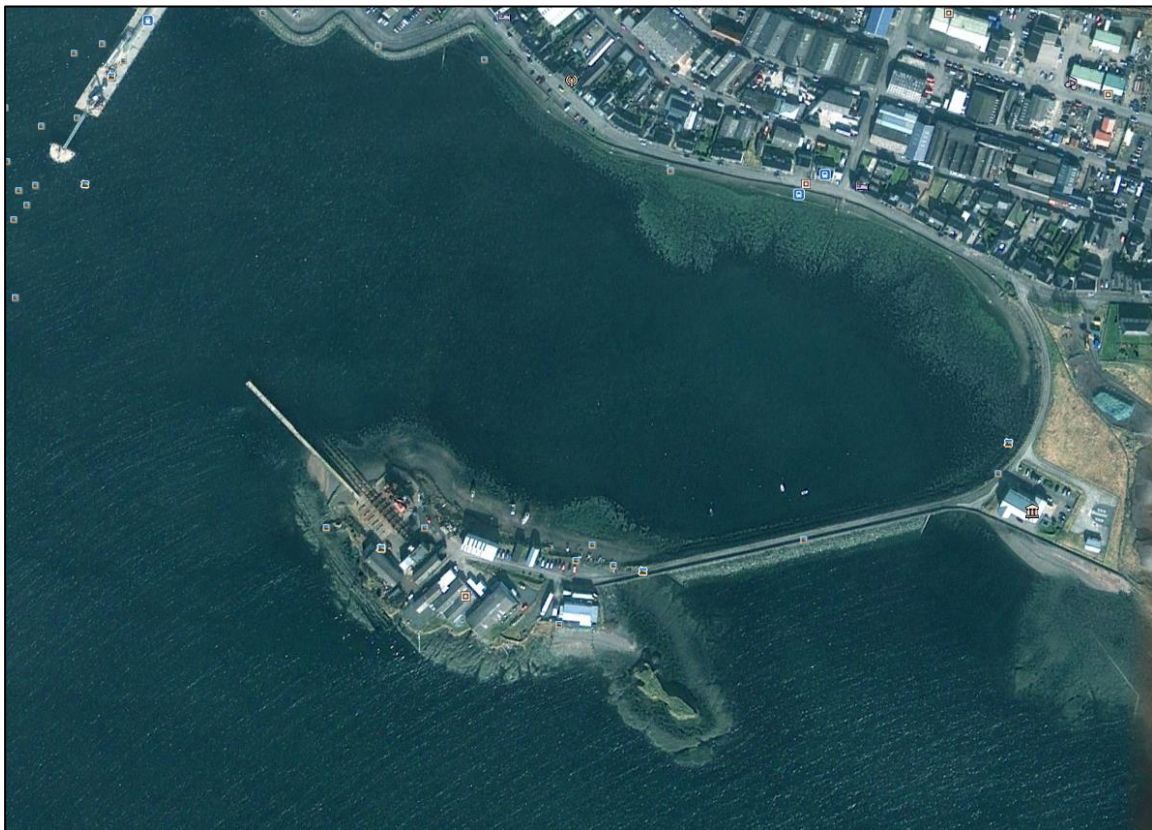


## **Newton Marina**

### **Technical Appendix 5.2: Marine Mammal Protection Plan**



**December 2018**

# Newton Marina

## Technical Appendix 5.2: Marine Mammal Protection Plan

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# 1 INTRODUCTION

## 1.1 Remit

EnviroCentre Limited was commissioned on behalf of Stornoway Port Authority (SPA) to undertake a Marine Mammal Protection Plan (MMPP) to inform an Environmental Impact Assessment (EIA) in relation to the development of Newton Marina, Stornoway, Isle of Lewis.

The MMPP is required to assess and manage the risks of causing injury or disturbance to marine mammals (cetaceans and seals) and basking sharks as a result of proposed piling and dredging operations in response to the scoping opinion of Comhairle nan Eilean Siar's (CnES) (September 2017); within which section 4.3 states '*SNH have advised that it is likely that the proposed development will have a significant environmental effect on harbour porpoise (within Inner Hebrides and the Minches candidate Special Area of Conservation) and other cetacean species*'. The MMPP, which will include a site specific Marine Mammal Risk Assessment (MMRA), will inform a detailed method statement in order to provide appropriate mitigation during development and inform a European Protected Species (EPS) licence application. An EPS licence is required from Marine Scotland prior to the commencement of any construction works. The Marine Scotland 'Guidance for Scottish Inshore Waters: The Protection of Marine European Protected Species from injury and disturbance (2014)' was consulted to inform this document.

## 1.2 Project Overview

The proposed development site is situated within Newton Basin, immediately to the south of Stornoway within the Stornoway Harbour embayment. Newton Basin is a small tidal bay partially enclosed by Goat Island.

The proposed development is concerned with the reclamation of land to form a new marina and associated infrastructure and facilities at Goat Island, which is situated at the southern end of Stornoway and centred on grid reference 142660, 93214 (eastings/northings) as demonstrated on Figure 1.1 within Volume 2 of this EIAR (hereafter known as 'the site'). The existing use of Goat Island is associated with industrial use, incorporating a seafood processing facility owned by Macduff and the current Macmillan Boat Yard. Macmillan Boat Yard currently operates as a boat repair and renovation workshop, with facilities existing to repair and renovate vessels via the existing slipway to the immediate west of the facility.

The existing marina, (i.e. the Stornoway Inner Harbour Marina at Cromwell Street), has been virtually full since it opened in 2014 years ago with 83 berths being occupied all year round. In response to the success of the existing marina, the proposed development has been proposed to provide berthing for an additional 75 vessels and relieve the pressure over the summer months for visiting yachts. It is proposed that up to 50 of the berthing spaces could be provided to meet local demand, with the remaining berths reserved for visiting use.

The development includes:

- Reclamation of land along the north side of Goat Island (approx. 2.28ha) behind a concrete retaining wall, and subsequent formation of a level development platform;
- Excavation of material won by a combination of cutter suction and backhoe dredging from both sea and land, dredged to up to 3m Chart Datum (CD);
- Formation of a new rock-armoured breakwater of up to 75m in length and 20m wide at its base;
- Formation of a proposed slipway structure of 50m in length and the width of its base varying between 10m and 25m with rock armouring on its side, for the launch of vessels from Goat Island;

- Formation of a marina structure from a 100m long floating access walkway of 3m width, with three walkway legs around 60m long and 2.5m wide, and finger piers on either side, and a 24m long and 1.5m wide access bridge connecting to the shore;
- Installation of a boat lift structure to facilitate boat repair and overwintering of vessels of up to 90 tonnes in weight;
- A new rock armoured passing place on the western side of Battery Point, with a surfaced area of 0.01ha;
- Service provision for the berths, including power, water, waste collection, toilets, showers and other ancillary services;
- Up to 20 boat storage bays of up to 10m long, and 15 boat storage bays of up to 10m long (on land);
- Provision for 40 car parking spaces for marina users (and 18 (future) spaces for boatyard building users); and
- Two boat sheds of 12.5m in length, 5m wide and 6m high, to replace the existing boat sheds.

## 2 MARINE MAMMAL BASELINE

### 2.1 Cetaceans

Baseline information, to determine how marine mammals utilise the zone of influence of the proposed works, was collated from the following sources:

- The Joint Nature Conservation Committee (JNCC)<sup>1</sup> & <sup>2</sup>;
- Seawatch Foundation<sup>3</sup>;
- Scottish Natural Heritage (SNH)<sup>4</sup>;
- Whale and Dolphin Conservation (WDC)<sup>5</sup>; and
- The Hebridean Whale and Dolphin Trust (HWDT) Whale Track<sup>6</sup>.

### 2.2 Disclaimer

It should be noted that the baseline is limited by the reliability of third party information and the geographical availability of biological and/or ecological records and data. The absence of species from biological records cannot be taken to represent actual absence. Species distribution patterns should be interpreted with caution as they may reflect survey/reporting effort rather than actual distribution.

#### 2.2.1 Designated Sites

Please see Appendix B: Designated Sites Boundaries.

A search for designated sites was undertaken via the SNH Sitelink<sup>7</sup> website. Glumaig Bay is not within any statutory designated site; the nearest site featuring marine mammals is North East Lewis [proposed] Marine Protected Area (pMPA), approximately 1km east of the proposed Newton Marina development, which is designated for Risso's dolphin (*Grampus griseus*). Hundreds of Risso's dolphins have been observed in this area and it is thought some individuals stay year-round.

Also in proximity to the proposed Newton Marina is the Inner Hebrides and the Minches [candidate] Special Area of Conservation (cSAC), which is designated for harbour porpoise (*Phocoena phocoena*), due to their high predicted and observed densities. The site covers important summer habitat, where the number of animals has been shown to be consistently above average. This area spans from the north west coast of Kintyre in the south to the north east of the Isle of Lewis in the north. The boundary of the SAC is approximately 2km east of the proposed Marina.

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<sup>1</sup> JNCC Statutory Nature Conservation Agency Protocol for Minimising the Risk of Injury to Marine Mammals from Piling Noise (2010) available at: [http://jncc.defra.gov.uk/pdf/JNCC\\_Guidelines\\_Piling%20protocol\\_August%202010.pdf](http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Piling%20protocol_August%202010.pdf) last accessed 19/03/2018

<sup>2</sup> Reid, J B, Evans, P G H, and Northridge, S P. JNCC Atlas of Cetacean Distribution in north-west European waters (2003) available at: <http://jncc.defra.gov.uk/page-2713#download>

<sup>3</sup> Seawatch Foundation Cetaceans of Western Scotland available at: <http://seawatchfoundation.org.uk/wp-content/uploads/2012/07/WesternScotland.pdf> last accessed 19/03/2018

<sup>4</sup> SNH About Scotland's Nature: Marine Mammals available at: <http://www.snh.gov.uk/about-scotlands-nature/species/mammals/marine-mammals/> 06/02/2018

<sup>5</sup> WDC species guides available at: <http://uk.whales.org/species-guide> last accessed 19/03/2018

<sup>6</sup> HWDT sightings data available at: <https://whaletrack.hwdt.org/sightings-map/> last accessed 19/03/2018

<sup>7</sup> SNH Sitelink website available at: <https://gateway.snh.gov.uk/sitelink/searchmap.jsp> last accessed 19/03/2018

In the case of both designated sites, any individual cetaceans are protected as features whether in the site or not, thus Risso's dolphins and harbour porpoises within the zone of influence should be considered to be a part of the pMPA/cSAC.

### 2.2.2 Cetacean Distribution and Sightings

The cetacean fauna of western Scotland (including the Western Isles, West Highlands and South-west Scotland) is thought to be the richest in the UK and one of the most important areas in north-west Europe for cetaceans. Areas favoured by cetaceans in proximity to the proposed Newton Marina include The Eye Peninsula (approximately 2.5km east), The Butt of Lewis (approx. 30km north) and The Old Man of Stoer (approx. 57km east)<sup>8</sup>.

Since 1<sup>st</sup> August 2017, 412 individual cetacean sightings have been recorded via the HWDT Whale Track sightings database, which were observed within the North Minch. Of the individual animals recorded, the following species were identified: harbour porpoise, Risso's dolphin, bottlenose dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphis*), minke whale (*Balaenoptera acutorostrata*), long-finned pilot whale (*Globicephala melas*), killer whale (*Orcinus orca*), humpback whale (*Megaptera novaeangliae*), fin whale (*Balaenoptera physalus*), sei whale (*Balaenoptera borealis*) and white-beaked dolphin (*Lagenorhynchus albirostris*).

Several species of cetaceans occur regularly in Stornoway Harbour and its surrounds including harbour porpoise, Risso's dolphin, minke whale, killer whale, short-beaked common dolphin, bottlenose dolphin and humpback whale<sup>9</sup>.

The most commonly recorded species within The North Minch, and more specifically the area surrounding Stornoway, is harbour porpoise. Since August 2017, 141 harbour porpoise sightings have been submitted to HWDT Whale Track, which makes up over a quarter of the total marine mammal sightings during this time. The number of harbour porpoises in Hebridean waters is amongst the highest in Europe; they are widespread throughout coastal regions and are seen year-round. Figure 2-1 shows UK harbour porpoise distribution.

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<sup>8</sup> JNCC Coasts and Seas of the United Kingdom, Regions 15 and 16 North-west Scotland: The Western Isles and West Highland available at: [http://jncc.defra.gov.uk/pdf/pubs\\_csuk\\_region16.pdf](http://jncc.defra.gov.uk/pdf/pubs_csuk_region16.pdf) last accessed 05/03/2018

<sup>9</sup> Letter from SNH to Marine Scotland dated 25 January 2018: Arnish Deep Water Development, Glumaig Bay, Isle of Lewis. Scoping Request – Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2007.

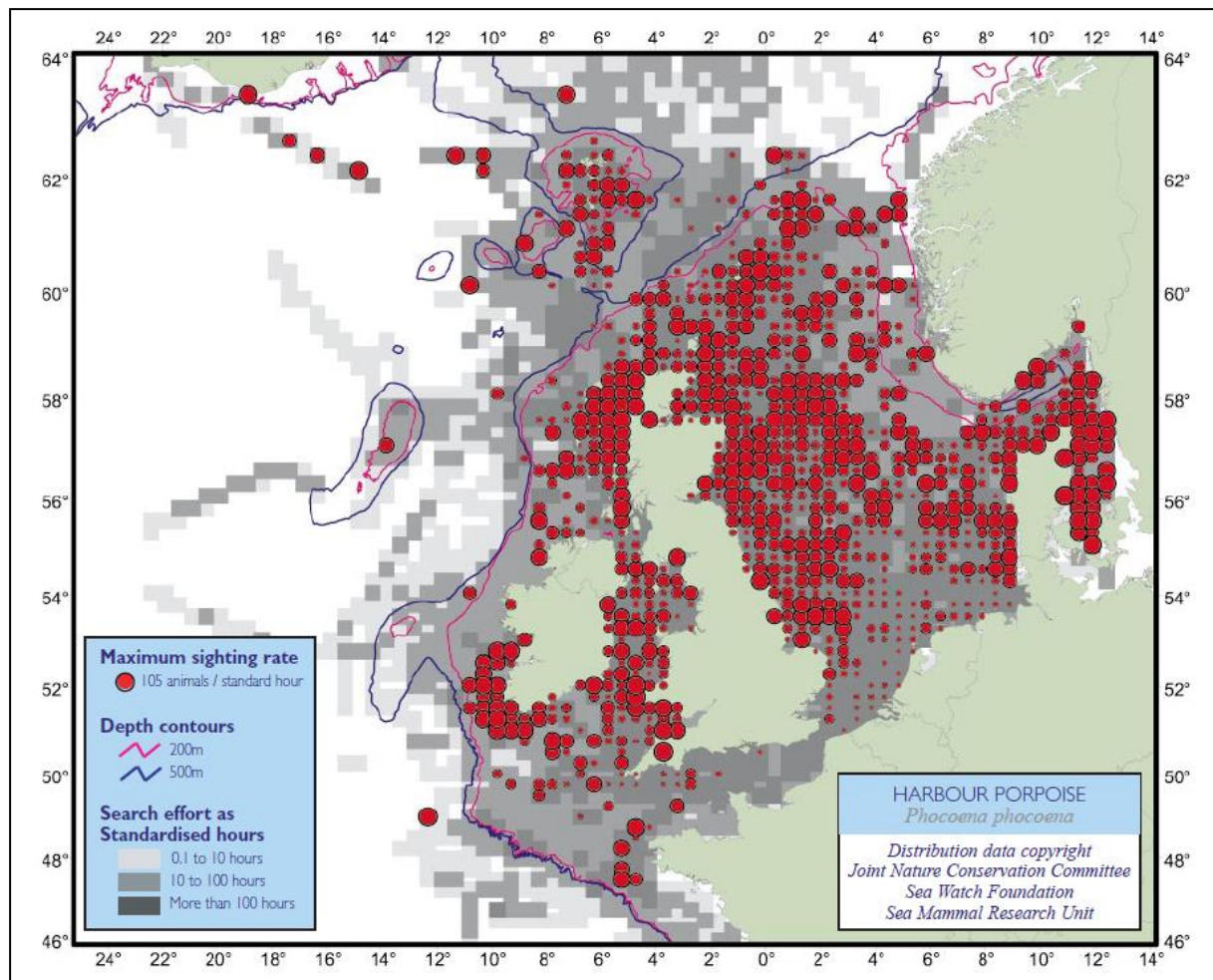


Figure 2-1: JNCC harbour porpoise distribution map

Sightings of Risso's dolphin are generally between April and September, with peak numbers in August and September, however some individual animals are thought to stay year-round. The Eye Peninsula off the east coast of Lewis is a notable location for Risso's dolphin sightings, particularly between Tiupan Head and Chicken Rock. Since August 2017, 26 sightings of Risso's dolphin within The Minch have been submitted to the HWDC Whale Track database, the closest of which being approximately 5km offshore to the east. The majority of these sightings were during the summer months (predominantly August), however, three records show the animals to be present through the winter months; two sightings were submitted in January 2018 from around Loch Inver on the west coast of the mainland and one individual animal was recorded within 5km of the site in November 2017. Figure 2-2 shows UK Risso's dolphin distribution.



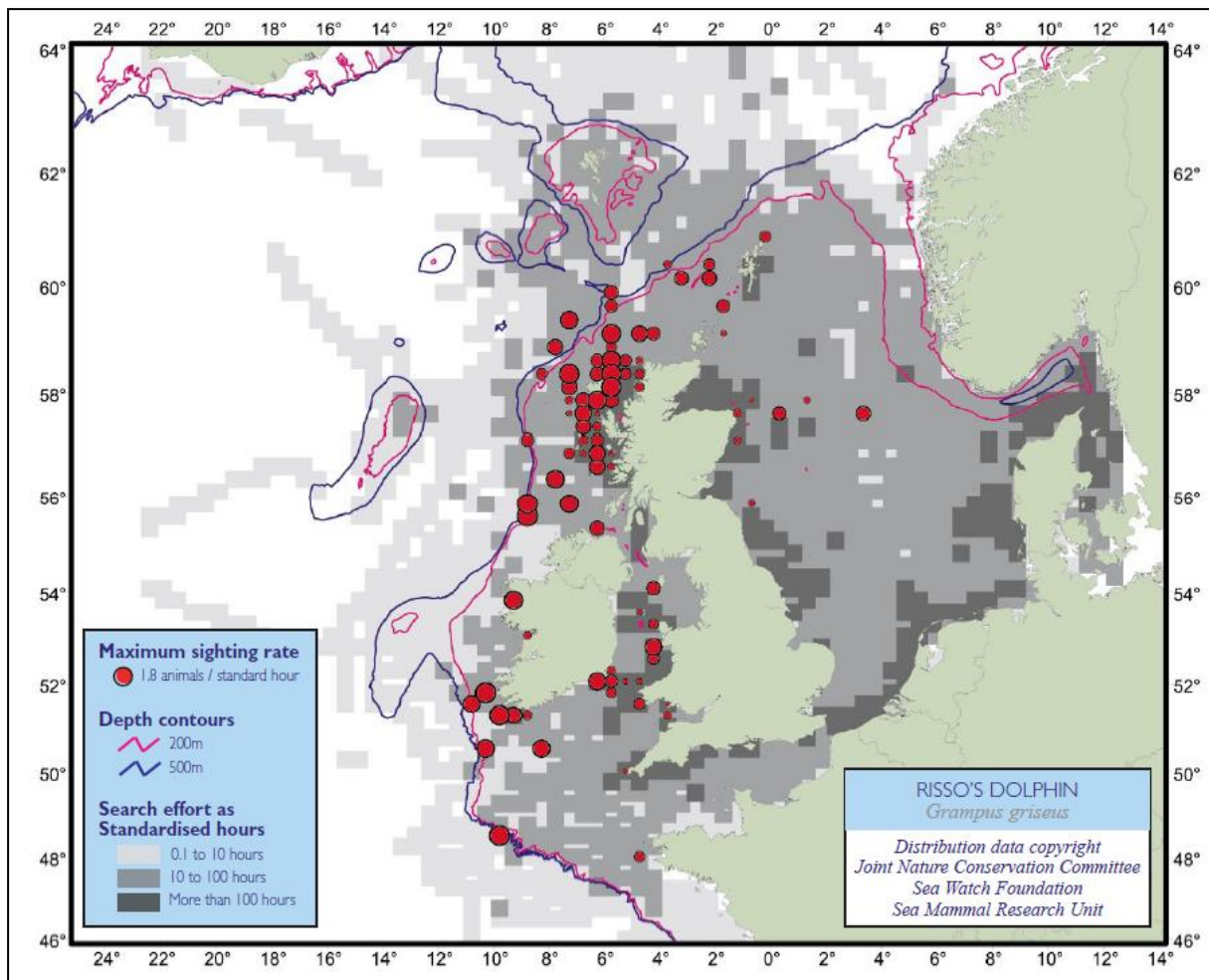
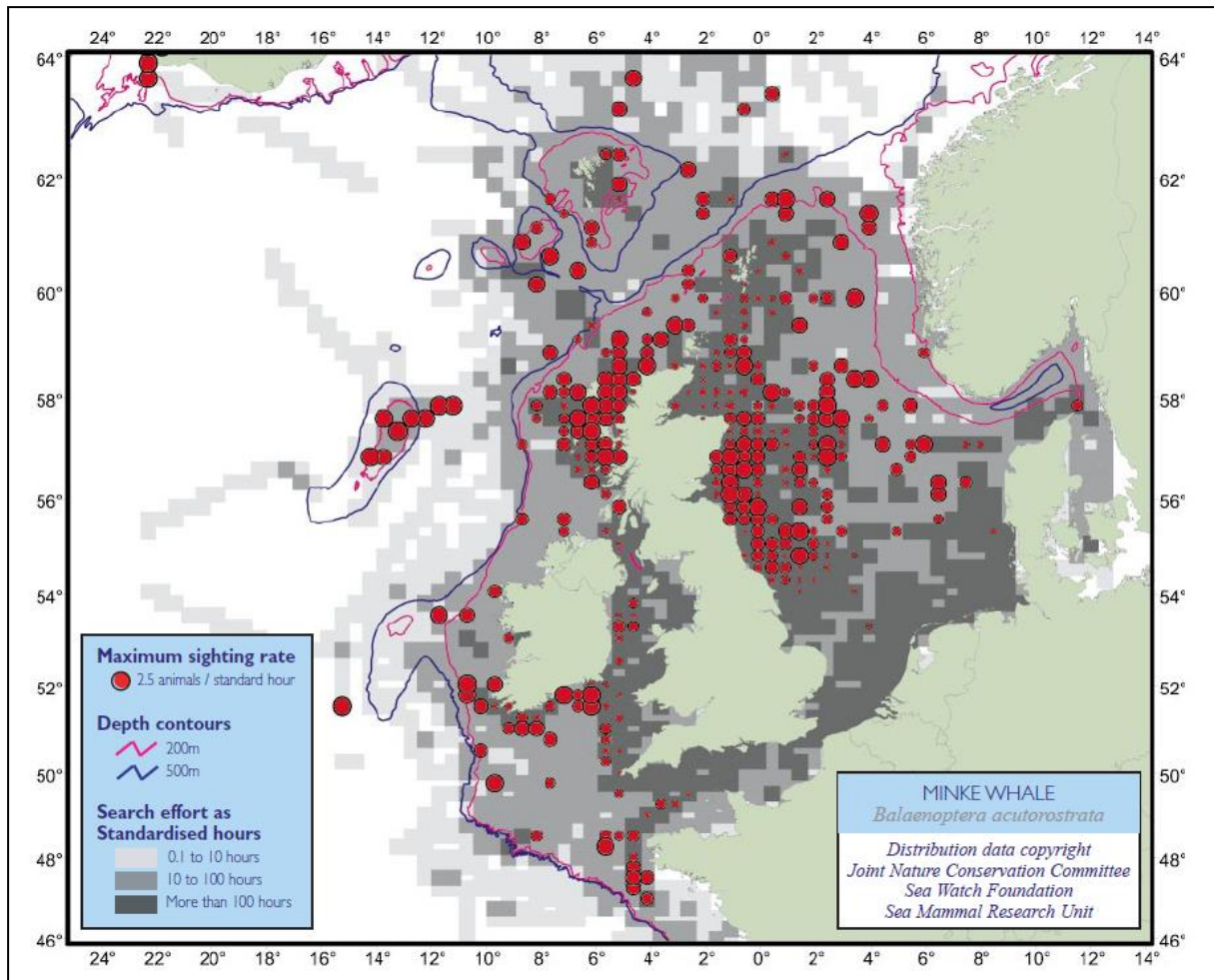


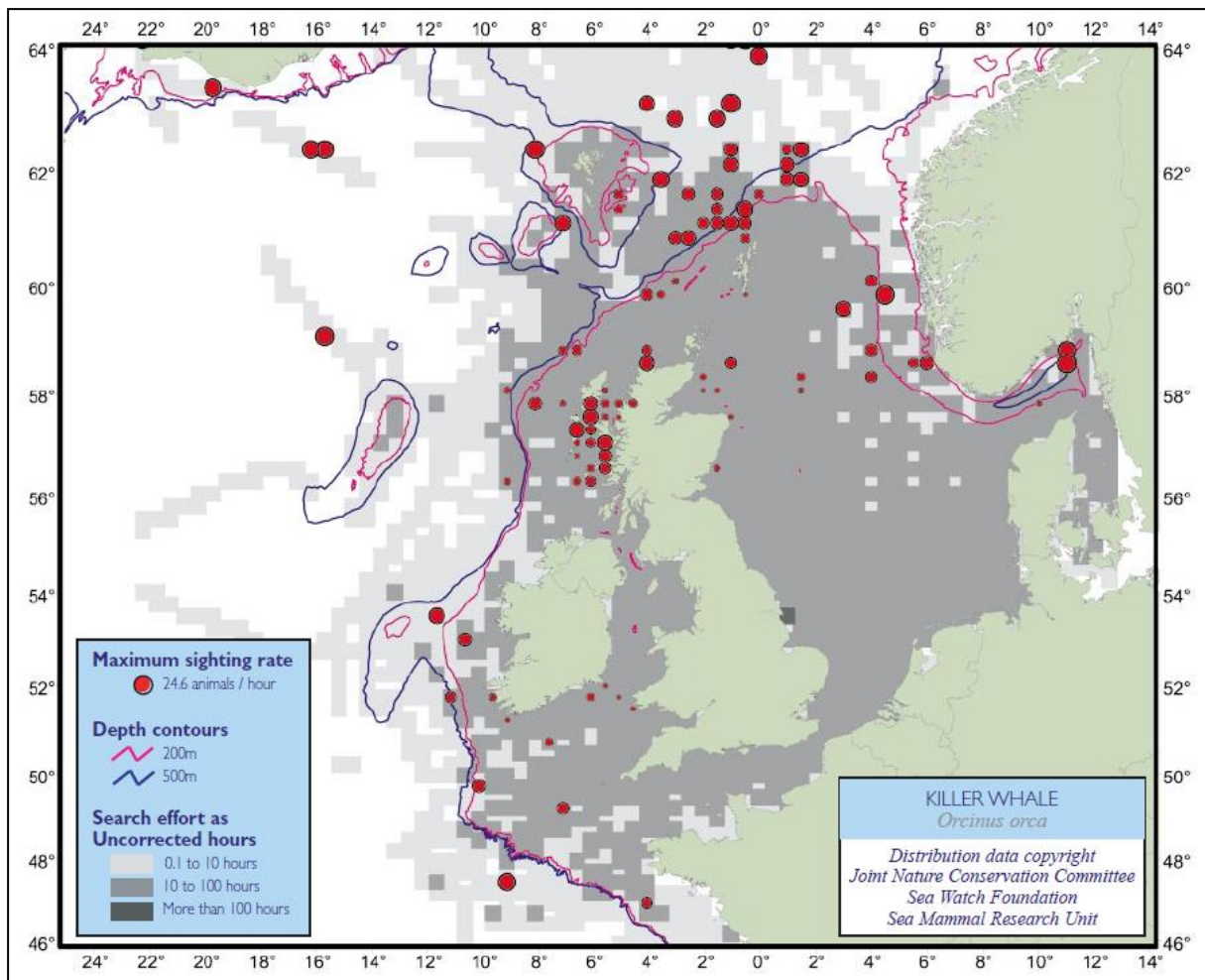
Figure 2-2: JNCC Risso's dolphin distribution map

Minke whales are frequently seen in coastal and inshore waters around the Hebrides from April to October with some studies suggesting that individuals return to the same localities year after year. Thirty-six minke whale sightings have been submitted to the HWDC Whale Track database since August 2017 within an approximate 15km radius of the proposed development. The majority of sightings were in the summer months (July to September) with one sighting in January 2018 off the north of the Eye Peninsula. Figure 2-3 shows UK minke whale distribution.



**Figure 2-3: JNCC minke whale distribution map**

Although killer whales are uncommon, they are widely distributed in western Scottish waters. Killer whales usually first appear in coastal waters around the Northern Isles and Outer Hebrides in May and June, singly or in groups numbering up to 14 individuals. Repeat sightings have been recorded in and around The Little Minch, east of Harris and west of Skye. Some individuals with unique markings have been repeatedly observed in particular locations for periods of over 10 years. Figure 2-4 shows UK killer whale distribution.



**Figure 2-4: JNCC killer whale distribution map**

In North Atlantic waters, common dolphins are predominantly found in continental shelf waters, notably in the Celtic Sea and Western Approaches to the Channel, however they can be frequently seen in the Sea of Hebrides in the Summer (June to September). In August 2017, one sighting of 20 individual common dolphins, approximately 6km east of the proposed Deep Water Port site, was submitted to the HWDT Whale Track database. In September 2017 a further sighting of 18 animals within Glumaig Bay (approximately 1.5km north) was also recorded. Figure 2-5 shows UK common dolphin distribution.



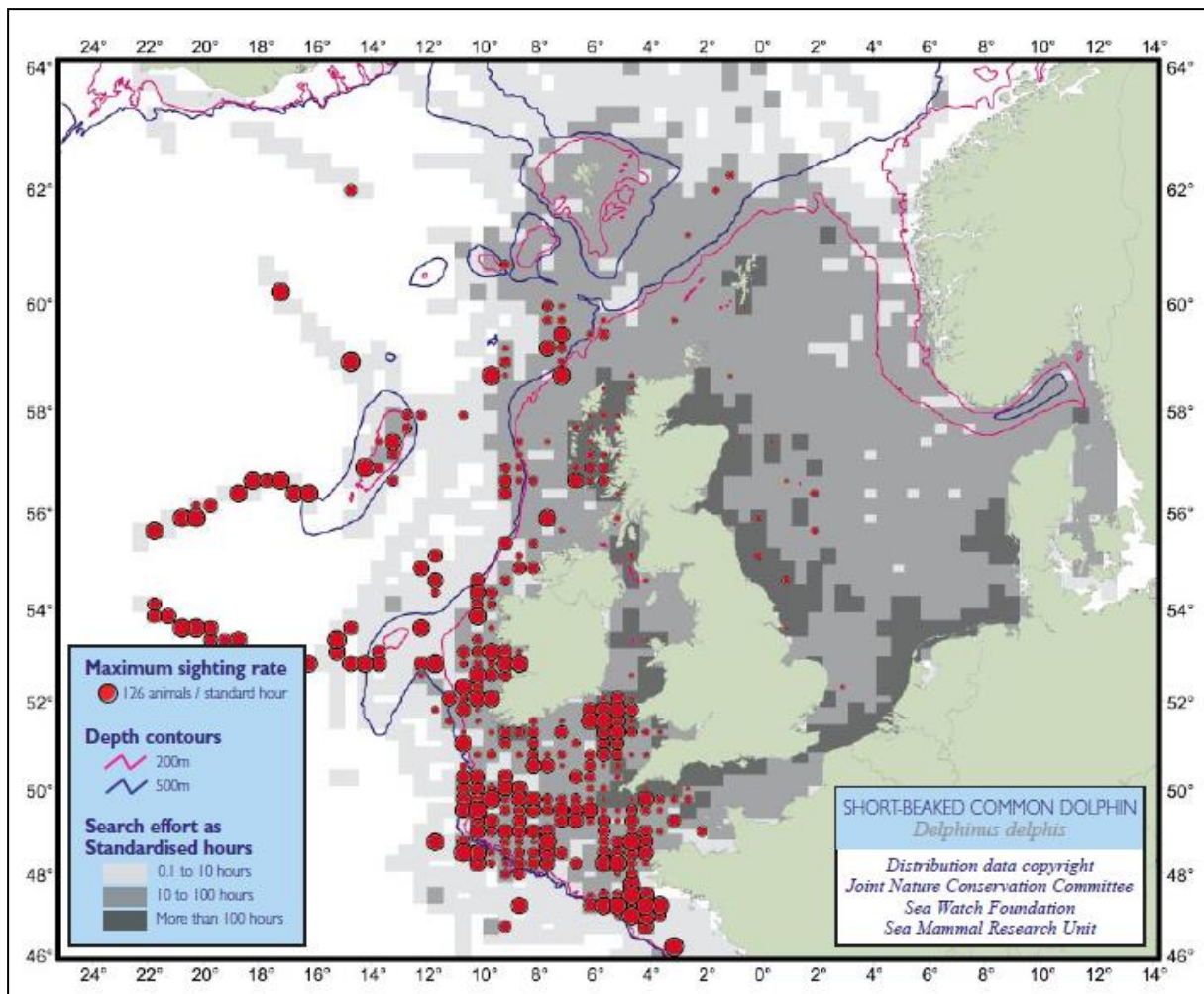


Figure 2-5: JNCC common dolphin distribution map

Although bottlenose dolphin have been noted as regularly occurring within Stornoway Harbour, larger schools of bottlenose dolphin tend to occur in deeper waters and the number of sightings in proximity to the proposed Deep Water Port is significantly lower compared to other species. Since July 2017, the closest sighting of bottlenose dolphin submitted to the HWDT Whale Track database was approximately 55km east, off the Scottish Mainland. Figure 2-6 shows UK bottlenose dolphin distribution.

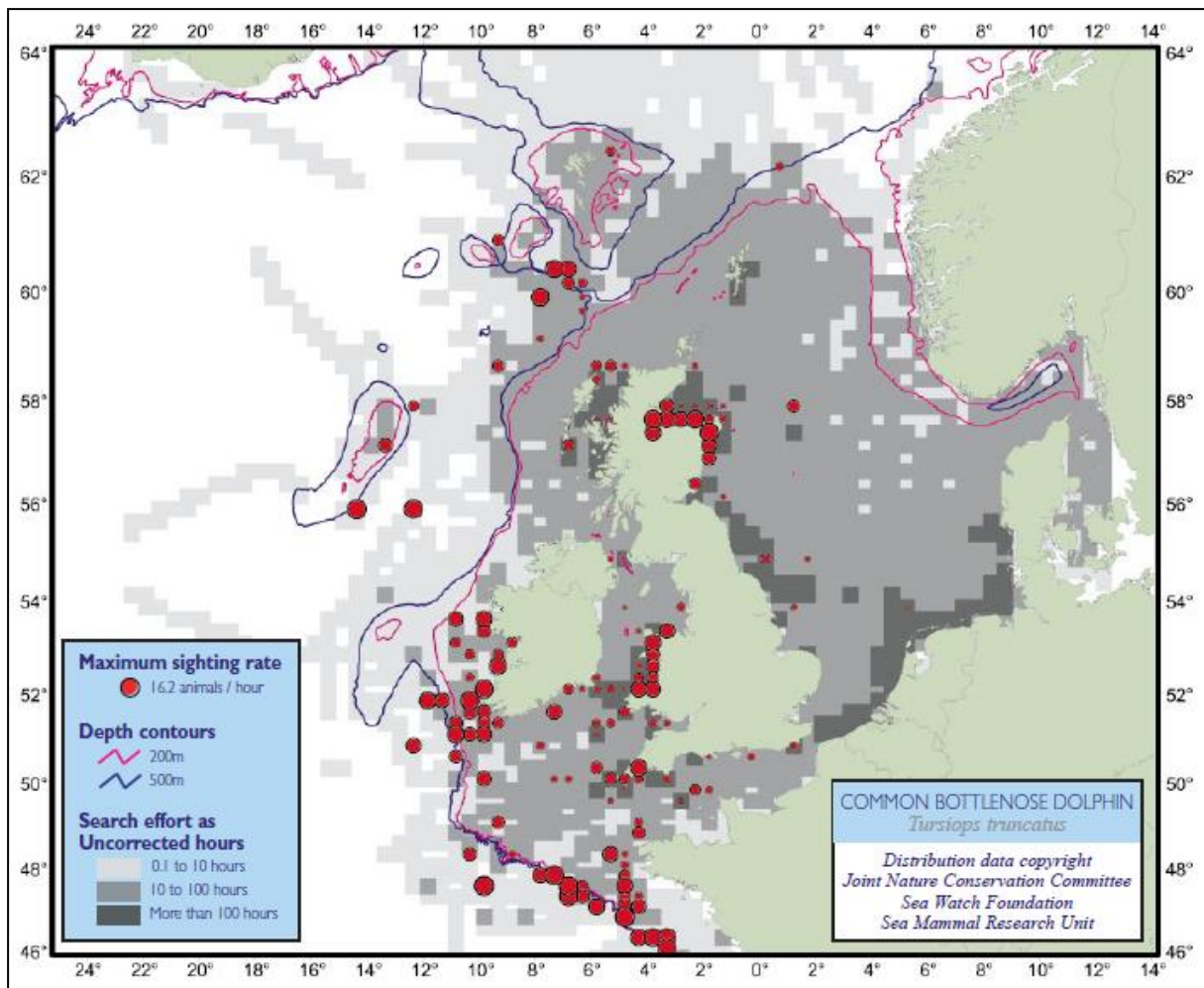


Figure 2-6: JNCC bottlenose dolphin distribution map

Humpback whales sightings off Stornoway are infrequent, with isolated records almost exclusively in waters deeper than 200m. Most sightings are between May and September, which is when small numbers are seen off the continental shelf; west and north of Scotland. Since July 2017, one sighting of once humpback whale was recorded approximately 10km south west of the proposed development. Figure 2-7 shows UK humpback whale distribution.

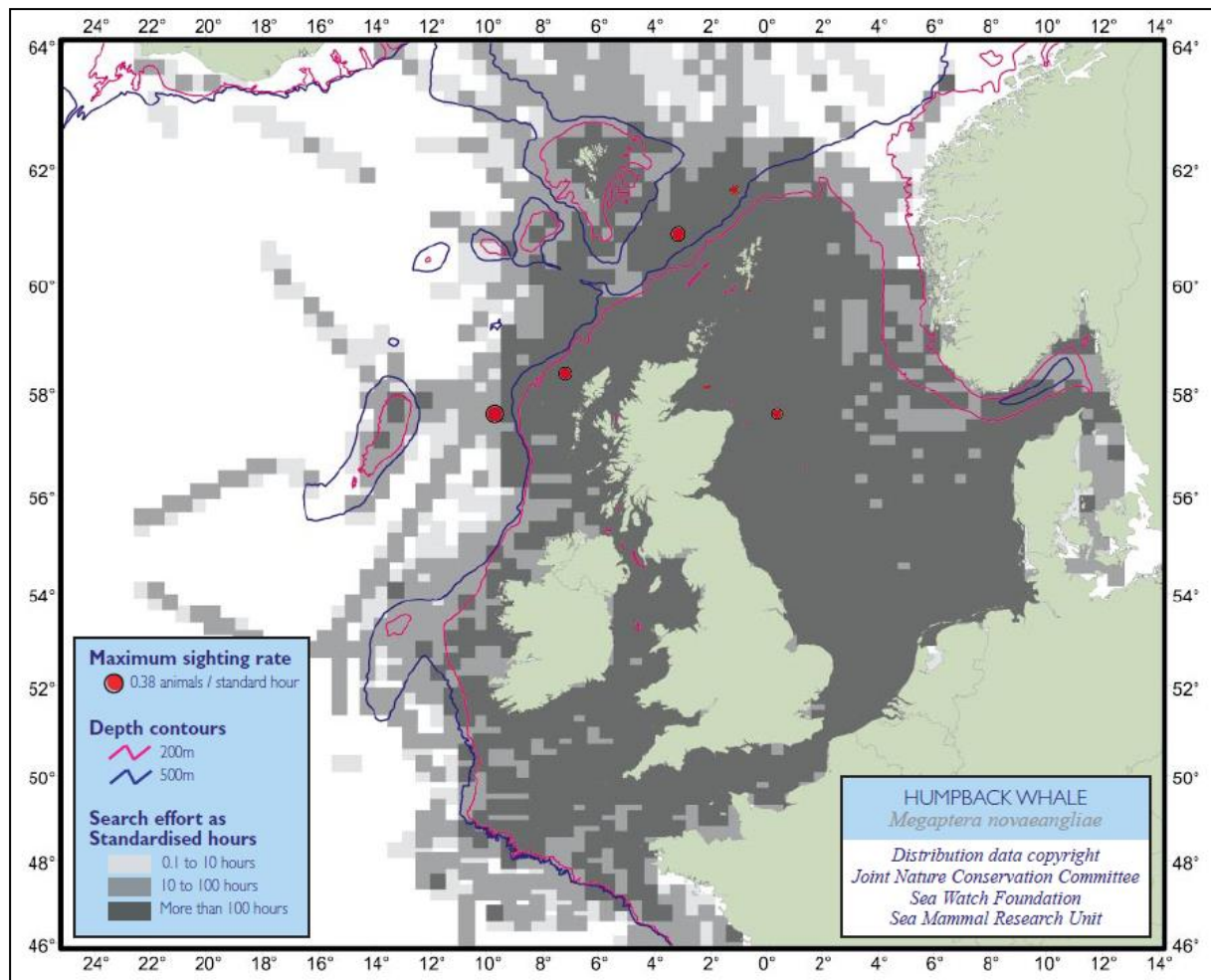


Figure 2-7: JNCC humpback whale distribution map

Based on the above information, it has been assessed that the most frequently observed species, and therefore the species considered to be of most concern within the zone of influence of the proposed Newton Marina, are harbour porpoise, Risso's dolphin and minke whale.

## 2.3 Seals

Baseline information, to determine how seals utilise the zone of influence of the proposed works, was collated from the following sources:

- SNH<sup>10</sup>; and
- Scottish Government Designated Sites: Seal Haul out Sites<sup>11</sup>

Both harbour seal and grey seal can be seen all around Scotland on many of the offshore islands and along much of the west mainland coast. Because seals range widely in their search for food, single seals of either species might be spotted anywhere along the Scottish coastline.

<sup>10</sup> SNH Seals in Scotland available at: <http://www.snh.org.uk/publications/on-line/naturallyscottish/seals/sealsinscotland.asp> last accessed 19/03/2018

<sup>11</sup> Scottish Government seal Haul-out maps available at: <http://www.gov.scot/Topics/marine/marine-environment/species/19887/20814/maps> last accessed 19/03/2018

There are no statutory designated sites which feature seals within 50km of the proposed Deep Water Port. The nearest notable site for seals in proximity to the development is Broad Bay, approximately 14km to the north, which is a designated seal haul-out site.

Harbour seals (*Phoca vitulina*) routinely travel 40-50km from their haul-out sites to forage and prefer more sheltered waters, meaning harbour seals are more likely to be encountered in Stornoway Harbour than grey seals (*Halichoerus grypus*), which prefer offshore feeding areas, however both species could be present.

## 2.4 Basking Shark

Although not a marine mammal, basking sharks (*Cetorhinus maximus*) are listed as endangered on the International Union for Conservation of Nature and Natural Resources (IUCN) Redlist<sup>12</sup> and are afforded domestic and global protection; therefore have been considered in this assessment. The coast of the Isle of Skye, approximately 55km south west of Stornoway is a known basking shark hotspot<sup>13</sup> during the summer months, between May and October.

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<sup>12</sup> IUCN Redlist available at: <http://www.iucnredlist.org/> last accessed 30/05/18

<sup>13</sup> The Shark Trust basking shark sightings available at: [https://www.sharktrust.org/en/basking\\_shark\\_sightings](https://www.sharktrust.org/en/basking_shark_sightings) last accessed 30/05/2018

## **3 MARINE MAMMAL RISK ASSESSMENT**

### **3.1 Activities Affecting Marine Mammals**

#### **3.1.1 Underwater Noise Producing Activities**

Underwater noise modelling was commissioned as part of this assessment and was appraised to inform this document. Please refer to Irwin Carr Consulting report: 'Technical Appendix 5.4: Underwater Noise Report, Newton Marina' which details the methods and findings of the underwater noise modelling.

There are a number of proposed activities which will introduce underwater noise into the marine environment. These include: pile extraction (vibratory), vessel movement, rock armour placement, drilling, vibratory piling and impact piling.

The Marine Scotland 'Guidance for Scottish Inshore Waters: The Protection of Marine European Protected Species from Injury and Disturbance' defines what disturbance means to cetaceans as: 'Changes in behaviour which may not appear detrimental in the short-term, but may have significant long-term consequences. Additionally the effects may be minor in isolation, but may become more significant in accumulation'. Disturbance may be identified via the following behaviour:

- Changes in (direction or speed of) swimming or diving behaviour;
- Bunching together or females shielding calves;
- Certain surface behaviours such as tail splashes and trumpet blows; and
- Moving out of a previously occupied area.

The following negative effects are linked to disturbance:

- Displacement from important feeding areas;
- Disruption of feeding;
- Disruption of social behaviours such as communication, calving, breeding, nursing, resting and feeding; and
- Increased risk of injury or mortality;
- Increased vulnerability of an individual or population to predators or physical stress; and
- Changes to regular migration pathways to avoid human interaction.

At this stage the exact details of the equipment to be used are not known, and will be confirmed upon appointing contractors. As a result, the data to inform the noise models has been interpolated from similar construction projects, in-house work undertaken by Irwin Carr Consulting, and a review of the literature. This means that the results are based on a presumption that the works at Newton Marina will be carried out using equipment that produces similar noise levels to the examples used to inform the model. The three construction methods below are considered the most significant:

#### **1. Impact Piling**

Impact piling activities will likely produce the loudest noise during construction. Despite only a few strikes being required to set a pile, this type of piling has a higher chance of causing injury than other types of noise with similar energy. This is because the sound impulse has a very fast 'rise time' i.e. how quickly an acoustic impulse "rises" from the background noise. This means animals in the vicinity of the noise source have no time to react/adapt to the noise, and consequently increases the risk of acute hearing injury. For the most part piles will be installed into pre-drilled holes by vibration. Where sediment proves too hard for this approach some impact piling will be carried out. The proposed piling activities are anticipated to



occur over a 3-4 day period, with a 6000 hammer strike per day maximum assumed to undertake the noise modelling.

## **2. Odex Drilling**

All holes for piles will be pre-drilled. This drilling is done by the “Odex-drilling” method, that is suitable for softer sediments, as it can be used to line the drilled hole while drilling, thus avoiding soft sediment flowing into the drilled hole. Even though this is in essence an impact method, a high strike rate means that the noise is characterised as continuous (>20 strikes/second).

## **3. Dredging**

The removal of up to 100,000m<sup>3</sup> of sediment by either suction or lifting of loose material from the seabed will be undertaken via one or both of the following methods :

- Backhoe dredgers are diggers on barges/land based and are suitable for removing soft sediment at shallow depths.
- Cutter suction dredging involves a cutter which can break/loosen harder sediments and remove them via suction. Cutter suction dredging is considerably noisier due to the amount of moving parts under water and the impact of the cutter with hard sediment. The noise model is based on data for the cutter suction dredger, to represent a worst-case scenario.

Cetaceans rely on their hearing for foraging, navigation and mating. The impact of noise to a population level is difficult to determine, however the expected impact on an individual animal’s hearing ability and potential damage that could be caused by noisy activities during construction is assessed by modelling representative scenarios, taking into account environmental variables and the animal’s hearing capabilities.

### **3.1.2 Increased vessel movement**

During construction, there will be a small increase in vessel movement in and out of the marina; the increase in vessel capacity at Newton Marina will also lead to an increase in vessel traffic post-construction. It is not currently known what the predicted increase in vessel movements will be as a result of the development.

The increase in the number of vessels travelling through to Newton Marina, both during construction and operation, would increase the risk of collision with marine mammals and/or basking sharks, potentially resulting in death or injury to individuals.

### **3.1.3 Cumulative Impacts**

Scottish and Southern Electricity Networks Transmission are proposing to construct a High Voltage Direct Current (HVDC) connector between the island of Lewis and the Scottish mainland. The Western Isles Connection will transmit electricity generated by renewable developments on the Western Isles to areas of demand in towns and cities across Scotland. The construction of the HVDC is expected to commence within the same timescales as Newton Marina. An increase in the number of vessels in the area is expected during the construction of the HVDC. This increases the risk of collision with marine mammals and/or basking sharks.

During the operation of the marina there is likely to be an increase in the number of vessels traveling through waters surrounding the development associated with the increased vessel capacity of Newton Marina and Stornoway Deep Water Port. There is already some marine traffic associated with the existing Stornoway Port. The total number of vessel movements for the previous three years was 768 in 2015, 833 in 2016 and 908 in 2017 (Stornoway Port Authority, 2017). There are a range of vessels including cruise ships, a twice daily passenger ferry from Ullapool as well as yachts, cargo ships and fishing vessels.

During the construction of Newton Marina, construction will also be underway to develop Stornoway Deep Water Port, approximately 1.5km south of the proposed Newton Marina. Stornoway Deep Water Port is subject to a separate EIA, however the EIA Scoping Opinion received from Comhairle nan Eilean Siar (CnES) Planning Department requested that impacts from the Deep Water Port development be considered in combination with impacts from the Newton Basin Marina development. The dredging and piling work would be scheduled so that piling and dredging would not occur simultaneously across both sites.

### 3.2 Noise Modelling Results: Impacts of Underwater Noise on Cetaceans

The way in which noise affects marine mammals is dependent on several factors, including the type of noise generated, the noise level, the species of marine mammal and the distance between the animal and the source of the noise. The National Oceanic and Atmospheric Administration (NOAA) describes how different groups of marine mammals hear and are affected by sounds, which can be found in the *'Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing'*<sup>14</sup>. The effects can be described as either a Permanent Threshold Shift (PTS), where an animal experiences irreversible damage to their hearing which can in turn affect their ability to forage and reproduce and in extreme circumstances result in death; or a Temporary Threshold Shift (TTS) which an animal can recover from, but may experience 'masking' which reduces its ability to communicate with other animals and locate prey, resulting in fatigue<sup>15</sup>.

The dredging and piling work is organised so that piling is carried out in Newton Marina while dredging is carried out in the Deep Water Port area and vice versa. The noise modelling ran the scenarios in a way that reflected this tandem operation.

#### 3.2.1 Impact Piling

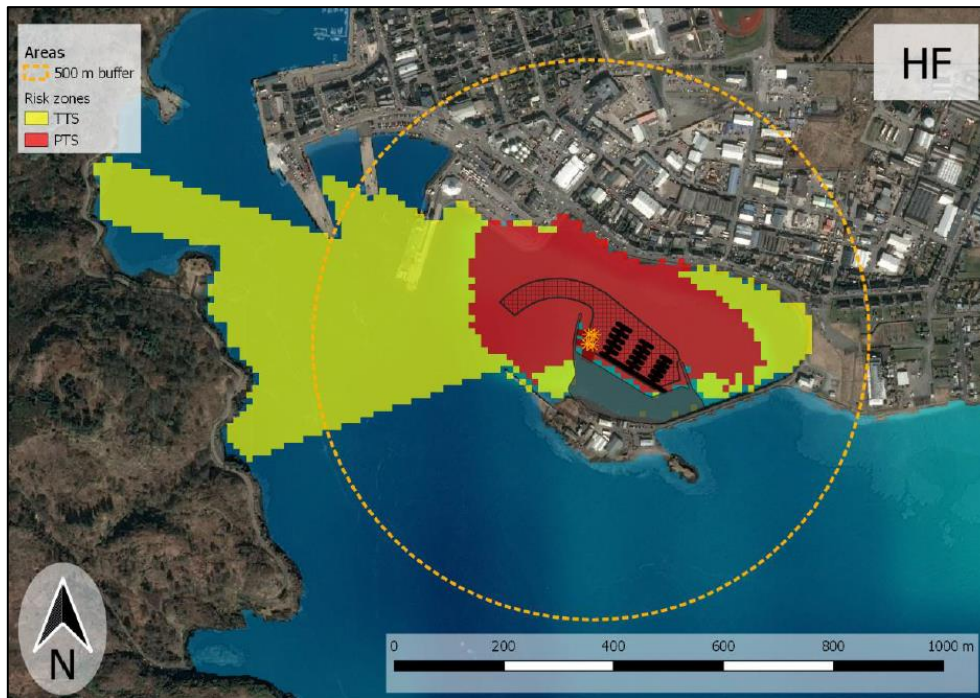
Impact piling presents the highest risk of injury and/or disturbance to cetaceans. The noise model indicates that a single strike of the impact hammer at full power would risk acute injury, and cause PTS to harbour porpoises within approximately 200m of the source of the noise, and to whales and dolphins within approximately 50m. The TTS limit for this scenario would be approximately 850m for harbour porpoise, and less than 100m for all other cetacean species.

If any of the priority cetacean species were to stay within the risk zone for the duration of the assumed 6000 hammer strikes per day, i.e the worst case scenario which is highly unlikely, this PTS limit would increase to approximately 850m for harbour porpoise, minke whale and dolphin species, across the whole of the bay to the west. By implementing a 500m exclusion zone and a soft start procedure, it is assessed that any animal would flee the area prior to full-power impact piling commencing. As soon as an animal reaches any further south than the current breakwater at the marina, the noise from the impact hammer is likely to be masked by the structure. Figure 3.1 shows the PTS/TTS risk zones for harbour porpoise during impact piling, assuming a single strike of the impact hammer at full power. Figure 3.2 shows the risk zones for harbour porpoise during impact piling; assuming an animal stays in the vicinity of the impact piling for 6000 hammer strikes over a 24 hour period which is the worst-case scenario; generated by the underwater noise modelling. Harbour porpoise risk zones have been displayed as they are the most sensitive of the priority species to noise.

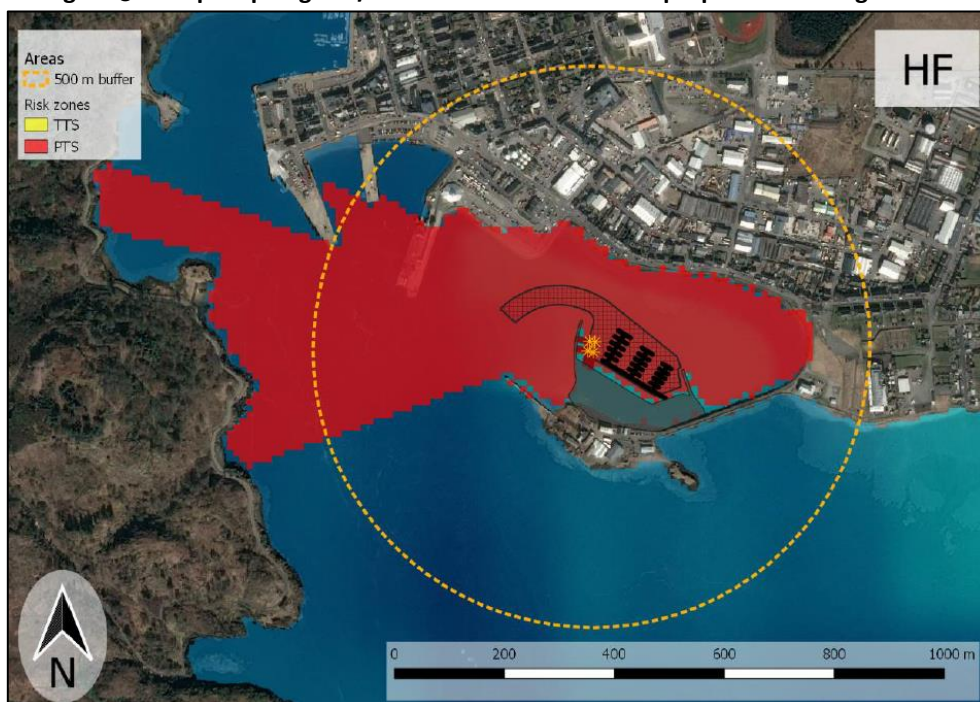
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<sup>14</sup> NOAA guidance available at: <http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm> last accessed 22/05/18

<sup>15</sup> JNCC UK Marine Noise Registry: Information Document available at: [http://jncc.defra.gov.uk/pdf/MNR\\_Draft\\_InfoDoc\\_V1\\_20160808.pdf](http://jncc.defra.gov.uk/pdf/MNR_Draft_InfoDoc_V1_20160808.pdf) last accessed 06/06/2018



**Figure 3-1: Impact piling PTS/TTS risk zones for harbour porpoise for a single strike**

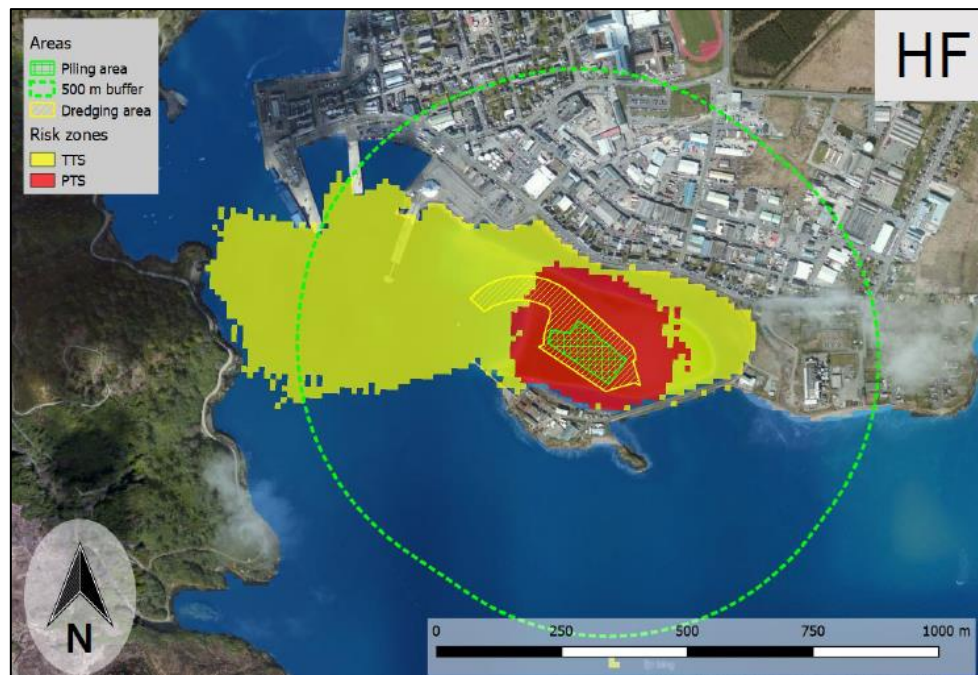


**Figure 3-2: Impact piling PTS/TTS risk zones for harbour porpoise across a worst-case 24 hour period**

### 3.2.2 Odex Piling

There is a risk of PTS associated with Odex piling only to harbour porpoise and minke whale. The PTS limit for both of these species groups extends no further than approximately 150m from the noise source. This model assumes however, that animals would stay in the area for the duration of the piling (a 15 hour period per day), which is highly unlikely. It is also unlikely that any of the priority species would swim this far into the bay. The TTS limit for harbour porpoise is approximately 600m from the noise source, for all other species the TTS limit is no further than <200m from the noise source; therefore the risks associated with Odex piling are assessed to be low. Figure 3.3 shows the PTS/TTS risk zones for harbour porpoise during Odex piling, over a 15 hour period

which is the worst-case scenario. Again, harbour porpoise risk zones have been displayed as they are the most sensitive of the priority species to noise.



**Figure 3-3: Odex piling PTS/TTS risk zones for harbour porpoise across a worst-case 15 hour period**

### 3.2.3 Dredging

Dredging activities will have the lowest acoustic impact upon cetaceans. There are no associated risks of PTS to any of the priority species. The risk of TTS extends to approximately 100m from the dredge area only for harbour porpoise and minke whale.

## 3.3 Noise Modelling Results: Impacts of Underwater Noise on Seals and Basking Shark

Assuming the worst case scenario; that seals would be within the risk zone of impact piling for the duration of the assumed 6000 hammer strikes per day, the limit for PTS is approximately 650m out to the west, this does not extend any further south than the barrier created by the current marina structures which will mask the sound; It is extremely unlikely that an animal would stay within this area for the duration of impact piling, however. By implementing a 500m MMO exclusion zone and a soft start protocol, it is assessed there will be no risk of PTS and low risk of TTS to seals.

Little is known about the hearing sensitivities of fish, particularly sharks, therefore the noise model gathered data from several sources to make an assessment. Although it is clear that sharks can detect sound (sharks have additional senses such as detecting pressure or particle movement), there is no evidence to suggest that sound has any effect on their population fecundity. A basking shark may suffer PTS if it were within approximately 10-20m of the impact hammer, which is unlikely as the water within the marina is relatively shallow. TTS may be experienced out to approximately 650m if an animal were to stay in the area for the assumed 6000 strikes per day, however this is an extremely unlikely therefore the risk of TTS is low. A MMO exclusion zone and soft start procedure would likely prevent the low risk of PTS to basking shark.

### 3.4 Impacts of Increased Vessel Movement

Harbour porpoises often live in the vicinity of vessel traffic and reactions by porpoises to various types of vessel showed only short-term negative effects from speedboats and large ferries in a study by the Seawatch Foundation<sup>16</sup>. SNH<sup>17</sup> indicate that as harbour porpoise are naturally shy of boats, they will for the most part avoid them, and so for most types of marine traffic the risk of collision is minimal. There is more potential for collision with fast-moving engine-powered vessels due to their speed and ability to change direction quickly. Risso's dolphins are rarely seen approaching vessels or bow-riding, suggesting that this species may actively avoid vessel traffic. Minke whales have reportedly been killed by ship strikes in UK waters, however are observed much less frequently in the vicinity of Newton Marina.

Basking sharks can often be observed with injuries to their dorsal fins, after colliding with vessels. Studies summarised by SNH<sup>18</sup> suggest that basking sharks show very little avoidance measures to approaching vessels, this is likely more apparent during the summer months when they are 'in a trance like state' feeding at the surface. This does not mean that risks do not exist however, rather, the risk is one of collision rather than disturbance. A vessel travelling at 6 knots (a low average cruising speed) will cover a distance of 10m in 3 seconds, at which range even a relatively aware animal would have no chance to evade a collision, nor a helmsman to avoid it. Therefore speed limits within the harbour is considered to be the soundest policy.

Disturbance caused by an increased human presence can have a negative impact on seals, seals that are on land are usually resting to conserve energy or may be nursing young, disturbing seals into the water costs them energy, creates stress and can lead to impacts on health<sup>19</sup>. Stampeding adults can also injure pups. As the nearest seal haul-out site is 14km to the north of the Deep Water Port, it is unlikely that seals will be negatively impacted to a population level. Individual animals foraging around Stornoway Harbour may be temporarily disturbed by an increase in vessel traffic.

### 3.5 Assessment of Risk

To summarise, for all hearing groups and without mitigation, impact piling produces larger impact zones than vibratory piling. The MMO protocol, detailed below, includes a mitigation exclusion zone of 500m. The PTS and TTS thresholds for whales and dolphins do not exceed 500m, nor does the PTS threshold for harbour porpoise. With the inclusion of this 500m mitigation zone, the only species to incur the effects of the impact piling noise will be harbour porpoise which showed thresholds for TTS within an approximate 850m radius.

Thus, the species of concern will be harbour porpoise, and it is considered that the mitigation suggested to protect them should be effective at protecting other species such as Risso's dolphin, minke whale, seals and basking shark.

It has been assessed that the primary risk from the works is to harbour porpoise; with consideration to be made for Risso's dolphin, minke whale killer whale, common dolphin, bottlenose dolphin, humpback whale and grey and harbour seal and that this will be **temporary disturbance** from underwater noise associated with the **impact piling**. The noise is not predicted to cause long term negative effects on the local populations of the

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<sup>16</sup> Seawatch Foundation: The Harbour Porpoise in UK Waters available at: [http://seawatchfoundation.org.uk/wp-content/uploads/2012/07/Harbour\\_Porpoise.pdf](http://seawatchfoundation.org.uk/wp-content/uploads/2012/07/Harbour_Porpoise.pdf)

<sup>17</sup> Scottish Natural Heritage: Inner Hebrides and the Minches Proposed SAC: Advice to Support Management available online at: <https://www.nature.scot/sites/default/files/2017-10/Consultation%20-%20Harbour%20Porpoise%20-%20Inner%20Hebrides%20and%20the%20Minches%20pSAC%20-%20Combined%20Reg%2033%20-%20MOP%20-%20A1918723.pdf> last accessed 13/06/2018

<sup>18</sup> Scottish Natural Heritage (2009) Commissioned Report 339: Basking Shark Hotspots on the West Coast of Scotland

<sup>19</sup> Scottish Natural Heritage: A Guide to Best Practice for Watching Marine Wildlife available online at: <https://www.nature.scot/sites/default/files/2017-06/Publication%202017%20-%20A%20Guide%20to%20Best%20Practice%20for%20Watching%20Marine%20Wildlife%20SMWWC%20-%20Part%202%20-%20April%202017%20-%20A2263517%29.pdf> last accessed 13/06/2018

aforementioned species due to its short duration and adherence to the detailed Marine Mammal Mitigation Plan (MMMP) in section 4; a JNCC report<sup>20</sup> providing guidance on disturbance of European protected marine mammals suggests that 2% of a harbour porpoise population would need to be impacted for disturbance to be considered significant. Given a rough population estimate of 6,500 individuals within the Inner Hebrides and Minches cSAC, approximately 128 individuals would need to be affected before the disturbance is considered significant at the population level. The report further goes on to specify that for an activity to disturb a significant number of porpoise it would have to continue for a considerably long period of time.

Given the mitigation which will be employed and the short term nature of the works producing underwater noise, the number of individuals affected will be negligible and any disturbance which may occur will not fall under the JNCC (2008) definition of significant disturbance. Therefore, it is considered that the MMMP will be sufficient to prevent short term negative effects.

Harbour porpoise and basking shark are the species' considered most at risk from an increase in vessel movement.

To reduce the risk of collision with marine mammals and basking sharks, contractors should be made aware of standard wildlife codes of conduct prior to construction commencing, which are outlined in section 4. Once Newton Marina is in operation, SPA will make leaflets available to marina users detailing measures, taken from these codes of conduct, to avoid collision with marine mammals and basking sharks.

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<sup>20</sup> JNCC (2008) *The Deliberate Disturbance of Marine European Protected Species – Guidance for English and Welsh Territorial Waters and the UK Offshore Marine Area*. Available at: [http://jncc.defra.gov.uk/PDF/consultation\\_epsGuidanceDisturbance\\_all.pdf](http://jncc.defra.gov.uk/PDF/consultation_epsGuidanceDisturbance_all.pdf) last accessed 25/07/2018



## 4 MARINE MAMMAL MITIGATION PLAN

### 4.1 Impact Piling Mitigation Protocol

A Marine Mammal Observation Protocol (MMOP) will be implemented so that the impact piling works do not cause injury or unnecessary disturbance to marine mammals. Although not an EPS, as good practice and as they are known to be present in the general area, this will extend to pinnipeds including harbour seal and grey seal. This section has been designed with reference to current JNCC guidance 'Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise' (August 2010)<sup>21</sup>.

#### 4.1.1 Marine Mammal Observer

A suitably qualified Marine Mammal Observer (MMO), competent in the identification of marine mammals, will be present during the impact piling. The MMO will undertake observation for marine mammals within the mitigation zone before and during impact piling. The MMO will advise the contractors and crews on the implementation of the procedures set out in the agreed protocol, to ensure compliance with those procedures.

The JNCC guidance provides the following definitions of an MMO:

**MMO:** Individual responsible for conducting visual watches for marine mammals. It may be requested that observers are trained, dedicated and/or experienced.

**Trained MMO:** Has been on a JNCC recognised course.

**Dedicated MMO:** Trained observer whose role on board a vessel is to conduct visual watches for marine mammals.

**Experienced MMO:** Trained observer with three years of field experience observing for marine mammals, and practical experience of implementing the JNCC guidelines.

The MMO will be land based and will be Trained. The identity and credentials of the MMO will be provided to SPA; and can be forwarded to Marine Scotland if required.

#### 4.1.2 MMO Equipment

The MMO will be equipped with binoculars (10X42 or similar) and/or a spotting scope (20-60 zoom or equivalent), a copy of the agreed protocol and the Marine Mammal Recording Form (MMRF), which is a Microsoft Excel spreadsheet containing embedded worksheets named Cover Page, Operations, Effort and Sightings. A Microsoft Word document named Deck forms is also available, and the MMO may prefer to use this when observing before transferring the details to the Excel spreadsheets. Although these forms were developed for seismic surveys, they can be used for piling operations, although many columns will not be applicable. The ability to determine the range of marine mammals is a key skill for MMOs, therefore a hand-held GPS device or rangefinder will be used to verify the range.

All MMO forms, including a guide to completing the forms, are available on the JNCC website:  
[http://jncc.defra.gov.uk/marine/seismic\\_survey](http://jncc.defra.gov.uk/marine/seismic_survey)

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<sup>21</sup> It should be noted that this protocol does not document measures to mitigate disturbance effects, but has been developed to reduce to negligible levels of risk of injury or death to marine mammals in close proximity to piling operations.

#### **4.1.3 Communication**

The contractor will be responsible for the communication channels between those providing the mitigation service and the crews working on the piling. A formal chain of communication from the MMO to the contractor, who will start/stop piling, will be established. In order to confirm the chain of communication and command the MMO will attend any relevant pre-mobilisation meetings.

#### **4.1.4 Mitigation Zone**

The JNCC guidance defines the mitigation zone as a pre-agreed radius around the piling site prior to any piling. This is the area where a MMO keeps watch for marine mammals (and delays the start of activity should any marine mammals be detected). The extent of this zone represents the area in which a marine mammal could be exposed to sound that could cause injury and will be determined by factors such as the pile diameter, the water depth, the nature of the activities (for example whether drilling will also take place) and the effect of the substrate on noise transmission. The radius of the mitigation zone should be no less than 500 metres, and this is measured from the pile location. The MMO should be located on the most appropriate viewing platform to ensure effective coverage of the mitigation zone.

Due to the geography of Stornoway Harbour, in optimum visibility and sea state conditions there is potential that from an elevated vantage point, which could be located on the concrete breakwater structure adjacent to the existing SPA slipway, the MMO will be able to visually monitor the area extending north across the whole harbour; including having the benefit of monitoring the channel to identify any cetaceans or seals travelling into the area from open water. This will encompass a crude 1km radius surrounding the proposed Newton Marina site, however, to provide a level of mitigation appropriate to the risk and more accurate monitoring, a mitigation zone of 500m around the piling activity is proposed.

#### **4.1.5 Impact Piling Protocol: MMO**

The standard JNCC protocol is outlined below<sup>22</sup> (please see Section 4.1.6 for deviations to this protocol to be followed during times of sea states exceeding 4 or during periods of darkness and/or low visibility i.e. fog):

1. Visual monitoring will not commence during poor visibility (such as fog) or during periods when the sea state is not conducive to visual mitigation (above sea state 4 is considered not conducive<sup>23</sup>) as there is a greater risk of failing to detect the presence of marine mammals. In the event that visual monitoring is not possible, the protocol outlined in Section 5.8.3 of the EIAR should be followed. Harbour porpoise have small dorsal fins, therefore the MMO shall take additional precautions if the sea state exceeds 2. As works are scheduled to commence during the winter period it is likely that sea state 2 will be exceeded on a regular basis. An elevated platform for the MMO to monitor from would be beneficial when the sea state is 2 or above, the impact piling works could also be scheduled on a day where the sea is expected to be calm.
2. The mitigation zone will be monitored visually by the MMO for an agreed period prior to the commencement of piling. This will be a minimum of 30 minutes.
3. The MMO will scan the waters using binoculars or a spotting scope and by making visual observations. Sightings of marine mammals will be appropriately recorded in terms of date, time, position, weather conditions, sea state, species, number, adult/juvenile, behavior, range etc. on the JNCC standard forms.

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<sup>22</sup> There is a 'variation of standard piling protocol' allowed in the guidance if required.

<sup>23</sup> Detection of marine mammals, particularly porpoises, decreases as sea state increases. According to the JNCC guidance ideally sea states of 2 or less are required for optimal visual detection.



Communication between the MMO and the contractor and the start/end times of the activities will also be recorded on the forms.

4. Piling will not commence if marine mammals are detected within the mitigation zone or until 20 minutes after the last visual detection. The MMO will track any marine mammals detected and ensure they are satisfied the animals have left the mitigation zone before they advise the crew to commence piling activities.
5. A soft-start will be employed, with the gradual ramping up of piling hammer power incrementally over a set time period until full operational power is achieved. The soft-start duration will be a period of not less than 20 minutes. This will allow for any marine mammals to move away from the noise source.
6. If a marine mammal enters the mitigation zone during the soft-start then, whenever possible, the piling operation will cease, or at least the power will not be further increased until the marine mammal exits the mitigation zone and there is no further detection for 20 minutes.
7. When piling at full power this will continue if a marine mammal is detected in the mitigation zone (as it is deemed to have entered voluntarily<sup>24</sup>).
8. If there is a pause in the piling operations for a period of greater than 10 minutes, then the pre-piling search and soft-start procedure will be repeated before piling recommences. If a watch has been kept during the piling operation, the MMO should be able to confirm the presence or absence of marine mammals, and it may be possible to commence the soft-start immediately. If there has been no watch, the complete pre-piling search and soft-start procedure will be undertaken.

To prevent the need for the pre-piling search and therefore delays to the piling operations, a noise generator could be deployed to create a continuous underwater noise which mimics the sound of the impact hammer; which would in turn deter marine mammals from entering the mitigation zone. This should be used for no longer than 1 hour, or in exceptional circumstances 2 hours (i.e. a breakdown of machinery), after which the standard soft-start procedure will commence. All uses of the noise generator should be logged and handed to the MMO to include in the deck forms.

#### **4.1.6 Impact Piling Protocol: Periods of darkness or low visibility and sea states exceeding 4**

As works at Newton Marina are scheduled during the winter months, it is anticipated that piling works will be programmed during periods of low visibility or darkness. To prevent significant delays to the project, SNH were consulted<sup>25</sup> to discuss potential alternative mitigation measures to enable works to commence during these times. Impact piling at Newton Marina presents low risks to marine mammals due to the short duration of the works, the breakwater structure providing a buffer for the noise and the low probability of large numbers of marine mammals occupying the working area; SNH recommend that wherever possible the standard JNCC MMO protocol will be adhered to. During periods when conditions are not conducive to visual monitoring, a soft-start must be conducted, meaning a gradual ramp-up of power over a period of not less than 20 minutes.

An Acoustic Deterrent Device (ADD) protocol was presented as a potential alternative to the above method, however it was concluded that the short duration of the works and the low risks of PTS/TTS presented by impact piling, did not warrant the use of an ADD which in this instance would contribute significantly more underwater noise, for little benefit.

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<sup>24</sup> The guidance states that there is no scientific evidence for this voluntary hypothesis; instead it is based on a common sense approach. Factors such as food availability may result in marine mammals approaching piling operations; in particular, the availability of prey species stunned by loud underwater noise may attract seals into the vicinity.

<sup>25</sup> Conference call on 17/07/2018. Attendees: EnviroCentre, SPA, Wallace Stone and Roddy MacMinn (Operations office, Outer Hebrides SNH).

#### **4.1.7 Reporting**

As per the JNCC guidance, reports detailing the piling activity and marine mammal mitigation (the MMO reports) will be sent to Marine Scotland at the conclusion of piling activity. Reports will include:

- Completed MMRFs;
- Date and location of the piling activities;
- A record of all occasions when piling occurred, including details of the duration of the pre-piling search and soft-start procedures, and any occasions when piling activity was delayed or stopped due to presence of marine mammals;
- Details of watches made for marine mammals, including details of any sightings, and details of the piling activity during the watches;
- Details of any problems encountered during the piling activities including instances of non-compliance with the agreed piling protocols; and
- Any recommendations for amendment of the protocols.

Dead cetaceans will be reported to the Scottish Marine Animal Stranding Scheme (SMASS) ([www.strandings.org](http://www.strandings.org)) and live marine mammal strandings will be reported to British Divers Marine Live Rescue ([www.bdmlr.org.uk](http://www.bdmlr.org.uk)).

#### **4.2 Odex Piling Mitigation Protocol**

The requirement of an MMO for Odex Piling is not considered necessary due to the underwater noise modelling displaying the risk of TTS for harbour porpoise only extending out to a maximum of approximately 600m from the piling activity. A soft-start method/gradual ramp-up of power will likely deter harbour porpoise from staying within, or moving into the area where Odex piling is ongoing.

#### **4.3 Dredging Mitigation Protocol**

The requirement of an MMO for dredging is not considered necessary due to the small TTS zones associated with the noise generated. Instead, dredging contractors should be made aware that marine mammals and basking sharks may be present within the working area, and broadly work to the vessel movement mitigation suggestions in section 4.4, below and Appendix D, to avoid disturbance to and/or collision with marine mammals.

#### **4.4 Vessel Movement Mitigation Protocol**

SPA implement speed restrictions on vessels within Stornoway Harbour, which can be found in Appendix D; additionally, leaflets will be created to provide additional advice to marina users to avoid disturbance to and/or collision with marine mammals or basking sharks which should include, but is not limited to the following:

- Keep a safe distance. Never get closer than 100m (200m if another boat is present) if within 100m, switch the engine to neutral;
- Never drive head on to, or move between, scatter or separate marine mammals or sharks. If unsure of their movements, simply stop and put the engine into neutral;
- Spend no longer than 15 minutes near the animals;
- Special care must be taken with mothers and young;
- Maintain a steady direction and a slow 'no wake' speed; and
- Avoid sudden changes in speed.

Wildlife code of conduct methods which have been created by SNH and the Shark Trust are included in Appendix D for reference.

## **4.5 Additional Good Practice Recommendations**

If any dead cetacean is anecdotally observed during construction or operation, it should be reported to the Scottish Marine Animal Stranding Scheme (SMASS) ([www.strandings.org](http://www.strandings.org)) and live marine mammal strandings will be reported to British Divers Marine Life Rescue ([www.bdmlr.org.uk](http://www.bdmlr.org.uk)).

The MMO should keep a record of all marine mammal sightings, whether in the mitigation zone or not, to be issued to SNH. An understanding of the location of species is essential to appropriately assess the impacts of a proposed development and plan and target effective mitigation, therefore this data could be used to inform future projects. Biodiversity data are extremely important as, aside from use in planning and decision making, they are key to delivering state of environment reporting, education, modelling trends in species and habitat distribution, and research and policy making.

## 5 MARINE MAMMAL LICENSING

European Protected Species (EPS) are animals and plants (species listed in Annex IV of the Habitats Directive) that are afforded protection under The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017. All cetacean species (whales, dolphins and porpoise) are European Protected Species. If any activity is likely to cause disturbance or injury to a European Protected Species a licence is required to undertake the activity legally.

The licensing of Marine European Protected Species in Scotland is shared between several regulators depending on the purpose and location of the activity in question. For activities taking place within 12 nautical miles of the coast (the Scottish Territorial Sea), EPS are protected under the 1994 Regulations. For commercial activities, including geophysical or seismic surveys (including those related to oil and gas), port and harbour developments and the installation of renewable energy devices Marine Scotland (on behalf of the Scottish Ministers) is the licensing authority under the 1994 Regulations: Regulation 39 (1) (a). For activities relating to scientific research or conservation, Scottish Natural Heritage is the licensing authority.

A licence may be granted to undertake such activities if certain strict criteria are met:

- There is a licensable purpose.
- There are no satisfactory alternatives.
- The actions authorised will not be detrimental to the maintenance of the population of the species concerned at favourable conservation status<sup>26</sup> in their natural range.

The flowchart in Figure 5-1 below shows the decision-making process for licensing, taken from the Marine Scotland guidance<sup>27</sup>.

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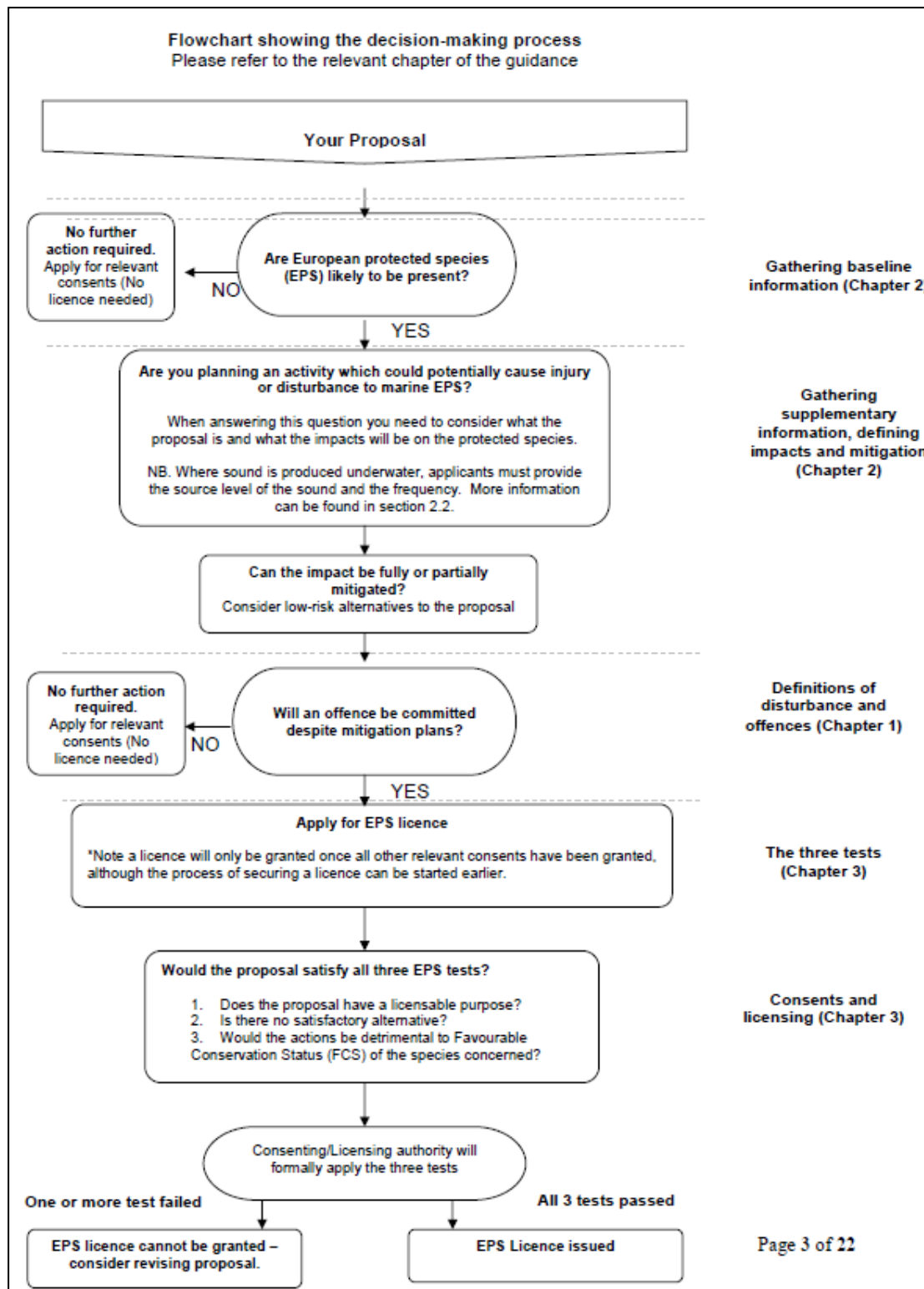
<sup>26</sup> The ultimate objective of the Habitats Directive is to ensure that the species covered reach what is called a 'Favourable Conservation Status' and that their long-term survival is deemed secure across their entire natural range within Europe. Article 1(i) of the Habitats Directive defines Favourable Conservation Status (FCS) of a species as follows:

"Conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within its natural range.

The conservation status will be taken as 'favourable' when:

- population dynamics data on the species concerned indicates that it is maintaining itself on a long-term basis as a viable component of its natural habitats; and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis."

<sup>27</sup> Guidance for Scottish Inshore Waters: The Protection of Marine European Protected Species from injury and disturbance. Marine Scotland 2014.



**Figure 5-1: EPS Licencing Procedure**

Impact piling has the potential to produce underwater noise at levels which could cause injury and disturbance to cetaceans. If the mitigation in section 5 is employed effectively, it is predicted that there will be no risk of injury, however, the mitigation measures cannot fully protect against disturbance from piling noise. As highlighted in Section 3 the risk of disturbance is greater than that of injury, with TTS (disturbance) occurring over a much wider area than PTS (injury). **Therefore an EPS licence will be required for potential disturbance from impact (hammer) piling.**

## **APPENDICES**

## **A SITE LOCATION**

## **B DESIGNATED SITE BOUNDARIES**



## **C MARINE MAMMAL MITIGATION ZONE**

## **D VESSEL MOVEMENT: SPEED RESTRICTIONS AND CODES OF CONDUCT**

## On the sea

Seeing wildlife is a great bonus to any boat trip, and increasing numbers of people are taking advantage of dedicated wildlife watching boat tours. There is a great deal of wildlife around, and it is often easy to see, even from a distance – especially if binoculars are used.

This guidance applies to anyone out in a boat of any kind who encounters wildlife, intentionally or otherwise. Although the Code should be followed at all times where practical, remember that the first responsibility of the skipper of a vessel is the safety of passengers and crew. Do not put yourself, crew or passengers in danger.

- Follow any locally available advice about avoiding disturbance to wildlife. This may include local marine codes, byelaws and wildlife management schemes.
- Keep a good lookout and don't get too close. Use binoculars to get a better view. Tour operators often provide their passengers with binoculars to assist with this.
- As soon as you see wildlife, assess the situation. What are the animals doing? Where are they going? How can I avoid disturbing them?
- If you are passing close to wildlife, reduce your speed to the safest minimum. Make sure that your movements are steady and predictable and approach at an oblique angle – direct or head-on approaches are more threatening. Depart with equal caution.







- Do not cut off an animal or group of animals by moving across their path, and do not approach them from behind.
- Let the animals decide how close they want you to be. If you see signs of disturbance (such as sudden movements or flight, aggressive behaviour, "heads up", bunching together, tail slaps) then you should move away and if possible take an alternative route or wait for the animals to move on.
- If animals are moving in a consistent direction, maintain a steady parallel course and where possible keep above the recommended minimum distances discussed in the Guide.
- If marine mammals decide to approach you (for example to bow ride), try to maintain a steady speed and course. Try not to present your propellers to approaching animals.
- Make sure the animals are not surrounded. If other people are watching, try to stay on the same side. Avoid corralling or boxing animals in against the shoreline or in sea lochs or bays.
- If you can see one animal at the surface, others may well be nearby, just below the surface out of sight. Keep a careful lookout at all times.
- Remember that with more boats and people about, the likelihood of disturbance will be greater.
- Take extra care during sensitive times of year in places where animals may be feeding, resting, breeding or with their young:
  - Do not intentionally break up or put up rafts of birds or flush seals into the sea.
  - Avoid landing or entering the sea adjacent to designated seal haul-out sites.
  - Be careful not to split up groups, or mothers and young, and never approach apparently lone young animals.
  - Watch out for basking sharks at tidal fronts where different water bodies meet (often marked on the surface of the water by lines of debris or foam) as they may be feeding and not be aware of your presence.
- If watching whales, dolphins or porpoises, switch off your echo sounder if it is safe to do so. These animals are particularly sensitive to underwater noise and

it may interfere with their communication, navigation and foraging.

- Avoid using flash photography – check the default setting on your camera.
- Do not throw litter into the sea.

**If you are using an engine:**

- Avoid sudden unpredictable changes in speed, direction and engine noise.
- Keep your engine and propeller well maintained to minimise noise.


**If you are under sail, paddling or rowing:**

- Do not take advantage of your ability to approach quietly – it may result in wildlife being suddenly startled by your proximity.
- Be aware of any wildlife around your vessel so that you can act as quickly as possible to minimise disturbance.
- Remember that small craft are vulnerable. Getting too close to marine animals may put you at risk.
- If you are under sail, avoid tacking, gybing and flapping sails close to marine wildlife, if possible.
- When seals are hauled out on the shore, they are particularly prone to disturbance from passing kayaks. If paddling, give haul-out sites a wide berth.

Personal water craft (sometimes known as "jet skis") are not recommended for viewing marine wildlife. They are fast, noisy, and low in the water. Their speed and limited range of visibility means that collisions may occur and can be serious for both parties.

- Keep a good lookout at all times, and keep away from marine wildlife where possible.
- If you have an unexpected encounter with marine wildlife, slow down and move away steadily to 100 metres or more.


See **A Guide to Best Practice for Watching Marine Wildlife** for more detailed advice on different species groups.

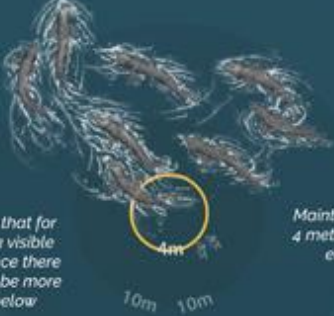


# BASKING SHARK CODE OF CONDUCT

## BOAT-USERS, KAYAKERS, SWIMMERS, DIVERS AND SURFERS

The following guidelines have been designed to help water-users reduce the risk of injuring or harassing Basking Sharks, ensuring they return to British waters each year.






Remember that for every shark visible on the surface there are likely to be more hidden below

Maintain a distance 4 metres away from each shark

Restrict the number of people in the water at any one time


**Do not approach within 100m of the sharks – but if you do find yourself close to Basking Sharks here are some general tips:**

- ▶ Although mostly placid, Basking Sharks can startle if disturbed, often thrashing their tail with enormous power
- ▶ Be extremely cautious in areas where Basking Sharks have been seen breaching
- ▶ Avoid pairs or large numbers of sharks following each other closely. This may be courting behaviour and they should not be disturbed. Maintain a distance of at least 500m
- ▶ Remember that for every shark visible on the surface there are likely to be more hidden below
- ▶ Take time to observe the direction(s) of movement of the sharks and then quietly position yourself alongside their anticipated course for a safe and enjoyable view. Wait for them to come to you



Don't forget to take pictures of the fins for the Photo-ID Project and record your sighting

SWIMMERS, DIVERS AND SURFERS




- ▶ Maintain a distance of at least 4m from each shark and be wary of the tail
- ▶ Do not try to touch the sharks
- ▶ Do not swim towards them if they are near you
- ▶ Ideally, swimmers should remain on the surface – stay in a group, rather than stringing out around the sharks
- ▶ No more than four people in the water within 100m of a shark at any one time

www.baskingsharks.org

REMEMBER


Basking Sharks are legally protected in the UK. It is illegal to intentionally kill, injure, recklessly disturb or harass Basking Sharks in British waters. Any person committing such an offence could face up to 6 months in prison and a large fine.




When closer than 100 m switch the engine to neutral

6

Restrict your speed to below 6 knots




BOATS



- ▶ Never chase a shark or direct a vessel towards them – this could make them dive or act unpredictably
- ▶ When sharks are sighted, restrict speed to below 6 knots and/or operate under sail
- ▶ When closer than 100m, switch the engine to neutral to avoid injuring sharks
- ▶ Avoid sudden changes in speed
- ▶ Do not allow several vessels to surround the shark(s)
- ▶ Jet-skis should not approach Basking Sharks

KAYAKS (AND SUPs)



- ▶ Remain calm and quiet – avoid sudden movements which will disturb the sharks
- ▶ Never paddle directly towards the sharks or allow several kayaks to surround them – this could make them dive or act unpredictably
- ▶ Stay in a group, rather than stringing out around the sharks
- ▶ Try not cross the path of the shark so the sharks can maintain their course without changing direction or speed
- ▶ Never use your paddle or kayak to touch a shark