and one in West Loch Roag) and corridors of non-development. Waters adjacent to Kirkibost have been designated as part of a non-development corridor.

Issues Scoped Out:
Population and Human Health – No significant residential developments identified near to the proposed site.
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 unlikely that changes to wave patterns would be such that they would result in significant alterations of coastal processes.

[29] available at http://www.cne-siar.gov.uk/harbourmaster/lochroag.asp

ASSESSMENT – KIRKIBOST				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna 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	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 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 Kirkibost jetty 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 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.

ASSESSMENT – KIRKIBOST				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	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.
Cultural Heritage Historic features in the environs of the site.	Storage of devices which are on or break the water surface is unlikely to affect the setting of these historic features.	No effect	None required	None
Landscape / Seascape	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 Kirkibost pier.	Assuming mitigation is implemented, the potential for significant adverse visual effects should be reduced.
Material Assets Harbour access	Possible effects on navigational safety. 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.
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.

ASSESSMENT – KIRKIBOST				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
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 Wet storage at other sites in Loch Roag: Breasclete, Callanish, Carloway, Kirkibost, Loch Roag and Miavhaig. Existing aquaculture (finfish and shellfish) in Loch Roag.				
Cumulative Effects	The following adverse cumulative effects may occur: • disturbance/displacement of birds, particularly red-throated diver. • corkscrew seal injuries. • effects on navigational safety. • possible disturbance and/or displacement of fishing from local grounds. • possible disturbance and/or displacement of recreational sailing. • possible damage to existing aquaculture infrastructure.			

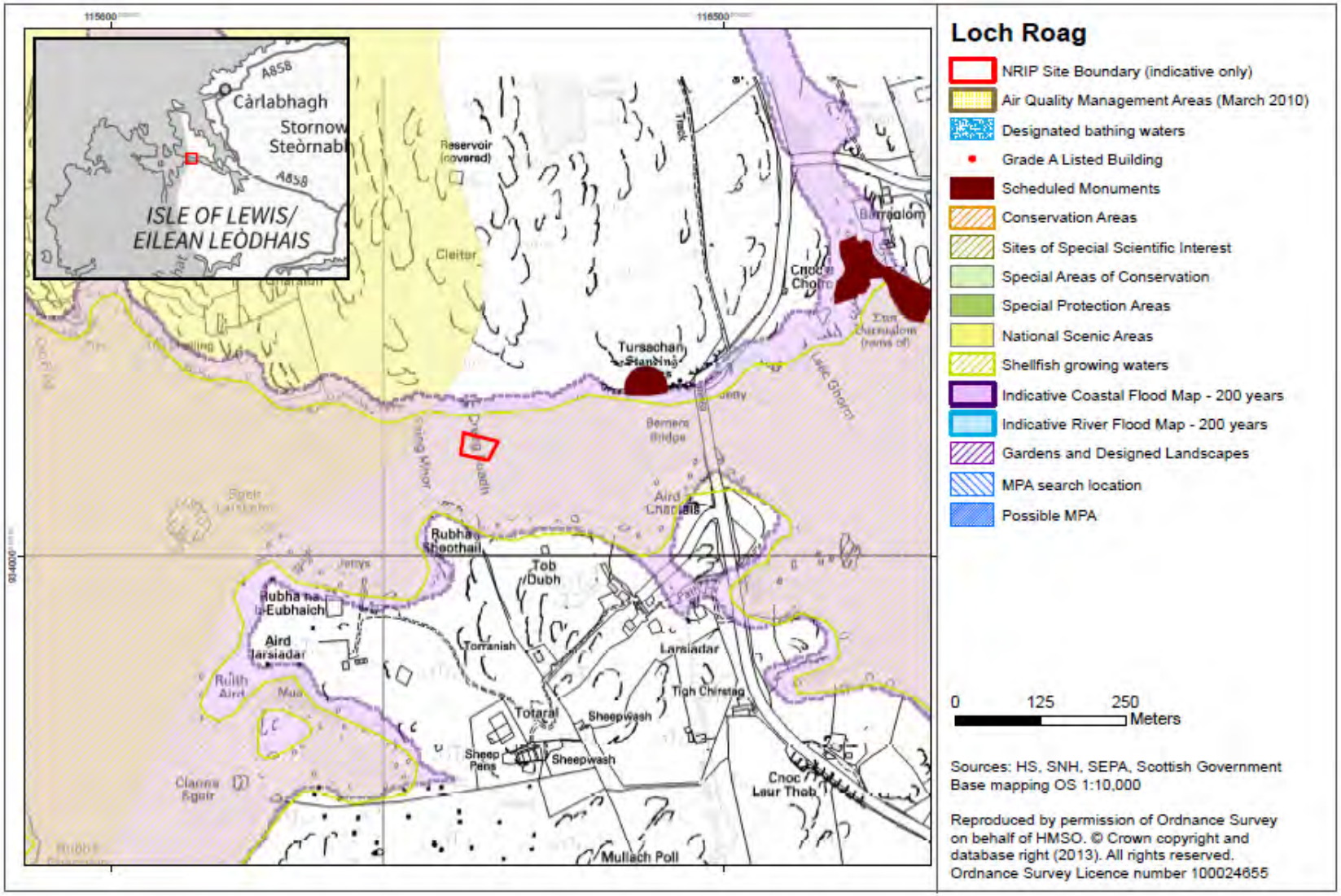
Implications for development:
The following requires further examination at the project level:

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

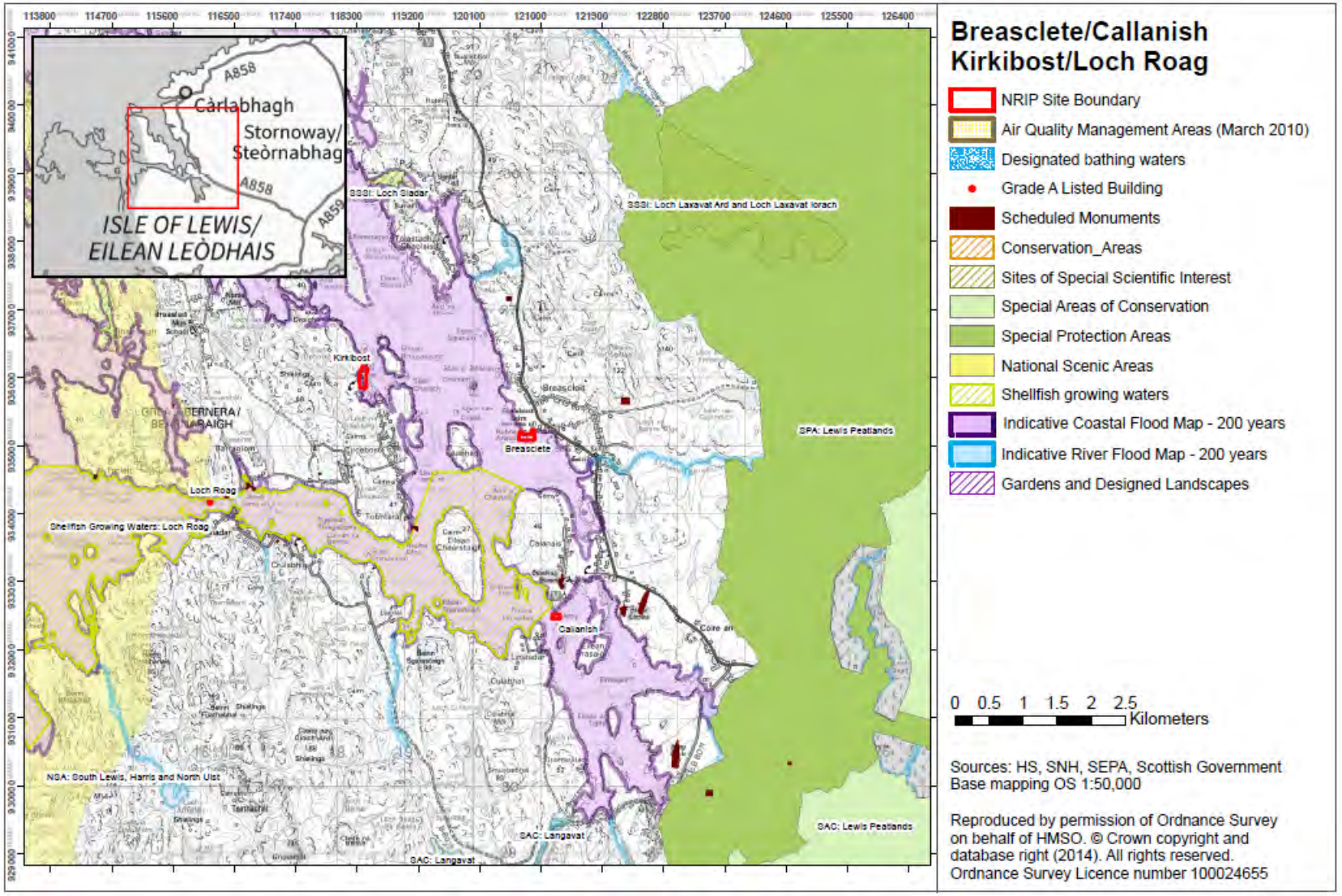
Early discussions should be held with SNH, SEPA, Historic Scotland, the Local Planning Authority, Harbour Authority, MCA, Inshore Fisheries Group and/or local fishermen, Royal Yachting Association Scotland and other vessel operators as required.

Habitats Regulations Appraisal
It is likely that Habitats Regulations Appraisal will 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: Loch Roag



Wider Map: Loch Roag



Assessment Table: Loch Roag

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; re-use existing buildings if possible. (Note that space appears to be constrained in Loch Roag.) 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 ROAG
Biodiversity, flora and fauna – **Traigh na Berie SAC** – Machair (approximately 4 km east of the site). **Loch Roag Lagoons SAC** – Lagoons (approximately 2.5 km north of the site). **Tob Valasay SSSI** – Tidal rapids and saline lagoon (approximately 4 km north of the site). **Langavat SAC** – Atlantic salmon (approximately 6 km south-east of the site). **Lewis Peatlands SPA and Ramsar** – Aggregations of breeding birds – black-throated diver, dunlin, golden eagle, golden plover, greenshank, merlin and red-throated diver, and blanket bog (approximately 7 km south-east of the site, 6 km east of the site). Seals – Potential designated haul-out site for grey seals in Gasker Barra Head and for harbour seals further south, e.g. near Uist[30]. Indications are that the west coast of the Western Isles is used by both grey and harbour seals[31].

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

ENVIRONMENTAL BASELINE – LOCH ROAG

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 – Isolated residents may have views of devices.

Water and marine environment – Loch Roag has been designated as Shellfish Growing Waters and shellfish and finfish aquaculture farms. consents have been approved within the Loch Roag[32]. The nearest site is approximately 300 m west of Sruth Larsiadair jetty. 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. Tob Valasay SSSI – Inshore sublittoral rock (marine) and inshore sublittoral sediment (marine) -Tidal rapids and saline lagoon (approximately 4 km north of the site).
Much of the Loch Roag coastline has been identified as having the potential for erosion or accretion, with large sections of vulnerable coastline (e.g. beaches, soft cliffs, etc.) identified in proximity of the site, and to its west and east. Coastal erosion has been identified across this area, with accretion also identified in the south east portion of the Loch.

Cultural heritage – Scheduled monuments were identified in vicinity of the site including the Stone Setting at Bernera Bridge (SM5548) located approximately 300 m east of the site, and Dun Barraglom Broch, Cup Marked Rocks, Fish Trap and Settlement (SM5429) located a further 300 m to the east. Scheduled Monument Carnan Beag Chambered Cairn (SM) was identified over 1 km west of the site, near Sgeir Fhada.
A range of other historic features were identified in coastal parts of Loch Roag, the nearest being several possible or identified cairns located immediately north of the proposed site in Great Bernera.

Landscape / Seascape – South Lewis, Harris and North Uist NSA is located covers the western portion of Loch Roag, immediately west of the proposed site.

Material Assets – Shellfish and finfish aquaculture interests have been identified in Loch Roag and neighbouring West loch Roag and East Loch Roag, the nearest being Aird Earshader Relay Area shellfish farm located just 300 m west of Rubha na h-Eubhaich jetty. Fishing and recreational vessels also utilise Loch Roag and harbours such as Port Sheothail and Sruth Larsiadair.

The Loch Roag Zoning Plan[33] identifies a designated anchorage in East Loch Roag (north of Loch Riosaigh, two emergency anchorages (one in East Loch Roag and one in West Loch Roag) and corridors of non-development including several within Loch Roag and on narrow corridor adjacent to the proposed

[31] 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]
[32] Site 51 of Shellfish Water Designations 2012 – Loch Roag

ENVIRONMENTAL BASELINE – LOCH ROAG
site. **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.

ASSESSMENT – LOCH ROAG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Birds including red-throated diver – Lewis Peatlands SPA and Ramsar.	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.
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.

[33] available at http://www.cne-siar.gov.uk/harbourmaster/lochroag.asp

ASSESSMENT – LOCH ROAG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
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 Designated 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.
Climatic Factors Site is within the Indicative 200 year Flood Zone.	Potential for coastal areas within Loch Roag 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.	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 unlikely that changes to wave patterns would be such that they would result in significant alterations of	No significant adverse effect	None required	None

ASSESSMENT – LOCH ROAG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	coastal processes.			
Cultural Heritage Listed buildings and other historic features in the environs of the site.	Storage of devices which are on or break the water surface are 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 local residents	Residents with views of Loch Roag 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.	Assuming mitigation is implemented, the potential for significant adverse visual effects should be reduced.
Material Assets Fish farming interests identified in the area.	Possible navigational implications regarding siting of these.	Effects of this will range from temporary to permanent depending on duration and frequency.	Avoiding vessel and infrastructure movements in the vicinity of these sites.	Assuming mitigation is implemented, the risk of significant adverse effects could be reduced.
Harbour access and Navigation	Possible effects on navigational safety, e.g. vessels. Devices could block access to harbours 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.

ASSESSMENT – LOCH ROAG				
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.
OTHER DEVELOPMENT Wet storage at other sites in Loch Roag: Breasclete, Callanish, Carloway, Kirkibost and Miavhaig. Existing aquaculture (finfish and shellfish) in Loch Roag.				
Cumulative Effects	The following adverse cumulative effects may occur: • disturbance/displacement of birds, particularly red-throated diver • corkscrew seal injuries • effects on navigational safety • possible disturbance and/or displacement of fishing from local grounds • possible disturbance and/or displacement of recreational sailing • possible damage to existing aquaculture infrastructure Adverse cumulative effects on the NSA are not anticipated. The distance between the harbour and from the NSA means that significant cumulative effects are unlikely.			

Implications for development:

The following requires further examination at the project level:

- effects on birds using nearby 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.

- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage
- planning and design to avoid and/or reduce landscape/visual effects and effects on historic environment, including wrecks.

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.

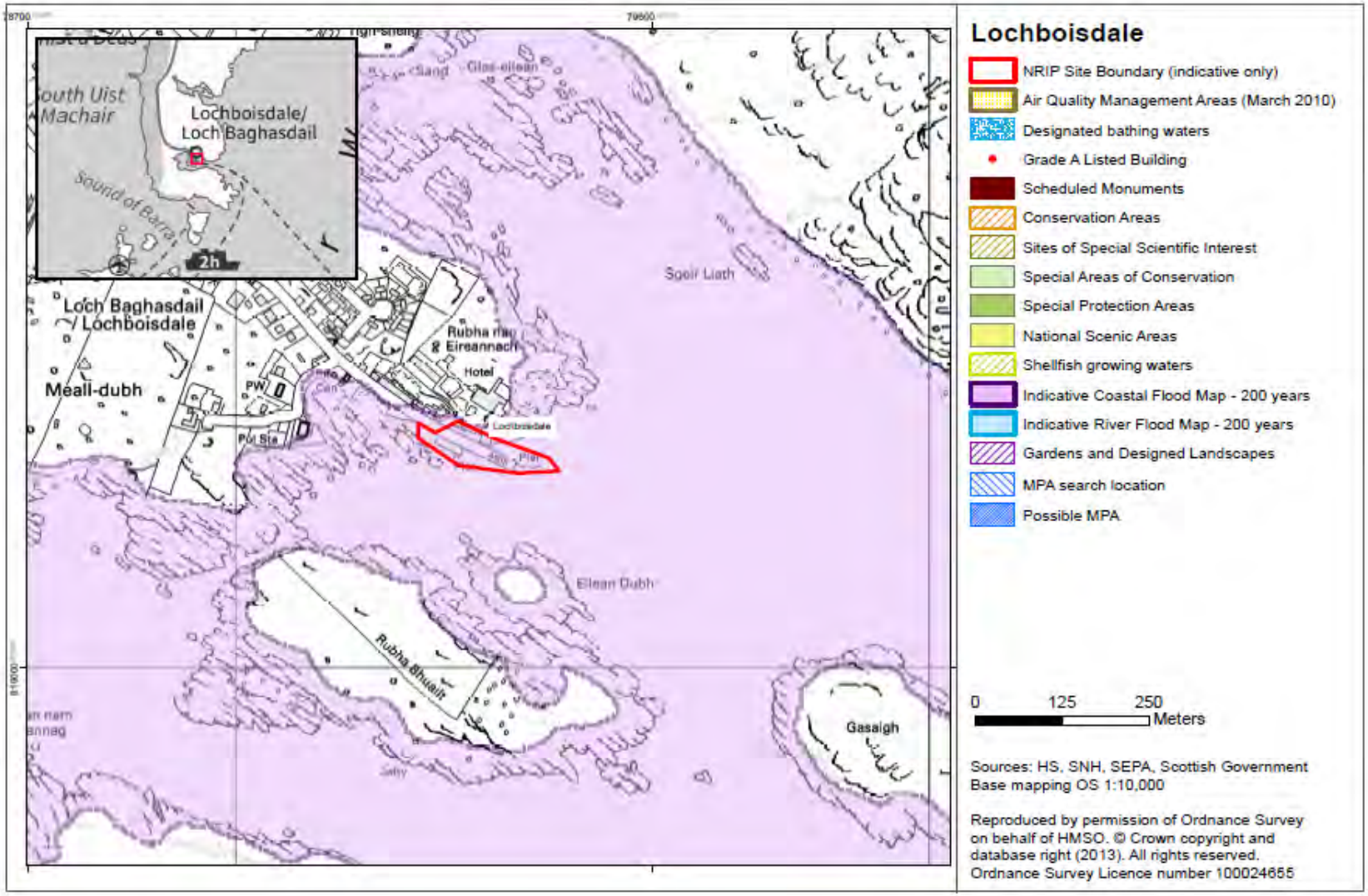
Habitats Regulations Appraisal

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

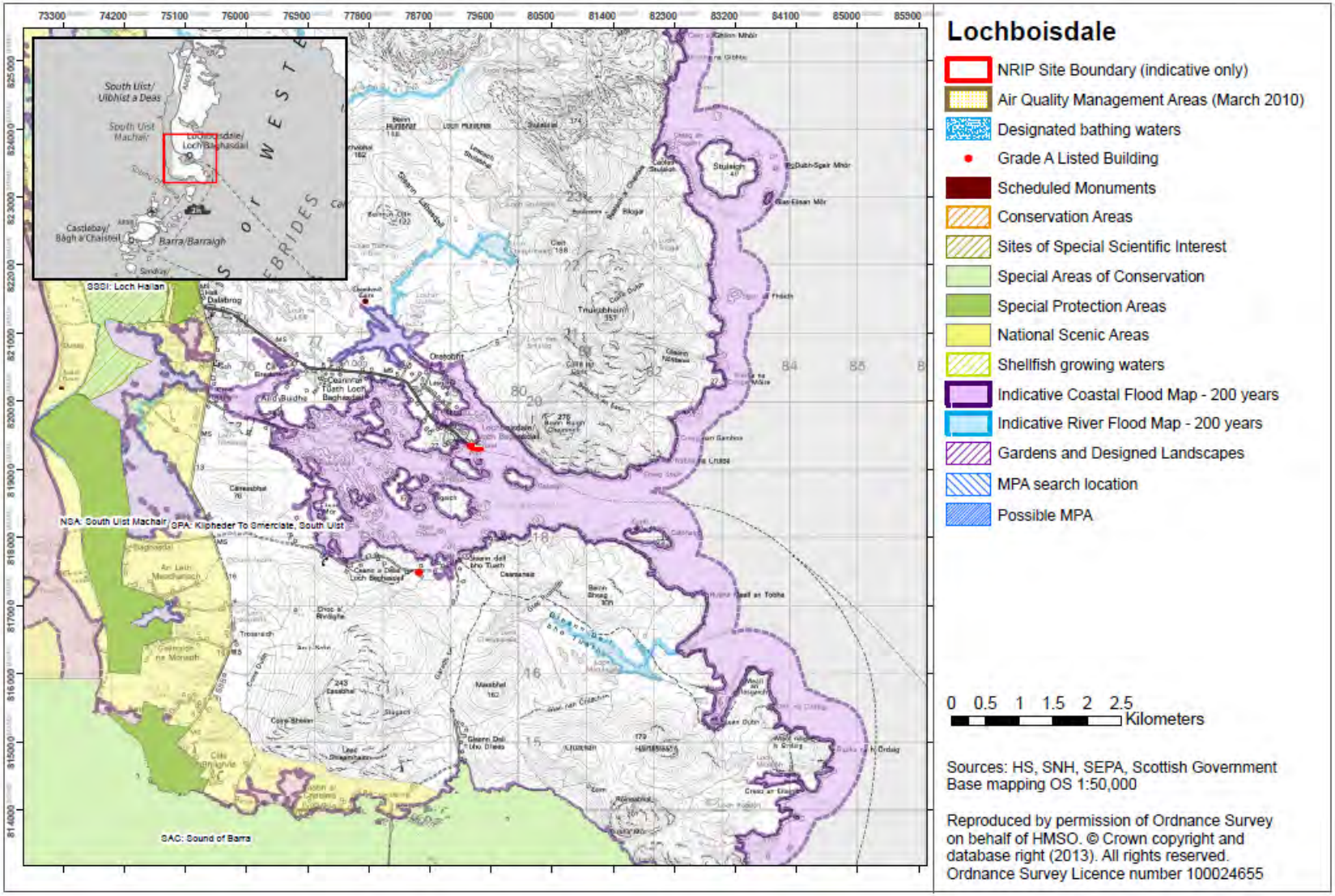
- effects on birds using adjacent SPA habitat, particularly red-throated diver.

Early discussions should be held with SNH.

Site Map: Lochboisdale



Wider Map: Lochboisdale



Assessment Table: Lochboisdale

SITE USE – Operations and Maintenance

POTENTIAL DEVELOPMENT

Operations & Maintenance

- Within the existing port, re-use existing buildings, where possible, or provide new ones. (Note: at present space appears to be limited for new buildings, but this may change once the new pier etc. is completed.) 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 – LOCHBOISDALE

Biodiversity, flora and fauna –

Kilpheder to Smerclate, South Uist SPA – Aggregations of breeding birds – corncrake (approximately 4 km west of pier).

South Uist Machair and Lochs SPA and RAMSAR – Aggregations of breeding and non-breeding birds – Corncrake, Dunlin, Little tern, Oystercatcher, Redshank, Sanderling and Ringed plover; saline lagoon, loch trophic range, machair loch, oligotrophic loch and machair (approximately 4 km north-west of pier).

South Uist Machair SAC – Lagoons, otter, lochs and pools, and coastal supralittoral sediments such as dune grassland, dune slacks and machair (approximately 4 km north-west of pier).

Sound of Barra SAC – Reefs, subtidal sandbanks and harbour seals (approximately 5 km south of pier).

Loch Hallan SSSI – Breeding bird assemblages, fens, machair lochs and machair (approximately 4 km north-west of pier).

Seals – Potential designated haul-out sites for harbour seals in Loch Ainort to the north of the site, e.g. Rubha Bholuim, Eilean nan Gamhna, Loch Eynort Vallaquie[34]. Indications are that the west coast of the Western Isles is used by both grey and harbour seals[35].

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 along the west coast of the Uists and Harris, and 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

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

[35] 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 – LOCHBOISDALE

waterbirds in Scotland and complement the existing network of SPAs[36].

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

Population and Human Health – Harbour is located near to residential dwellings.

Water and 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.

Soil, Geology & Coastal Processes – Site is not within an area designated as a geological SSSI. Skye to Mull MPA search location – marine geomorphology of the Scottish Shelf Seabed (components to be confirmed).
While much of the west coast of South Uist has been identified as having the potential for erosion or accretion (e.g. beaches, soft cliffs, etc.), small sections of coastline within Loch Boisedale have also been identified. However, no significant coastal erosion or accretion has been identified in Loch Boisedale.

Cultural heritage – Numerous historic features are located in proximity to the site including Lochboisdale Pier (Canmore ID 172073), located within the site. A listed building, Lochboisdale school and school house with garden, boundary walls and gate (Category C Index Number 44722), is located north-west of pier. Several other recorded sites are located in proximity to the pier including Lochboisdale Hotel (Canmore ID 172070), Lochboisdale Harbour RAF Air Sea Rescue Unit (Canmore ID 214741), Lochboisdale Village (Canmore ID 172068) located north-west of the pier; Lochboisdale Police Station and House (Canmore ID 172075), Lochboisdale Church (Canmore ID 172071) and South Uist Blackhouses (Canmore ID 171827) to the west; and several sites at Rubha Bhuailt located south of the pier.
Several wreck sites including the Excelsior (Canmore ID 214388), Islesman (Canmore ID 285394) and Comthur (Canmore ID 292956) are located adjacent to the pier, with further recorded wrecks located further to the east.

Landscape / Seascape – South Uist Machair NSA located approximately 4 km west of pier.

Material Assets – Fishing and recreational vessels utilise the harbour facilities and surrounding waters, and Calmac ferry services between Lochboisdale, Barra and the Scottish Mainland operate from the Ferry Terminal. Aquaculture activities have been identified in the area, the nearest being Loch Boisdale (An Camus Calvay) finfish farm located adjacent to Calbhaigh at the eastern entrance of Loch Boisdale approximately 2 km south-east of the pier.

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

[36] 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 – LOCHBOISDALE
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 unlikely that changes to wave patterns would be such that they would result in significant alterations of coastal processes.

ASSESSMENT - LOCHBOISDALE				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Birds - Kilpheder to Smerclate, South Uist SPA, South Uist Machair and Lochs SPA and RAMSAR, Sound of Barra SAC, Loch Hallan SSSI and 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.	Localised but unlikely to be significant	None required	None
Lagoons, lochs and pools, coastal supralittoral sediments, reefs, subtidal sandbanks, fens, machair lochs and machair – South Uist Machair SAC, Sound of Barra SAC, Loch Hallan SSSI.	These sites are all a significant distance from the harbour, so no effects are considered likely.	No effects.	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.

ASSESSMENT - LOCHBOISDALE				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Otters: South Uist Machair SAC and elsewhere (European Protected Species)	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. It is unlikely that otter will be affected (if they are using the harbour area).	No effects	None required.	None.
European Protected Species: cetaceans (including minke whale, one of the Skye to Mull MPA search features)	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 in the environs of Mallaig Harbour is unlikely to result in such effects.	None	None needed	None
Population / Human Health Harbour located near to residential dwellings	Noise disturbance during site operations. Due to the nature of existing activities in the harbour, it is unlikely this will add	Localised	Site protocols and/or good neighbour agreements would set out conditions for controlling noise and/or	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.

ASSESSMENT - LOCHBOISDALE				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	significantly to existing levels of noise and disturbance.		disturbance from construction activities and site operations.	
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 within designation on SEPA Indicative Flood Map 200 years	Potential for Lochboisdale pier 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 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 staging, deployment and 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.	Site operations are unlikely to affect the setting of the listed buildings and 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 local residents nearby	Residents in Lochboisdale 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 Loch Boisdale.	Assuming mitigation is implemented, the potential for significant adverse visual effects should be reduced.
Material Assets Harbour access and	Possible effects on navigational safety, e.g. ferries.	Collisions could result in injury/death of human beings,	Ensure that devices are located away from access	Assuming mitigation is implemented, the risk of

ASSESSMENT - LOCHBOISDALE				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Navigation	Devices could block access to the harbour terminal and displace harbour users.	oil spills etc. Potential displacement of harbour activities.	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.	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.
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 Other harbour users including fishing and recreational vessels. Ferry services operating from the harbour.				

ASSESSMENT - LOCHBOISDALE				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Cumulative Effects	Possible cumulative effect with existing operations in Loch Boisdale including ferry services, fishing and recreational boating, etc. Potential for cumulative effects on birds using nearby SPA 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 nearby SPA habitat. Early discussions should be held with SNH regarding timing, extent and duration of construction, including piling and dredging, disturbance to seal haul out locations and corkscrew seal injuries.
- preparation and agreement of construction protocols/good neighbour agreements.
- need to alleviate flood risk through project planning and design.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage
- planning and design to avoid and/or reduce landscape/visual effects and effects on historic environment, including wrecks.

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.

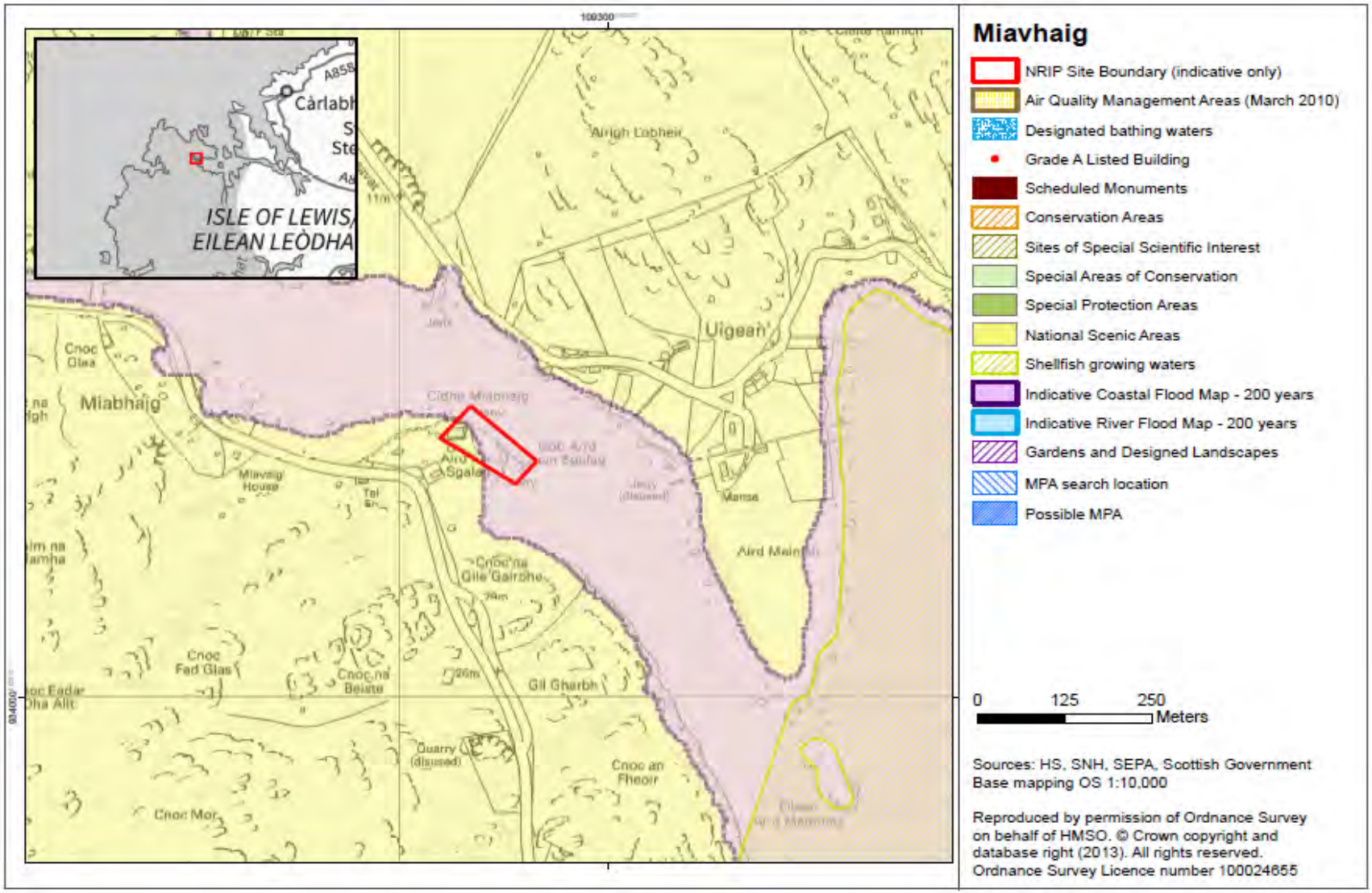
Habitats Regulations Appraisal

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

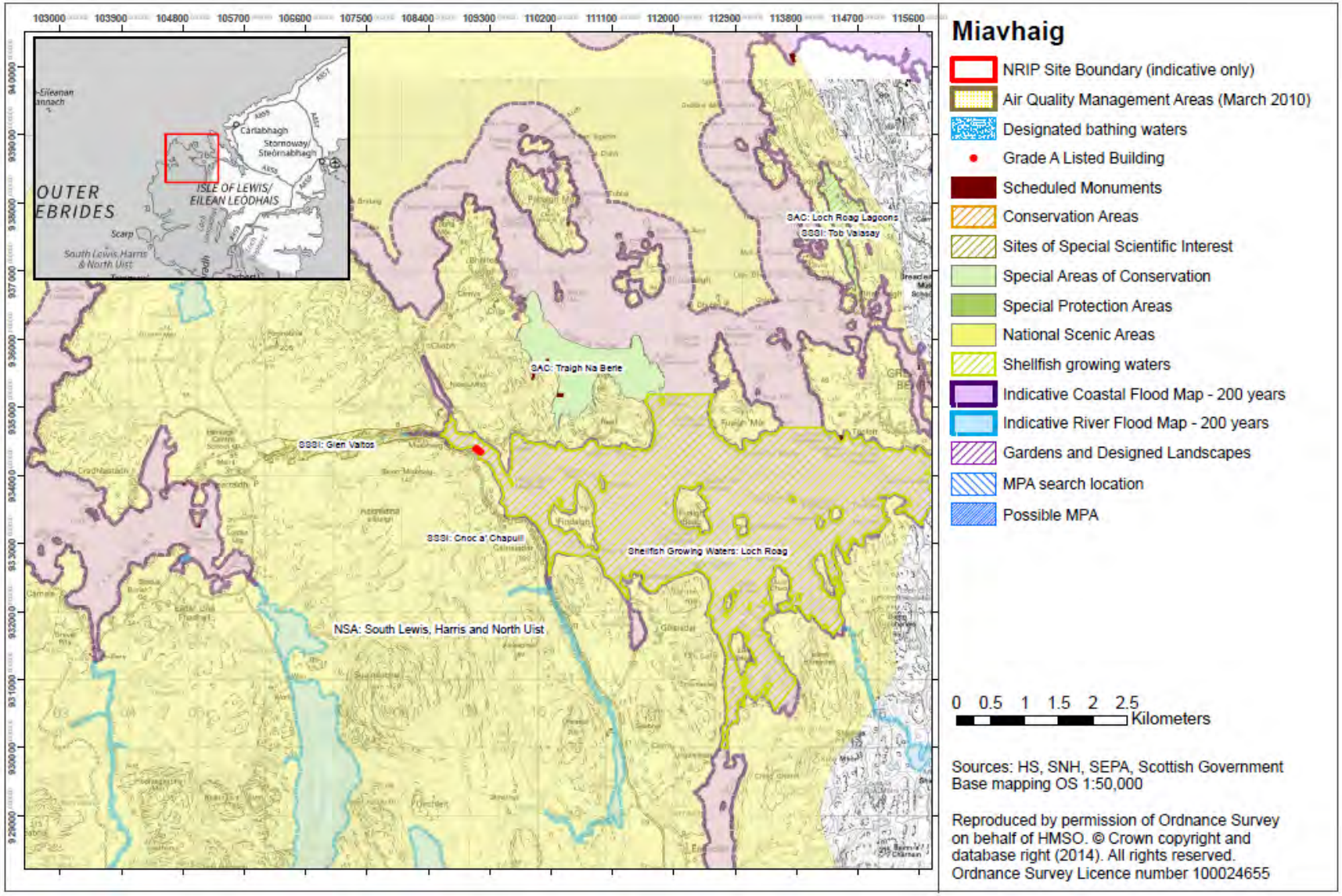
- effects of construction and piling on birds using habitat near to the SPA.

Early discussions should be held with SNH.

Site Map: Miavhaig



Wider Map: Miavhaig



Assessment Table: Miavhaig

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; re-use existing buildings if possible. 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 – MIAVHAIG
Biodiversity, flora and fauna – **Traigh na Berie SAC** – Machair (approximately 1.5 km east of jetty). Seals – Potential designated haul-out site for grey seals in Gasker Barra Head and for harbour seals further south, e.g. near Uist[37]. Indications are that the west coast of the western isles is used by both grey and harbour 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* – Pier is located amongst scattered residential properties, the nearest located approximately 50 m to the south-west of the pier. *Water and marine environment* – Loch Roag has been designated as Shellfish Growing Waters. Shellfish and finfish aquaculture farm licensing consents have been approved in Loch Roag[39], and several shellfish and finfish farms are located south-east of the pier. 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]

ENVIRONMENTAL BASELINE – MIAVHAIG

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

Air – No air quality issues identified.

Soil, Geology & Coastal Processes – Glen Valtos SSSI – Quaternary geological and geomorphology – Quaternary of Scotland (approximately 1 km west of jetty).
Much of the Loch Roag coastline has been identified as having the potential for erosion or accretion, with large sections of vulnerable coastline identified to the east of the pier (e.g. beaches, soft cliffs, etc.). While coastal erosion and accretion has been identified in Loch Roag, no significant coastal erosion or accretion has been identified in proximity to the site.

Cultural heritage – Monuments at Miavhaig include a drystone enclosure (ID 7417) and the Jetty (ID 7418) have been recorded in the Western Isles Sites and Monuments records. Both features are located either within or adjacent to the site. Other historic features are scattered through the surrounding area including Listed Buildings at the Church of Scotland at Miavaig Uig (ID 18670) and Miavaig Bridge (ID 19270) located approximately 1 km north-west of the pier.

Landscape / Seascape – The pier is located within South Lewis, Harris and North Uist NSA.

Material Assets – The pier currently services fishing and recreational vessels, and there is suitable anchorage for vessels to the north-west of the pier. Aquaculture interests have previously been located within the north-west portion of the loch..

The Loch Roag Zoning Plan[40] identifies a designated anchorage in East Loch Roag to the north of Loch Riosaigh, two emergency anchorages (one in East Loch Roag and one in West Loch Roag) and corridors of non-development. This includes the designation of a corridor of non-development within the loch running from the pier out to wider Loch Roag to the south-east.

Issues Scoped Out:
Population and Humand 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 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.

[39] Site 51 of Shellfish Water Designations 2012 – Loch Roag
[40] available at http://www.cne-siar.gov.uk/harbourmaster/lochroag.asp

ASSESSMENT – MIAVHAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Traigh na Berie SAC	No mobile species interests. Sites will not be affected due to distance from pier.	No effect	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	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 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 – MIAVHAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Climatic Factors Site is within the Indicative 200 year Flood Zone.	Potential for Miavhag jetty 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 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 Glen Valtos SSSI - Quaternary geological and geomorphology – Quaternary of Scotland 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 or designated features.	No significant adverse effect	None required	None
Cultural Heritage Recorded Monuments, Listed Buildings and other historic features in the environs of the site.	Storage of devices which are on or break the water surface are unlikely to affect the setting of the listed buildings or other historic features.	No effect	None required	None
Landscape / Seascape South Lewis, Harris and North Uist NSA Local residents within 50 m of 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 the nature of the devices.	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.	Assuming mitigation is implemented, the potential for significant adverse effects at the local level should be reduced.

ASSESSMENT – MIAVHAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Material Assets Pier access	Possible effects on navigational safety, e.g. fishing vessels. Devices could block access to the pier and displace users.	Collisions could result in injury/death of human beings, oil spills etc. Potential displacement of pier activities.	Ensure that devices are located away from access points to the pier. 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.
OTHER DEVELOPMENT Wet storage at other sites in Loch Roag: Callanish, Carloway, Kirkibost, Miavhaig and Loch Roag itself. Existing aquaculture (finfish and shellfish) in Loch Roag.				

ASSESSMENT – MIAVHAIG				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Cumulative Effects	The following adverse cumulative effects may occur: • disturbance/displacement of birds, particularly red-throated diver • corkscrew seal injuries • effects on navigational safety • possible disturbance and/or displacement of fishing from local grounds • possible disturbance and/or displacement of recreational sailing • possible damage to existing aquaculture infrastructure			

Implications for development:

The following requires further examination at the project level:

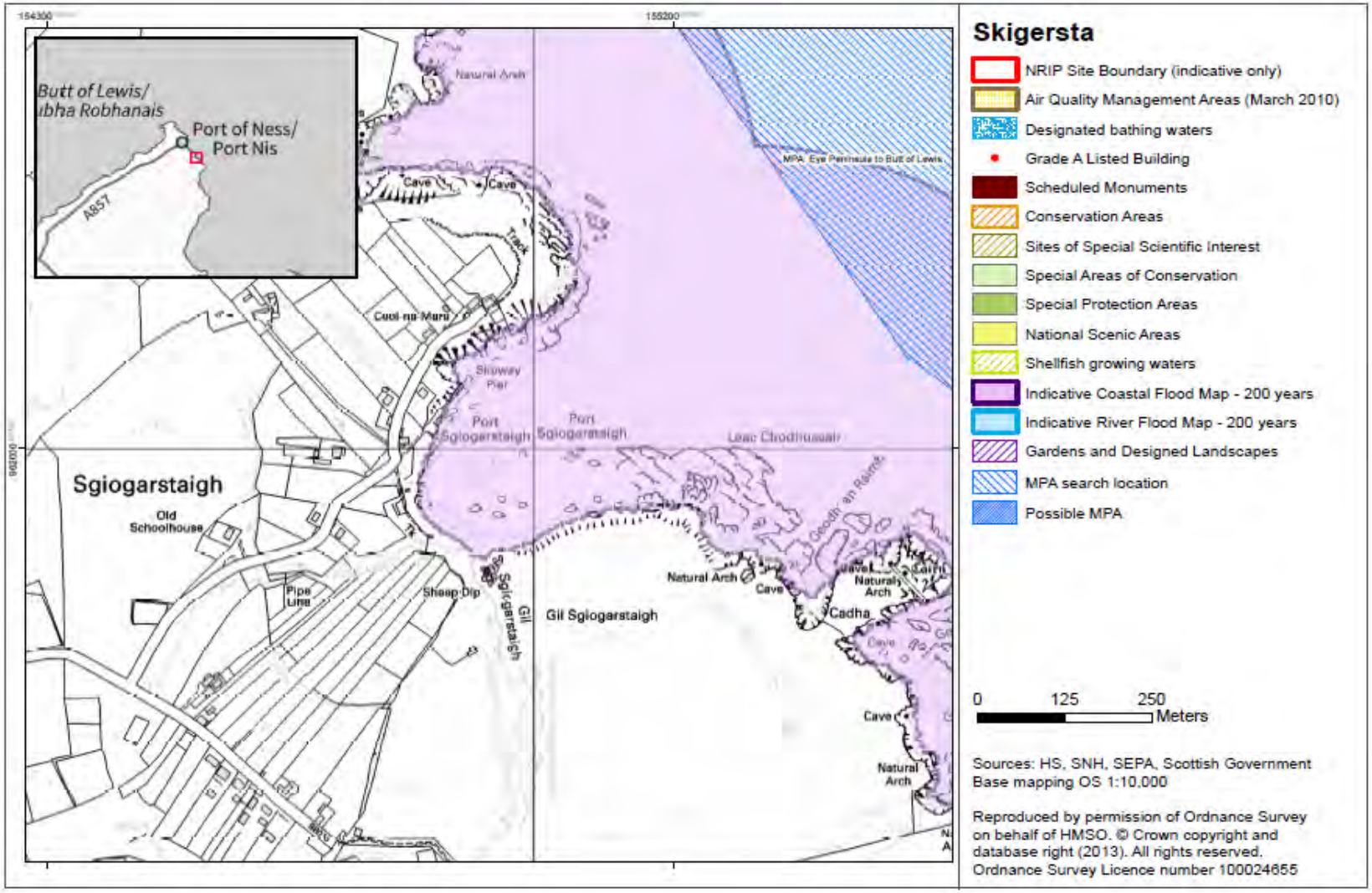
- risk of disturbance to seal haul out locations and corkscrew injury to seals.
- preparation and agreement of construction protocols/good neighbour agreements.
- need to alleviate flood risk through project planning and design.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage
- planning and design to avoid and/or reduce landscape/visual effects and effects on historic environment, including wrecks.

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.

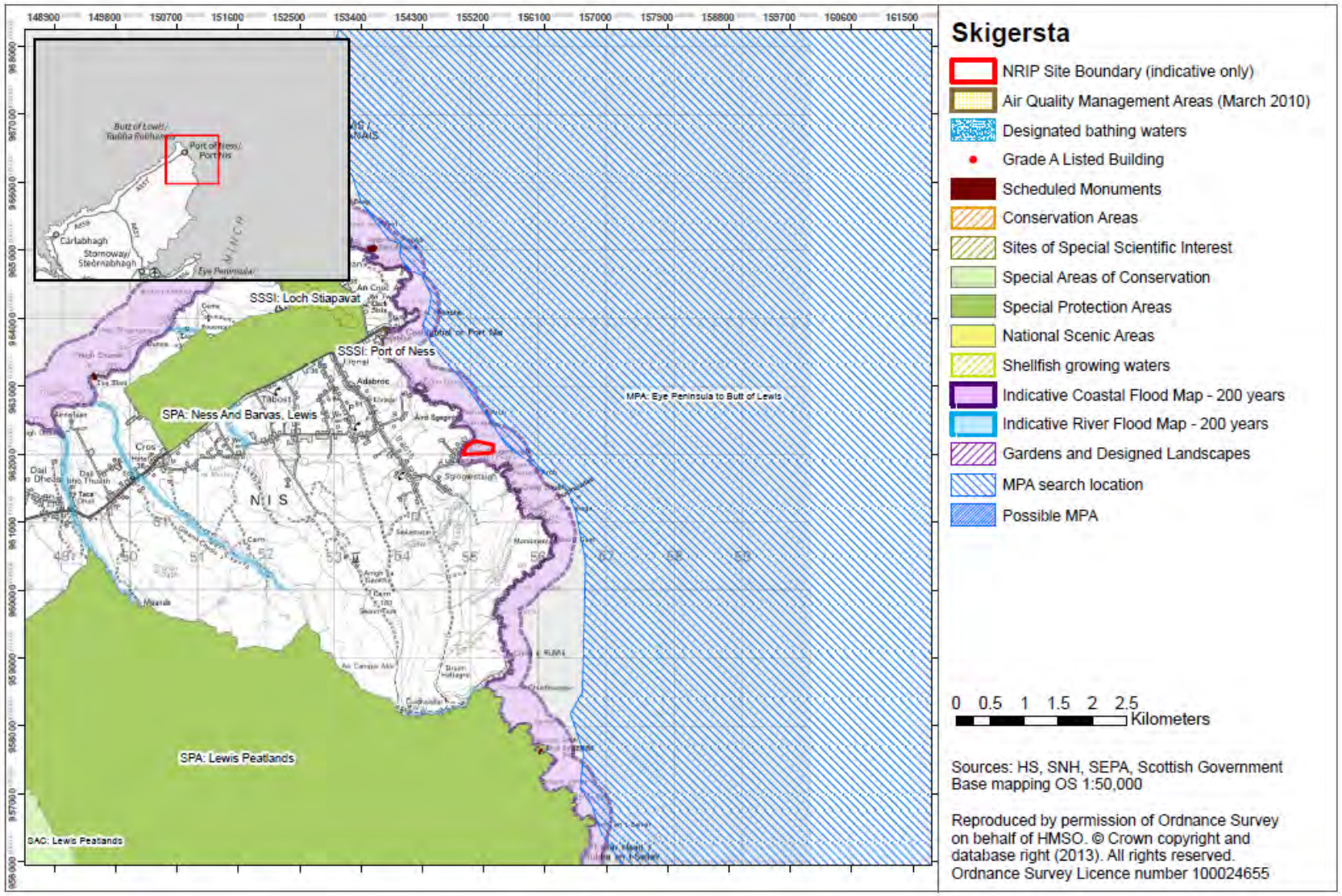
Habitats Regulations Appraisal

It is likely that Habitats Regulations Appraisal will 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: Skigersta



Wider Map: Skigersta



Assessment Table: Skigersta

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; re-use existing building if possible. 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 – SKIGERSTA
Biodiversity, flora and fauna – **Loch Stiapavat SSSI** – Bird breeding assemblage, open water transition fen, eutrophic loch and machair (approximately 2-3 km north-west of site). **Ness and Barvas, Lewis SPA** – Bird breeding – Corncrake (approximately 2 km north-west of site). **Lewis Peatlands SPA/RAMSAR** - Aggregations of breeding birds – red-throated diver, merlin, golden eagle, golden plover, greenshank, black-throated diver and dunlin (approximately 5 km south-west of the site). **Eye Peninsula to Butt of Lewis MPA search location** – The proposal is being put forward for the protection of Risso's dolphin and sandeel (approximately 500 m north-east of the site).

ENVIRONMENTAL BASELINE – SKIGERSTA

Seals – Potential designated haul-out sites for both grey and harbour seals are located off Lewis and along the north-west coast of Scotland's mainland (e.g. Eilean Chrona, Am Balg near Cape Wrath, etc.). The nearest site is for harbour seals is located at Sgeir Leathann (Broad Bay) in Northern Lewis near Stornoway[41]. Indications are that the waters around Lewis and North Minch are used by both grey and harbour seals[42].

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 south 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[43].

Population and Human Health – Isolated residents may have views of devices.

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 – Site is not within an area designated as a geological SSSI. **Port of Ness SSSI** – Quaternary geology and geomorphology (approximately 2 km north-west of site).
Several sections of Lewis' north east coastline have been identified as having the potential for erosion or accretion (e.g. beaches, soft cliffs, etc.). Coastal erosion has been identified at several locations along this coastline, including soft coast areas near Skigersta and Port of Ness (approximately 2 km north west of the site).

Cultural heritage – Recorded sites in the environs of the harbour include the Port Skigersta Pier (Canmore ID 155593), several buildings and historic sites located to the south-west of the harbour, and two wrecks adjacent to the pier including Mary Sgiogarstaigh (Canmore 295099) and Cellarhead (Canmore ID 295105).

Landscape / Seascape – No national designation.

[41] The Scottish Government (2011) Consultation on Seal Haul-out Sites, March 2011.
[42] 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]
[43] 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 – SKIGERSTA
Material Assets – Local fishing and recreational sailing interests use local harbour facilities. **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.

ASSESSMENT – SKIGERSTA				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Loch Stiapavat SSSI, Ness and Barvas, Lewis SPA, Lewis Peatlands SPA/ RAMSAR, Area of Search	Potential disturbance (vessel noise and human presence) from wet storage activities. Presence of new features likely to disturb and possibly displace red-throated divers from feeding.	Temporary, depending on location, duration and frequency of activity.	Time storage activities and vessel movements to avoid 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	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	Risk of these events occurring is unclear, thus	Avoid cetacean habitat and migration routes. Use high-	Assuming mitigation is implemented, significant adverse

ASSESSMENT – SKIGERSTA				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
(includes Risso's dolphin, one of the MPA search features)	lines (e.g. minke whale); disturbance and displacement	significance of effect is unknown. Injury and/or death of individuals may affect overall population numbers/viability	visibility mooring lines.	environmental effects may 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 coastal areas within Port Skigersta 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 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.
Soil, Geology & Coastal Processes 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 and historic features in the environs of the site.	Storage of devices which are on or break the water surface is unlikely to affect the setting of the listed buildings.	No effect	None required	None
Wreck sites	Storage of devices could affect wreck sites through	Permanent loss of wreck features	Avoid storage on these areas.	Assuming mitigation is implemented, the risk of

ASSESSMENT – SKIGERSTA				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
	destruction of features.			significant adverse effects should be reduced.
Landscape / Seascape local residents	Residents in Skigersta 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 Skigersta.	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. fishing and leisure 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. Inefficient operation and 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.
OTHER DEVELOPMENTS Other harbour users (e.g. local fishing and leisure craft) utilise the facilities at Skigersta Harbour.				
Cumulative Effects	Possible cumulative effects with existing vessel traffic and anchorages in and around the harbour identified.			

ASSESSMENT – SKIGERSTA				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual 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 adjacent SPA/SSSI habitat, particularly red-throated diver.
- effects on protected biodiversity features of the MPA search location.
- risk of disturbance to seal haul out locations and corkscrew injury to seals.
- need to alleviate flood risk through project planning and design.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage
- planning and design to avoid and/or reduce landscape/visual effects and effects on historic environment, including wrecks.

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.

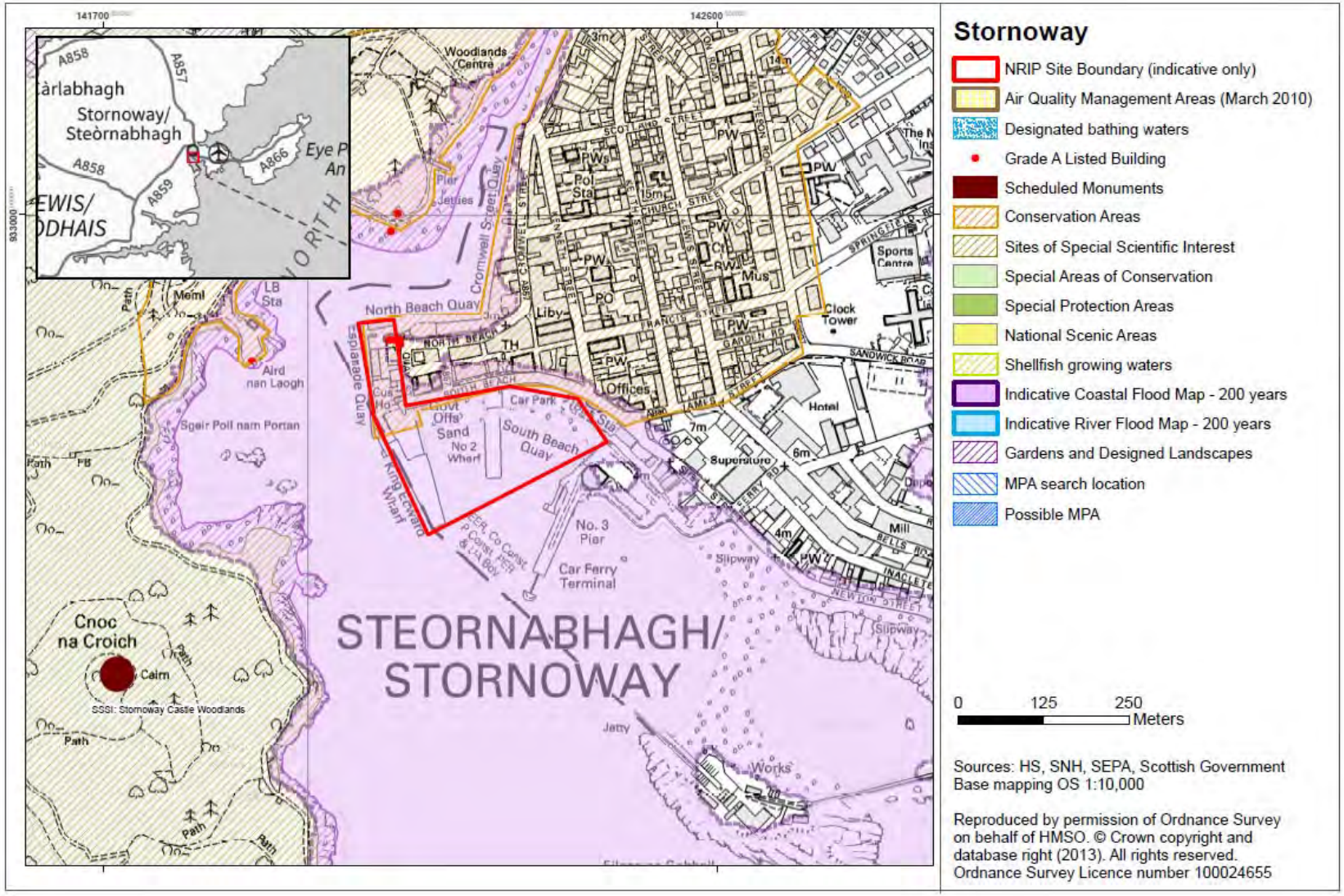
Habitats Regulations Appraisal

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

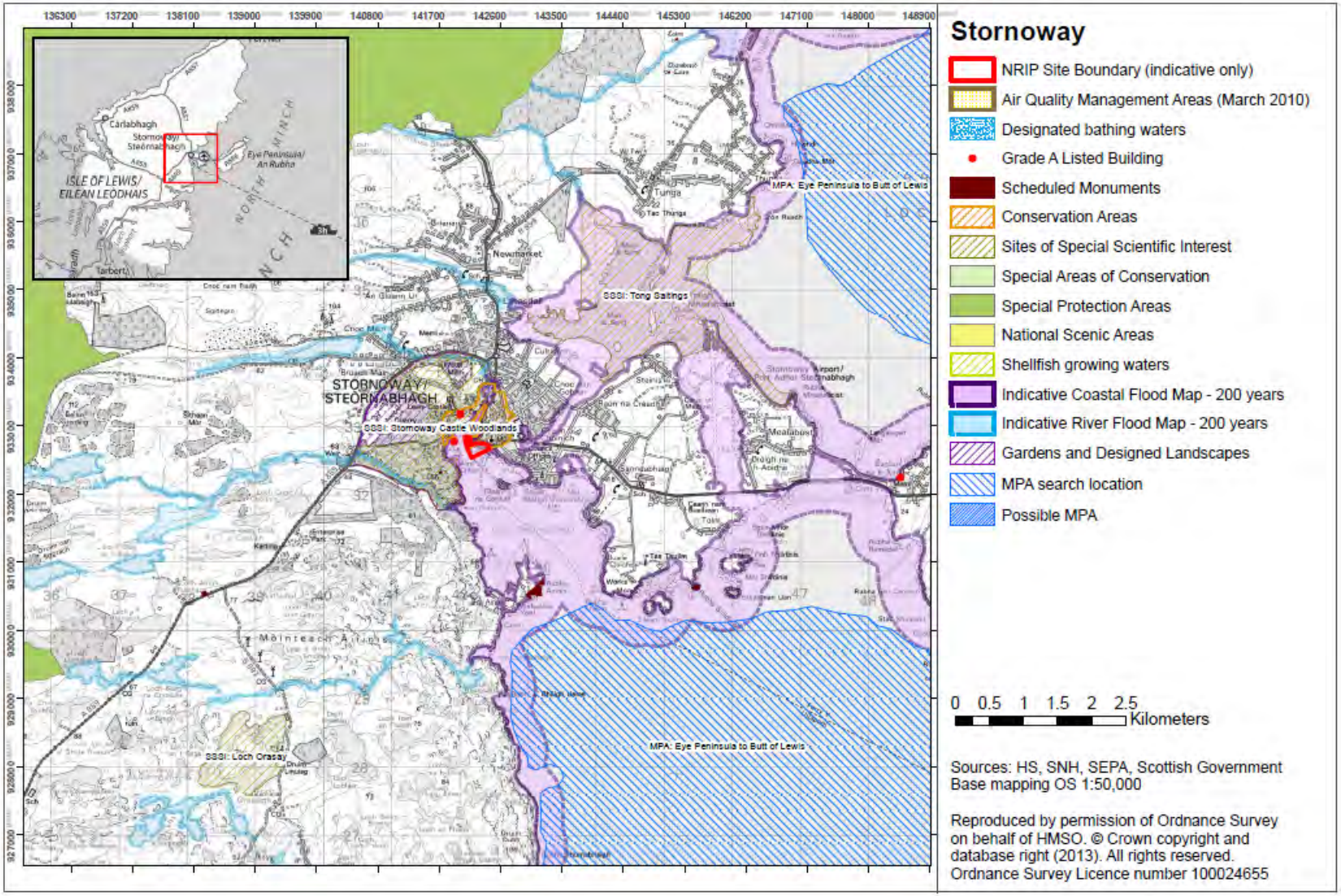
- effects of site activities on birds using habitats in the vicinity of the site including that of the SPA.

Early discussions should be held with SNH.

Site Map: Stornoway



Wider Map: Stornoway



Assessment Table: Stornoway

SITE USE – Operations and Maintenance; supporting Arnish

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 – STORNOWAY

Biodiversity, flora and fauna –

Tong Saltings SSSI – Assemblages of breeding birds, saltmarsh, mudflats and sand dunes (approximately 2 km north-east of harbour).

Lewis Peatlands SPA/RAMSAR – Aggregations of breeding birds – red-throated diver, merlin, golden eagle, golden plover, greenshank, black-throated diver and dunlin (approximately 5 km north-west of harbour).

Seals – Potential designated haul-out site for harbour seals located at Sgeir Leathann (Broad Bay) in Northern Lewis to the north-east of Stornoway[44]. Potential designated haul-outs for both grey and harbour seals are located along the north-west coast of Scotland's mainland (e.g. Eilean Chrona, Am Balg near Cape Wrath, etc.), and harbour seals off southern Lewis to the south. Indications are that the waters around Lewis and North Minch are used by both grey and harbour 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 north east of the site, in Broad Bay and to its north east. 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].

[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)

ENVIRONMENTAL BASELINE – STORNOWAY

Population and Human Health – Harbour is located within 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.

Soil, Geology & Coastal Processes – **Tong Saltings SSSI** – Saltmarsh, mudflats and sand dunes (approximately 2 km north-east of harbour).
Sections of coastline within Cala Steornabhaigh have been identified as having the potential for erosion or accretion, including those near to the harbour. Coastal erosion has been identified in proximity to Stornoway Harbour.

Cultural heritage – Listed Buildings including A Listed North Beach Old Sail Loft and House Adjoining (41735) and B Listed Amity House (41674) located within the site boundary. Various other Listed Buildings and historic features were identified within Stornoway Centre located adjacent to the harbour, the closest being on South Beach and Quay Street.
Garden and Designed Landscape – Lewis Castle and Lady Lever Park approximately 250 m west of the harbour. Wreck sites have been identified in Cala Steornabhaigh and along the coastlines to the south and east.

Landscape / Seascape – No national designation identified.

Material Assets – Local fishing and recreational interests use local harbour facilities, and ferry services between Stornoway and Ullapool are based in the harbour[47].

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.

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

ASSESSMENT – STORNOWAY				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Biodiversity, Flora and Fauna Birds (including red-throated diver) - Tong Saltings SSSI, Lewis Peatlands SPA/ RAMSAR, Area 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 presence of new features likely to be temporary and localised.	Time storage activities and vessel movements to avoid 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 of existing activities in the harbour. Otter will not be significantly affected (if they are using the harbour area).	No effects	None required.	None.
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 – STORNOWAY				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
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 Tong Saltings SSSI – saltmarsh, mudflats and sand dunes Wave patterns and coastal processes	Given the distance from the site, adverse effects from site operations are considered unlikely. Potential damage to geological features from wet storage of devices was identified. (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 vulnerable to erosion/accretion (e.g. north west portion of Cala Stornoway). Alternatively, implement sediment and erosion controls at SSSI during wet storage operations.	Assuming mitigation is implemented, significant adverse environmental effects could be avoided.

ASSESSMENT – STORNOWAY				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
Cultural Heritage Listed Buildings, Garden and Designed Landscape in harbour environs.	As no new infrastructure is required, effects on the site or setting of the listed buildings and gardens and designated landscapes are not anticipated.	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 local residents	Residents in Stornoway 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 Cala Steornabhaigh.	Assuming mitigation is implemented, the potential for significant adverse visual effects should be reduced.
Material Assets Harbour access	Possible effects on navigational safety. 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.

ASSESSMENT – STORNOWAY				
Environmental Receptor	**Effect**	**Characteristic**	**Mitigation**	**Residual Effects**
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 Ferry services and other marine users (e.g. fishing and recreational vessels) utilise harbour facilities in Stornoway.				
Cumulative Effects	Possible cumulative effects with existing vessel traffic and anchorages in and around the 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 and wet storage areas from nearby SPA and SSSI habitat.
- risk of disturbance to seal haul out locations and corkscrew seal injuries
- preparation and agreement of construction protocols/good neighbour agreements.
- need to alleviate flood risk through project planning and design.
- if wreck sites cannot be avoided, undertake survey and recording of wrecks prior to wet storage
- planning and design to avoid and/or reduce landscape/visual effects and effects on historic environment, including wrecks.

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:

- disturbance of birds from site operations and wet storage of devices.

Early discussions should be held with SNH.