



Ecological Assessments.

**Environmental Management Plan
– Plan 05 Ecology 23.02.05**

Prepared by;	Approved by;
Mark Dingwall.	Elizabeth Mullings-Smith
Signed;	Signed;

Document History Record

Doc No	EMP – Plan 05 Ecology 09.10.04				
Title:	Ecological Plan.				
Rev	Date	Description/Reason for Issue	Orig.	Ckd	Appd
R00	18.10.04	1 st draft Issue of plan	MD	EMS	EMS
R01	13.12.04	Revising of plan - onshore	MD	EMS	EMS
R02	23.02.05	Revision of plan - onshore	MD	EMS	EMS
R03	11.05.05	Offshore revisions	MD	EMS	EMS

NB Appendices may be revised and reissued separately. These do not constitute revisions of the whole plan, and are thus not recorded above as such.

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Document Update

The maximum period between reviews shall be:

Months	Date	Responsibility
One		HSES Co-ordinator
Three		HSES Co-ordinator

Responsibility for Review:

Project Health Safety Environment and Security Co-ordinator (sole responsibility)

Record of Review:

This document has been checked as being up to date as follows or has been revised as necessary.

Date of Last Review	Reviewed by
15.12.04	EMS
23.02.05	EMS
11.05.05	EMS

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1.0 Scope.

Ecology is possibly the most important aspect with regard to all the environment issues listed as plans. The main species under threat are Seals and Marine Benthos. It is obviously not just limited to these three as many other species must be considered. A comprehensive EIA was completed and a brief evaluation of what was recorded is explained in 3.0 in ecological assessment.

2.0 Responsibilities.

The environmental officer is responsible for work regarding KBRVestas actions but a number of roles go to BOW especially with regard to auditing and monitoring. If for some reason there is a significant impact occurring ecologically through results from auditing being carried out then records must be made and alternative options must be thought through or more stringent mitigation methods implemented.

3.0 Ecological assessment.

The construction work will be divided into four phases; transportation of workers and equipment to and from the site; installation of supporting piles; erection of masts and installation of nacelles; and commission of the generators. Disturbance linked to transportation will be caused by the vessels which are used. It is not however expected to be significant to marine wildlife.

The most significant impact expected is by the noise and vibration of the pile installation.

There will be a “pinger” device that is submerged for about 30 minutes to gently warn away any nearby marine wildlife, (obviously the closer the species to the pile being hammered, the more harm it will cause). This Pinger device will not cause any wildlife to permanently leave its natural habitat. It is merely a friendly warning.

Construction vessels –

The designated Sites that vessel must stay clear from/avoid if possible are;

A Ramsar site,

A site of Special Scientific Interest (SSSI).

A Special Protection Area (SPA),

Special Area of Conservation (cSAC) and a Special Marine Area (SMA).

Morecambe Bay Ramsar Site - International Designation.

Morecombe Bay Ramsar site is designated as a wetland of international importance, especially as a waterfowl habitat under the Ramsar convention. Its boundaries follow those of the following SSSI's.

Morecombe Bay;
South Walney and Piel Channel Flats; and
The Lune Estuary.

There are 12 water fowl species that must not be effected by the construction of the windfarm.

Any doubts or sightings must be reported to KBRVestas environmental contact who will then contact English Nature and BOW.

The species are ;
Pink-footed geese.
Shelduck.
Pintail.
Oystercatcher.
Ringed plover.
Grey plover.
Knot.
Dunlin.
Bar-tailed godwit.
Curlew.
Redshank.
Turnstone.

Terns are also present in the Morecombe Bay SPA which are listed below;

Sandwich tern.
Common tern.
Little Tern.
Arctic Tern – rare.

Wintering populations of the following may be spotted;

Golden plover
Great crested grebe.
Cormorant.
Widgeon.
Teal.
Eider.
Goldeneye.
Red-breasted merganser.
Lapwing.
Sanderling.
Black-tailed godwit.

Cable route –

Benthic Survey offshore Habitats.

The majority of sites within the wind farm are of a muddy sand substratum containing some gravel. The sites to the west showed a sediment without gravel with a high proportion of small species associated with mud. The site along the north east show a reduced community in a better sorted sediment. The east have a more extreme fine, sorted and mobile sand substratum with typical species in a very reduced and relatively uncharacteristic community.

Of the sub tidal area of Morecombe Bay, sand dominants but there are the odd rock and boulder.

Marine benthos obviously congregates around these as habitats and therefore mussels, algae and nationally scarce assemblages of sponges, reef builders, hydroids and sea squirts thrive in tide-swept waters.

Onshore Cable route and Great Crested Newt Mitigation.

The main problem along the on land cable route is the number of Great Crested Newts. A survey has been undertaken by RSK Environment (Tony Marshall)

A Survey called “Great Crested Newt Survey Ponds near Middleton, Heysham, Lancashire, May 2004” was recorded as a base to the mitigation measures.

The relevant onshore sub contractors will be informed and communicated onsite and as tool box talks before construction commences.

For a full copy of the DEFRA licence, please refer to the Environmental File (holding records etc) onsite.

For the summary of mitigation measures see below;

Mitigation strategy

The strategy proposed aims to remove risk to great crested newts during the development by:-

Making the pipeline route unfriendly to newts for the duration of the pipeline installation by cutting down existing grass and herbs.

Ensuring that none of the pipeline trench is accessible to newts at night

Installing the pipeline in the areas where newts may occur during the time when most newts are in ponds

Inspecting and hand searching each day’s section of the pipeline route before excavation begins.

Ensuring that no temporary newt friendly habitat is created during the development, such as temporary spoil heaps.

Compensating for the temporary disturbance by providing two new hibernacula near the main ponds and monitoring the ponds in detail to aid future management decisions for the nature reserve area.

No fencing along the route is proposed as the works will be very temporary and it is considered that the additional disturbance to the area, over a much greater time period would be more detrimental to the newt population than the very temporary nature of the trench excavation and infilling after a thorough inspection.

The trench itself is in generally poor newt habitat but if a fence had to be erected it would need to be in some good newt habitat areas for much of its length, particularly where the pipe will be installed along a road and any fence would therefore have to be on the opposite side of the road in a verge that would otherwise remain undisturbed.

Receptor site selection

There will not be any long term disturbance to the existing site, or loss of habitat or movement of newts away from the existing area. Therefore no receptor site is proposed.

Habitat creation, restoration and/or enhancement

Aquatic habitats

No aquatic habitats will be affected by this development. No restoration or enhancement is proposed as many of the ponds have been improved for newts as part of the general management of the area as either formal or informal nature reserve areas.

Terrestrial habitats

Two new hibernacula will be constructed to the north of the pipeline near the main pools on the ex-industrial estate. These will be constructed to a similar design to that detailed in the Great Crested Newt mitigation guidelines and will be positioned such that vehicles will not be leaving the tarmac/concrete surfaces within the estate so as to avoid the risk of harming newts while creating the hibernacula. The places chosen are roughly indicated on map D7 and the areas will be visually inspected and hand searched and cleared before any material is put in place. It is considered that there is a possible shortage of hibernation areas on the site, especially if the temporary earth and rubble mounds just north of the ponds are removed in the long term.

Integration with roads and other hard surfaces.

There are several roads along the pipeline route. No change is proposed to the kerbs or road edges as part of this development. The trench area will be restored with the vegetation removed from the area. For the majority of the trenched area this vegetation will be temporarily removed for less than a working day.

Integration with other species/habitat requirement

No significant changes are proposed to the area as a result of this application. Vegetation that is temporarily cleared will be done so as not to harm other wildlife.

Capture and exclusion

Timing, effort, methods, capture/exclusion methods, translocation.

The mitigation strategy is to avoid any conflict with newts by reducing the likelihood of them being present while the trench is excavated and the pipe laid.

The first priority each morning while the trench is being excavated and pipe installed will be for a thorough visual and hand searching of the area being worked that day to locate any newts that may be resting in the path of the pipeline. Any newts found will be recorded and caught by hand and moved towards but not into the nearest pond and released into suitable habitat that will give them cover until the following night.

Most of the trench will be excavated and filled in during a single day but a short 4m length about 600mm wide will be open each night at the end of the day's work. To avoid newts falling into it the hole will be covered with sheets of plywood with sandbags round the edges to ensure that there are no cracks that newts can crawl into. When the sandbags and plywood are removed each morning care will be taken to avoid and remove to safety any newts that may be sheltering round the sandbags.

Two of the cable joint bays are within 200m of ponds and therefore the area needed for the joint bay will be fenced with suitable newt fencing from the time the area is first disturbed until it is reinstated. Appropriate newt fencing will be temporary and constructed to the design shown in the Great Crested Newt mitigation handbook or where the ground is solid then the polythene sheeting will be folded back on the inside of the fence and sandbags used to seal any gaps between the polythene and the ground. The area of ground required for each joint bay will be approximately 12m by 5m. Any work within the fenced area will only take place after a thorough visual inspection and hand searching. When the fence is erected any refuge areas will be searched and removed for the duration of the development. Any newts found in the area will be caught and released outside the fenced area.

No surplus materials will be stored within 250m of any pond. Materials will be placed on geotextile matting or solid surfaces.

Post-development site safeguard

Habitat management and maintenance

Much of the area is either formal or informal nature reserve areas. A committee manages the land for Lancaster City Council at present. No change to this status is proposed however the newt population will be monitored as described below.

Population monitoring

In mitigation for the disturbance caused the newt population in the ponds will be surveyed on six visits to each pond during the spring 2005 season following English Nature standard guidelines in order to provide much better data on the newt populations and therefore management required than is available at present.

These visits will also be used to monitor the development work and its likely impact on the newt population. If large numbers of newts are unexpectedly found at any stage during the development work will stop and the situation reassessed with English Nature to decide any additional mitigation such as fencing and exclusion that it would be prudent to implement despite the negative impact of the additional disturbance that this would cause.

Mechanism for ensuring delivery

A report will be prepared for the Nature Reserve Management Committee based on the findings of the population monitoring. Lancaster City Council are represented on the management committee and are the major landowner. They will have seen this application and will be in the ideal situation to ensure that the work takes place as part of the stated methodology for the approval of this licence application.

Works during the development will be checked by the licensee approximately weekly during March, April and May to ensure that this method statement is being adhered to. The licensee will identify the most suitable place to put the new hibernacula.

Work schedule

The proposed work schedule is as follows:-

Mid-March 2005 Client gains legal access to the land

By end of March 2005 Vegetation will be cut back where relevant along the whole route. This mainly applies to the western section west of Money Close Lane as the vegetation along the rest of the route is generally sparse or short grass. There has been sightings of ornithological relevance in the shrubbery and vegetation located south of the power station. Under the Wildlife and Countryside act, as long as birds are not effected/impacted on during breeding season, it is possible to clear the shrubbery. The EIA points out that the birds in question breed middle of March depending on the temperature. The colder the temperature the longer it will take for the breeding season.

Mid-March to end May 2005 Install pipeline along the 2.7km route. Two teams meeting in the middle. One team will start at the inland end and work south and then west. The other team will start at Money Close Lane and work east until they meet the first team and then they will finish the section from the coast to Money Close Lane. This means the

lengths nearest the newt ponds are likely to be dug during May when most newts will be in the ponds.

May 2005 Create two new hibernacula areas near the main newt ponds. This is timed to occur when most newts are in the ponds.

May to June 2005 Construction of three joint boxes and pulling cables through the previously laid pipes.

March to June 2005 Monitor newt populations in ponds and near pipeline route at night.

Map to show all work covered by this plan

Map D7 in the licence shows the route of the cable and the approximate location of the joint boxes.

The middle joint box will be fenced and if any newts are found near Middleton Road the eastern joint box will also be fenced. Newts are not expected to be found along Middleton Road due to the large amount of good habitat available in the nature reserve and ex-industrial sites before reaching the road.

Map D7 also shows the approximate position of two hibernacula that will be constructed to provide conservation gain for the newt population.

Fish.

The fish fauna in the Irish sea is diverse and contains representatives of the majority of species recorded in the British Isles.

There seems to be concentrations of fish such as Cod, Plaice, Sole, Whiting, Haddock, Elasmobranchs, nephrops, Brown Shrimp, Cockles, Mussels, Scallops and shellfish. Meetings have been held to establish fishing activities in the area such as North Western and North Wales Sea Fisheries Committee (NW&NWSFC), National Federation of Fisherman's Organisations (NFFO) and Fleetwood Fish Forum.

Migratory fish that have been recorded to be in the area between fresh water and the sea are Salmon, trout and eel.

It is stated within the EIS that Electro-sensitive fish are unlikely to be significantly affected as electrical fields generated by cables will be minimised by insulation and burial.

Marine Mammals. – Please refer to Chapter 4.0 on Cetaceans Protocol below.

Morecombe Bay are NOT considered rich areas for cetaceans in comparison with other parts of the UK (Evans and Shepherd, 2002 from the EIS).

Regular visitors to the area are;

Minke Whale.
Long finned pilot Whale.
Risso's dolphin.
Bottlenose Dolphin.
Common Dolphin.
Harbour Porpoise.

All of these are protected species by the EU Habitat Directive.
Cetaceans are unlikely to be breeding in the vicinity of Morecombe Bay. (EIS).

Seals – both Grey and common seals are protected species under the EC habitats and Species Directive.
Within the UK – the Conservation of Seals Act 1970 makes it an offence to kill or take seals at certain times of the year or by the use of certain prohibited means.

Both these variety of seals are occasionally spotted but there is no large presence and breeding areas are well away from the proposed site of development.

Ornithological Environment.

Red throated divers
Eider.
Common Scoter.
Gulls.
Kittiwake.
Guillemots and Razorbills.
Terns

Although red throated divers, the most numerous diver species encountered in the area, occur in the area of the wind farm, they do so in small numbers and in low densities. The aerial surveys have not identified any areas which appear to be favoured feeding areas.

Eider are seaduck, there were some present but of low numbers.

Common scoter – the surveys did not identify the presence of any other significant flocks in the area of the proposed development apart from Shell flats approximately 10km south of the wind farm.

Gulls – All surveys recorded the presence of gull species in and around the wind farm development. The 5 types of gull are black headed gull, herring gull, lesser black headed gull, great black-backed gull and the common gull. There does not however seem to be any preferred winter feeding areas.

Gulls are also not heavily protected birds so even though it is important to keep any detrimental impacts to such a species to a minimum, they are not as exceptional and protected as other types of species.

Kittiwake – occur in and around the wind farm site in low numbers throughout the year. The surveys have also not identified any preferred winter feeding areas.

Guillemots and Razorbills - are the most commonly recorded species on the survey and were recorded in and around the wind farm site, albeit in low numbers.

Terns - are expected to be present in Morecombe Bay in August and September. Most birds depart from UK waters by October.

The Sandwich tern is the most common tern in the area, but no significant impact is expected on this species.

Bird flight characteristics and risk of collision. – During operation.

From the EIS, it states that Common Scoter are the most numerous in the vicinity of the proposed wind farm. Their data shows that even in tailwinds, the majority of common scoter fly at heights significantly lower than the turbine blades of the wind farm.

Disturbance associated with the installation of the steel piles (turbine foundations) would take three forms: acoustic disturbance and ground – borne vibration when the piles are driven in to the sand and underlying crag; visual disturbance associated with the presence of large numbers of workers and large equipment on the sands; chemical disturbance associated with unfamiliar odours from equipment, lubricants, smoke etc.

Erection of the wind turbines would involve visual and chemical disturbances similar to those associated with the installation of the piles, but much less acoustic disturbance. Seals are normally sensitive to abrupt changes on the landscape but fortunately the erection of the turbines will be gradual.

Seals in various locations appear to habituate to the presence of tourist boats; they also remain undisturbed by other boats so long as the movements of these vessels are predictable and slow.

Sounds produced by shipping now dominate the underwater sound spectrum between 10 and 100 Hz. Many marine mammals (including common seals) use this frequency range for their communications and acoustic disturbance of this kind has often been cited in the popular press as a reason for animals leaving an area. However, there is very little evidence to support his statement and the presence of large numbers of marine mammals in some coastal and harbour areas suggests that they are capable of distinguishing their own vocalisations from this background noise.

4.0 Cetaceans and Seal Protocol.

Seal Identification Key

There are two species of seal resident in the UK, the grey seal *Halichoerus grypus* and the common seal *Phoca vitulina*. Other breeds of seal do make occasional visits to UK waters but these are very rare.

Contrary to the name, there are fewer common seals in Britain as a whole than grey seals with around 28,000 common and 105-100,000 grey. Occasional sightings of common seal have been made within Morecambe Bay and along the Cumbrian coast and South Walney Island provides a locally important haul out site for grey seals.

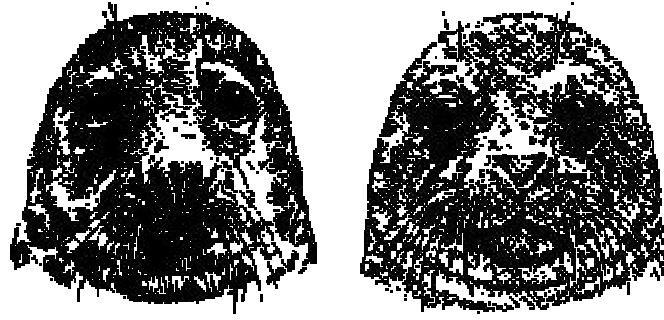
Distinguishing between Grey and Common Seals

Grey and common seals can be quite difficult to tell apart, although with practice it is reasonably straightforward.

- Size is one factor distinguishing the two - grey seals are usually much bigger with a fully grown adult male reaching 2.2m in length and the females reaching 1.8m. A fully grown male common seal only reaches 1.5-1.8m with the female reaching only 1.2-1.5m.
- Probably the easiest way to tell them apart is the shape of the head. The grey seal has a much larger head with a high muzzle often referred to as a Roman nose; whereas the common seal has a low dog-like muzzle with a relatively rounded head and distinct forehead producing a much more appealing and expressive appearance. The nostrils of the common seal form a 'V' shape while the grey's are much more parallel (see below).

Grey Seal (left) and Common Seal (right) facial characteristics





- The difference between the two species is not limited to their appearance; they also tend to have different habits. The grey seal prefers more open sea conditions while the common seal prefers sheltered shores and islands.



Common seal



Grey seal



Sightings Data Barrow Wind Farm

Background to Study:

Reporting of sightings data for whales, dolphins and porpoises (cetaceans), seals (pinnipeds), and basking sharks is a requirement of the consent conditions for Barrow Wind Farm. In light of this the following sightings pack has been compiled in order to facilitate identification and assist with reporting and data submission.

Sightings of whales, dolphins and porpoises:

If whales, dolphins or porpoises are sighted please use the WDCS (Whale and Dolphin Conservation Society) Identification Key (Appendix A) to aid identification of the species.

Following identification, complete the WDCS sightings reporting form (Appendix B) filling out as many of the required details as possible.

Return completed forms to RSK Environment who will forward the information to the WDCS.

Refer to Appendix A - Guide Notes for Whale and Dolphin Sighting Log

Offshore subcontractors must use tool box talks and posters on the vessel (Resolution) to educate and communicate to vessel employees.

See **Appendix B** of this Plan 05 for sighting form. – forms must be photocopied and available on board Vessel.

Sightings of seals:

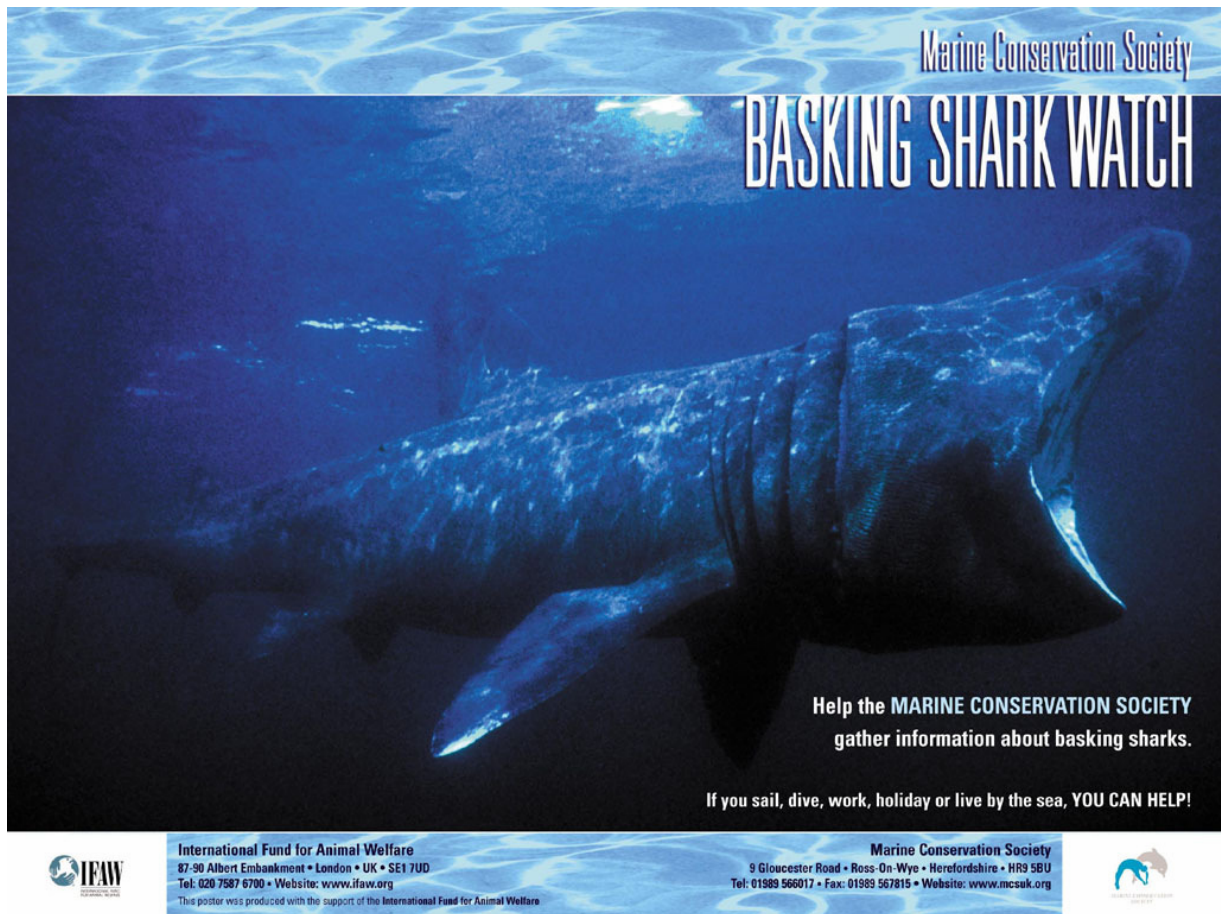
If seals are sighted please use the Seal Identification Key (above) to aid identification of the species.

Following identification, complete the seal sightings form filling out as many of the required details as possible.

Return completed forms to RSK Environment who will forward the information to the National Seal Sanctuary.

See **Appendix C** of this Plan 05 for sighting form – forms must be photocopied and available on board Vessel.

Sightings of Basking Sharks:



If a shark is sighted please use the MCS (Marine Conservation Society) Basking Shark Watch Pack (enclosed) to determine whether it is a basking shark.

Following a positive identification please complete the basking shark sighting form (both sides) filling out as many of the required details as possible.

Return completed forms to RSK Environment (in the return envelopes provided) who will forward the information to the MCS.

Refer to Appendix C for Basking Shark Information.

Submission of Forms:

All of the above sightings forms can be returned to RSK Environment in the same stamped address envelope, preferably on a weekly basis (providing there have been sightings). Please mark for the attention of Rebecca Robinson.

5.0 Consents concerning ecological monitoring.

Refer to Consents Matrix Appendix F from the EMP.

All of the environmental ecological monitoring shall be carried by the client BOW.

KBRVestas audit the work/construction onsite (harbour) and offshore on the vessels to check that sub contractors and employees are complying with legislation and the EMP's standards. These are expected to be carried out at least once a month (subject to change).

6.0 Contacts.

Reference should be made to Appendix C of EMP contacts a matrix which contains relevant numbers to call.

7.0 Ecological Checklist.

LIVE DOCUMENT.

Activity under investigation.	Date and Time	Results of inspection	Remedial action taken	Status
Activities on site must be compliant with legislation.				
Is the contractor compliant with conditions of any licence to handle or disturb protected species or their habitat?				
Is there acknowledgement regarding SSSI's or sensitive areas?				
What Ecological sightings have been recorded?				

Appendix A.