Chapter 3 – Project Description

Introduction

3.1 The Development consists of three wind turbines, each with a height of up to 135m to tip. Each turbine has a total installed capacity of up to 4.3 megawatts. The layout of the turbines is shown on Figures 1.1 and 1.2 contained within Volume II of this ES. Elevations of the turbines are illustrated in ES Figure 1.3.

3.2 The Ordnance Survey National Grid References of the turbines on which this ES has been based are set out in Table 3.1:

Table 3.1: Location of Turbines

Turbine	Easting	Northing
1	191098	202098
2	191423	201926
3	191577	201601

3.3 The turbines will be connected together by underground electrical cables buried between 0.8m and 1.2m deep, together with communication and low voltage cables. The cables would be laid where possible adjacent to a hard core track used for construction of the turbines and to provide access for maintenance. The new tracks extend to approximately 1.3km in length.

3.4 In addition to the turbines, there is a requirement for an Electrical Sub-station (48m x 25m) and Control Building (9m x 9m) which are proposed to be contained within a secure compound within the site. Details of these structures are illustrated in Figures 1.4 and 1.5. The Control Building will provide housing for the control equipment necessary to connect the array to the grid and to monitor the performance of the turbines. It would

also contain welfare facilities for staff working on site during the operational period.

3.5 The application boundary is shown on ES Figure 1.1. The Development will be constructed in accordance with the layout within ES Figures 1.1 and 1.2 with a 50 metre micrositing allowance for the turbines, access tracks and other infrastructure.

Local Ownership

3.6 The Applicant has explored whether ownership or investment from local people could be practicable and feasible for the Proposed Development. Having thoroughly considered the matter the Applicant has concluded that ownership or investment from local people, or indeed investment from a large public body, would add a layer of complexity which would mean that the development would be unable to progress.

3.7 The Applicant has decided that the best way to maximise the benefit for the people of Wales (and in particular those within the local community) is to set up a community benefit fund for the benefit of people and businesses within approximately 5 miles of the Proposed Development.

3.8 The Applicant will provide £5,000 per MW per year to the hpnity benefit fund. This is a total of £64,500 per year and amounts to £2,257,500 over the 35 year life of the development. Whilst the Proposed Development is not able to provide direct local ownership, the community benefit fund should provide a substantial and meaningful benefit to the local community.

Site Description

3.9 The Development Site occupies an area of approximately 11 hectares on land near to the village of Rhoscrowther, 9km west of Pembroke and 4km east of Angle. The site is to the south of the Haven Waterway in an area characterised by undulating farmland, dotted with farmsteads and occasional buildings sited alone or grouped in small clusters. It is located on the slopes of a shallow valley between two gently rolling low ridgelines that

run east/west with the ridgeline to the north rising to approximately 63m AOD and that to the south rising to approximately 59m AOD. A stream passing through the site drains into the sea in Angle Bay approximately 1.3km to the west.

3.10 The Valero Oil Refinery ("the Refinery") is located to the north of the site on rising land. It is a large sprawling industrial complex which includes six tall stacks up to 169m high, with buildings, a multitude of tanks, pipework, gantries and other structures including extensive car parking. There are solar farms at Hoplass and Wogaston Farms to the south east of the site and slightly further afield to the north east is the Pembroke Power Station (the power station) and extensive electricity transmission lines. To the west of the site on the shores of Angle Bay are the remains of the former BP Oil Storage site.

3.11 Both the Site and the Refinery lie within the Haven Waterway Enterprise Zone.

3.12 The former Cheveralton Landfill Site, which closed in 1995, is located within the eastern half of the site itself and has since reverted back to agricultural use.

3.13 The site lies close to the boundary of the Pembrokeshire Coast National Park. The boundary runs in a north-south direction a short distance to the west of the site, encompassing the eastern margins of Angle Bay and continuing south and east to include the Angle Peninsula and Freshwater West. The National Park wraps around the south and west of the Site, coming within 1.5km south and 0.75km west of the proposed wind turbines (see ES Figure 5.2).

3.14 There are no dwellings within the site. There are sporadic dwellings, including farmsteads, in the surrounding area including a cluster of properties at Wallaston Green and on the lane which runs to the south of the site. The nearest residential property is situated approximately 550m from the nearest turbine. As a result of an incident at the refinery in the early 1990's most of the residents moved out of Rhoscrowther village and many of the properties have been demolished. Whilst at the time of the Inquiry into the previous proposal only two dwellings were occupied, it is understood that one of these has

recently been vacated and only one dwelling in Rhoscrowther remains occupied.

3.15 There are no public rights of way across the site. However, there is a network of rural roads in the surrounding area which includes the B4320, the main road between Pembroke and Angle, and the minor roads to the north and south of the site boundary, the former also providing access to the refinery. Other public rights of way in the area include the Pembrokeshire Coast National Trail.

Proposed Turbines

3.16 No specific make or model of turbine will be applied for, although visualisation and noise calculations will be based on a Vestas V117 4.3MW model which is a standard turbine within the class that it is intended to use. The exact turbine model and specification would be agreed with the consenting authorities prior to construction. With the continual advances in turbine design, by the time of construction other model options may be available which could have a higher generation capacity at the same (or lower) height. It is also possible that some models will be discontinued.

3.17 The turbines would be up to 76.5m to hub height, the blades would have a swept diameter of approximately 117m giving a maximum tip height of 135m. The turbine base will be cast from concrete and would be circular with a diameter of approximately 16m to 18m.

3.18 Turbines normally operate up to 18rpm. The turbines are designed to commence generation at a wind speed of 3m/s (about 7 miles per hour) and will shut down at speeds in excess of 25m/s (about 56mph – storm force 10). In the latter instance the turbines will restart once the wind speed drops below 20m/s. Table 3.1 provides data on expected annual variation in rotation, based on data assumed from other projects.

3.19 If aviation warning lights are required by the MoD, these will be night vision goggle compatible infra-red lighting, mounted on the top of each nacelle and angled above the

horizontal, so not visible to receptors in the surrounding area.

Table 3.1: Expected Annual Variations of Turbine Performance

Turbine status	**Operating condition**	**Percentage of time (annually)**
Turbine parked; zero rotation	Very low wind speed (<2.5ms^{-1}) Very high wind speed (>25ms^{-1}) General maintenance	10%
Turbine idling	Rotational speeds up to 8.6rpm; turbine not connected to the Grid	5%
Operational but under rated power	Rotational speeds 8.6rpm at 4ms^{-1}- 18.4rpm at 14ms^{-1}	70-75%
Operational at rated power	Rotational speed of 18.4rpm at wind speeds above 14ms^{-1}	10-15%

3.20 In assessing the impact and practicalities of transporting and erecting turbines on the site, a model turbine has been assumed with the physical characteristics as given in Table 3.2.

Table 3.2: Model Turbine Component Characteristics

Turbine Component		**Length (m)**	**Width (max) (m)**	**Width (Min) (m)**	**Weight (t)**
Tower	Top	30	3.915	3.268	43.5
	Mid	23.8	4.167	3.915	40
	Base	20.3	4.450	4.167	51.5
Blades x 3		57.300	4.000	3.124	13.800

Nacelle	12.731	4.174	3.180	67.500
Drive Train	12.731	4.174	3.180	81.000

Construction Elements

Temporary Works – Site Compound

3.21 In addition to the information below a draft Construction Environmental Management Plan ('CEMP') has been included at ES Appendix 3.1. The CEMP is an iterative document that will be adapted throughout the construction phase of the wind farm to reflect any new environmental concerns or constraints that arise during the construction process. It is intended that this document will be updated and approved by the local planning authority prior to the commencement of development. Furthermore the Contractors employed by RWFL will develop and update this CEMP as the construction progresses.

3.22 On-site temporary works will be required and would include the formation of the site compound, the location of which will be adjacent to the easternmost site entrance. The area would be defined using Herras-type fencing and would be stoned to allow traffic by service and personnel vehicles. Topsoil in the area would be stripped and stockpiled for reuse when the compound is reinstated at the end of the construction phase.

3.23 Office, storage and staff welfare facilities are to be provided in modular-type accommodation placed in this area. Foul water drainage from the welfare facilities would be effected via a sealed cess pit and emptied on an as-required basis. Mains water is available to the site.

3.24 Temporary flood lighting will be provided in the construction compound for safety and security purposes. This lighting will typically comprise flood lights mounted on the temporary site offices to light footways and car parking areas. Lighting will be angled down the way so as to minimise spread/visibility from out with the compound, and will be

directed away from any sensitive habitats in the vicinity of the compound.

3.25 Power will be provided by a generator set and telecommunications will be sourced via the mobile telephone network.

3.26 Fuels, lubricants and hydraulic fluids will only be stored at the contractor's compound(s), which will be fenced and have a lockable gate, thereby making sure that the area in which fuels, lubricants and hydraulic fluids are stored will be properly secured against unauthorised access or vandalism. The storage area within the compound will contain a small bund lined with an impermeable membrane in order to prevent any contamination of the surrounding soils and vegetation and of groundwater. Alternatively, double skinned/bunded storage containers will be used. A designated, secure, COSHH store will be provided in the compound for storage of any hazardous substances. Temporary stock-proof fencing will be provided to the access tracks and turbine bases during the construction period. Temporary fencing will also be required to areas subject to reinstatement on completion of the construction phase.

3.27 Following completion of the construction phase, any stone placed to form a surface of the compound and any secondary compound areas, will be removed, along with any geotextile. The surface of such areas will then be ripped to alleviate compaction. The top and subsoils will be replaced by 3600 excavator working from the surface of the compound to minimise the tracking over newly placed soils.

Site Entrance

3.28 Access to the site will be gained via two new entrances off the unclassified road to the north of the site illustrated in ES Figures 1.1 and 1.2.

3.29 A wheel-wash facility will be used to reduce the risk of soil being transported onto the main refinery road.

On-Site Access Tracks

3.30 Approximately 1.3km of new access tracks will be constructed across the site as indicated on the overall site layout plan ES Figure 1.1 and shown in more detail on ES Figure 1.2.

3.31 A new access track is required to facilitate construction of, and ongoing operational access to, the turbines and switchgear and metering building, including the delivery of turbine components and turbine erection traffic.

3.32 In line with turbine manufacturer guidelines, the access track will be up to 4.5m wide at the running surface (excluding shoulders/verges, widening at bends, junctions, and crane hardstandings) to satisfy the requirements of the safe operation of construction and turbine deliveries.

3.33 The access track layout will be micro-sited to minimise cut and fill and earthworks requirement requirements. This will help to mitigate environmental impacts during the works, and also visual impact.

3.34 Access track construction will involve the removal of vegetation and top soil, excavation of the underlying subsoil to a suitable bearing stratum, and profiling of the ground as required to suit turbine access guidelines.

3.35 The topsoil and any incorporated seed bank will be stored as required in suitable stockpiles for use in reinstatement works. Topsoil shall be stockpiled separately to any sub soil material to avoid contamination and to allow restoration to occur successfully.

3.36 Previously stripped soils, vegetated layers or turfs will be reinstated/restored back over the verges of constructed tracks, hard standings and disturbed areas within as short a time period as reasonably possible, to give the seed bank and vegetation the best chance of an early regeneration. Turfs and topsoil will be matched to the adjacent habitats where possible.

3.37 Stone for the construction of the tracks will be imported from suitable local quarries.

3.38 Following completion of the construction all exposed soil bunds, banks and embankments will be seeded to stabilise the surface. An appropriate seed mix will be sown at the rate prescribed by the supplier during the first autumn or spring sowing season following completion of the construction phase.

3.39 Acceptable material will imported from nearby quarries. The stone material used to make up the tracks would be laid on a geotextile layer to prevent fine material migration and improve the track stability.

3.40 Existing gates will need to be widened to 6m. Where new gates are required they will also be 6m wide and will remain in place after the construction phase.

Turbine Bases

3.41 Where bedrock is encountered at the minimum founding depth a shallow foundation solution will be adopted consisting of a base that would typically be circular with a maximum radius of 18m.

3.42 Each base will require approximately 350m3 of concrete and contain approximately 50 tonnes of reinforcing steel. A steel base collar section would be cast into the base onto which the turbine's lower tower sections would connect.

3.43 In exceptional circumstances, where the competent founding material is not exposed within 2- 2.5m of the existing ground level, or where the adjacent terrain dips by more than 15 degrees, a bored pile solution may be adopted.

3.44 On completion, the base will be backfilled and compacted to existing ground level using previously excavated material.

Hard Standing

3.45 A working area will be defined at each turbine base location to facilitate the delivery and erection of each turbine. The typical area extends to circa 60m x 25m. The working area

will be formed using 400 to 600mm depth of clean crushed stone on a layer of geotextile to assist drainage and prevent soil migration.

3.46 Hardstandings will be created next to the turbine bases and will be used as lay-down areas and as stable platforms for cranes and other vehicles to operate during construction activities. The size of the hardstandings will be dictated by the requirements of the turbine supplier and the crane contractor.

3.47 The blade laydown area will be formed from temporary structures such as bog matting which will be removed on completion.

3.48 Hardstandings will be constructed using a cut and fill method of construction, similar to the site tracks and will be constructed from crushed aggregate, laid over a geotextile (as required in accordance with the track designers and manufacturers guidelines). The hardstandings will feature a layer of higher quality crushed stone and greater rates of compaction to comply with the appropriate crane lift loadings.

3.49 Following successful commissioning of the turbines, the crane hardstandings will be left in situ.

3.50 Turning heads will be required at turbine 3 to allow the trailers to turn after being off-loaded.

Trenchworks

3.51 Underground 11kV and 33kV electricity cables are to be installed in trenches to both supply electricity to the turbines and deliver the generated electricity to the sub-station. The trenches will be approximately 1.5m deep and will generally follow the route of the tracks.

3.52 The cables will be surrounded by imported material but bulk backfilling of the trenches will be effected using suitable material arising from the excavation, supplemented where

necessary by imported clean stone material.

Contamination Control

3.53 Throughout the construction and operation of the wind farm a number of oils and chemicals will be used. It is imperative that these are used and stored in a safe and ecologically sound manner to ensure that the surface and groundwater environment is not adversely affected.

3.54 The following measures can be adopted to protect the surface and groundwater environment:

i. All equipment, materials and chemicals to be stored away from any watercourses. Chemicals, fuel and oil will be stored in tanks of sufficient strength and integrity to ensure that it is unlikely to burst or leak in ordinary use. Oil and lubricants shall be stored within bunded containers. Waste oils will be stored in the construction compound in an aboveground tank within a sealed bund. The bund will be 115% of the storage tank capacity, and will be emptied by a specialist company;

ii. Only nominated personnel will be able to undertake and oversee refuelling and delivery and to ensure there are no spillages. Locked tanks will help enforce this and such activities will be restricted to a specific impermeable area within the site compound;

iii. In areas of potential risk, emergency procedures shall be prepared and pollution control equipment provided, such as “spill kits” and absorbent granules. These shall also be carried by appropriate vehicles on site. Drip trays will be provided for static machinery at appropriate points;

iv. All plant used during the construction and operational phases of the development shall be in suitable condition and fit for purpose to carry out the works and shall be maintained as per manufacturers guidelines. Machinery shall be properly stored at

all times to minimise rain wash off of oils etc.; and

v. Maintenance of construction plant to be carried out in designated areas on an impermeable surface away from any watercourse or drainage.

3.55 The BoP contractor shall be aware of any relevant regulations including, but not limited to the Environmental Permitting (England & Wales) Regulations 2010, and The Control of Pollution (Oil Storage)(England) Regulations 2001, and ensure compliance with all applicable regulations.

3.56 The cleaning of tools and other site equipment will not be permitted in onsite watercourses. Should it be necessary to clean tools and equipment on site, this will be done in the predetermined wash-out areas at the site compound.

3.57 Wash out areas shall be continually monitored and findings recorded to ensure effluent levels do not spill over into the environment. The wash out area shall be emptied regularly and the waste contents disposed off-site by a licensed waste carrier.

3.58 Concrete for the turbine bases will be imported using concrete lorries (more details are provided in Chapter 12 – Transport).

3.59 If groundwater is encountered in the excavation for the turbine bases the excavation will be lined with an impermeable membrane to prevent seepage of cementitious material into the sub- soil.

3.60 As the access track does not interact with any watercourse it is not anticipated that any culverts will be required.

Micrositing

3.61 In addition to the above, the continual refinement of the scheme will extend into the construction phase. Therefore it is established practice to seek agreement for the micro-siting of the turbines and other wind farm infrastructure up to a maximum of 50m from

the locations illustrated in the enclosed application drawings, other than where planning constraints/provisions mitigate against this e.g. telecommunication safeguarding buffer zones and ecological mitigation setback provisions.

Monitoring Mast

3.62 An application (Ref: 12/0709/PA) for temporary planning permission (18 months) for an anemometry mast on the land (grid ref.191000, 201520) was submitted to Pembrokeshire County Council on 6th November 2012 to measure wind speed, wind direction, ambient temperature atmospheric pressure and humidity. Permission was subsequently granted by the Local Authority on 17th April 2013. Wind speed and direction was measured at three different height positions on the mast.

Electrical Substation and Control Building

3.63 The substation and control building is located adjacent to the new western entrance. This location is close to the Valero refinery which ensures that it will not have a significant impact on the area. The compound area will be surrounded by a 2.4m high palisade fence the colour of which will be subject to approval by the Local Planning Authority, and contain the following structures:

i. An enclosed substation containing electrical equipment including a 132/33 MVA transformer which would be 48m by 25m (see ES Figure 1.4); and

ii. A pitch-roofed control building approximately 9m x 9m and 7.5m to eaves, containing switch gear and a meter room as well as welfare facilities for site staff and a control room for the turbines (see ES Figure 1.5).

3.64 The control building's exterior materials will be selected to reflect those commonly used in the area and subject to approval by the local planning authority.

3.65 External lighting will be provided for work carried out within the substation compound

outside of daylight hours. Lighting will be provided by pole-mounted or building-mounted flood lights.

3.66 The access road within the substation compound will have a tarmacadam surface and parking for two vehicles will be provided. The parking area and general surfacing within the compound will have a free-draining gravel surface.

3.67 Foul drainage from the WC, hand basin and canteen within the control building will discharge via an underground drain to a sealed cesspool located underground. A cesspool will be used given that the location of the site is remote from an urban sewerage system and unsuitable for septic tank/percolation system. The cesspool will be emptied at intervals by a licensed waste contractor using a vacuum tanker and will be sized to provide sufficient storage; depending on frequency of use of the facilities within the control building, emptying will only be required on a 6 month basis approximately. Access is required onto the site for construction and operation of the proposed development. A swept path analysis has been completed, and traffic implication from construction traffic has been considered. This analysis is presented in Chapter 12.

Proximity to Dwellings

3.68 There are no occupied dwellings located within the site boundary. The closest dwelling is located approximately 550m from the nearest turbine.

3.69 Early consideration has been given to potential environmental impacts from the Development on dwellings including visual, noise and shadow flicker issues.

3.70 In relation to noise levels, the design of the proposed wind farm at Rhoscrowther has been undertaken with consideration of potential sound emissions from the site. As site design developed, sound level predictions were undertaken in accordance with widely used criteria. The site is considered to meet the requirements, identified in the Department of Trade and industry (1996) ETSU-R-97 The Working Group on Noise from

Wind Turbines Assessment and Rating of Noise from Wind Farms. Chapter 10 (Noise) provides full details of noise studies undertaken.

Grid Connection

3.71 The power will be exported from the site via an underground cable or tee off the existing on site overhead 132kv line.

Construction Programme

3.72 The overall construction programme for the wind farm development is expected to take in the order of 10 months from start of work on-site. This will be preceded by the off-site highway works to reduce the impact on local traffic from the start of the on-site works.

3.73 The construction programme will be as follows:

Activity	1	2	3	4	5	6	7	8	9	10
Site Establishment & Remediation	■	■							■	■
Access Track and Hardstanding Construction	■	■	■	■	■					
Turbine Foundations				■	■	■	■			
Cable works					■	■	■			
Substation Building						■	■			
Turbine Erection								■	■	
Commissioning									■	■

i. Construction and on-site presence of the two new gated site entrances and new on-site access tracks and turning areas (see ES Figures 1.1 and 1.2). The junction bellmouths would be surfaced in tarmacadam and the tracks and turning areas would be surfaced in suitable stone aggregate imported from local quarries. The tracks would be approximately 1,300m in length and a minimum of 4.5m wide with local widening for junctions, bends and passing places (track area 8,347.5m²). The construction of the entrances and on-site access tracks would take approximately

12 weeks and would require the removal of no more than 100m of hedgerows. As illustrated on ES Figure 1.1, as the site is sloping, there would be some cut and fill required along the route of the tracks and around the turning areas, the exposed faces of which would be soiled and re-seeded.

ii. Construction and on-site presence of the temporary construction compound (see ES Figures 1.1 and 1.2). This would be located adjacent to the new eastern site entrance. It would be a fenced compound (400m²), with a stone aggregate surface and would contain modular, single-storey accommodation for the office, storage and staff welfare facilities, a bunded area for the storage of oil, fuel and machinery and a storage area for other materials and equipment. The temporary compound would be in place for the duration of the construction phase and removed at the end of the construction phase, and the area restored with retained soils and re-seeded.

iii. Excavation and construction of the crane hardstandings (4,470m²), laydown areas (4,050m²) and auxiliary crane pads (990m²) (see ES Figures 1.1 and 1.2). These would be constructed over a period of approximately 8 weeks and surfaced in stone aggregate. On completion of turbine installation, these would be reduced in size and the disturbed areas made good with retained soils and re-seeded.

iv. Excavation of the cable trenches and laying of the transmission and communication cables. The trenches would be approximately 1m wide x 1.5m deep and routed alongside the tracks. On completion of cable laying, these trenches would be backfilled with imported stone and retained materials and the topsoil re-seeded (see ES Figure 1.2). The construction of the trenches, laying of cables and backfilling would be undertaken over a period of approximately 12 weeks.

v. Excavations for and construction of the substation and control building. The substation and control building would be located within a fenced compound (area

1,280m²) adjacent to the new western entrance and access track. The substation would include electrical equipment and a transformer. The control building would be a single-storey pitched roof building approximately 9m x 9m and 7.5m to eaves, with exterior finishes to reflect local styles, subject to the final design to be agreed with the DNO and the Council. The excavations for and construction of the substation and control building would be undertaken over a period of approximately 8 weeks.

vi. Excavation and construction of the foundations for the 3 wind turbines (each approximately 350m³) (see ES Figures 1.1 and 1.2). The turbine foundations would typically be circular with a maximum radius of 18m, finished below ground levels and, on completion of turbine installation, backfilled to existing ground levels with retained soils and re-seeded. The excavation and construction of the foundations of each wind turbine would take approximately 12-16 weeks. As illustrated on ES Figure 1.1, as the site is sloping, the foundations would be built up on the downslope side of the turbine foundations, the exposed slopes of which would be soiled and re-seeded.

vii. Installation of the 3 wind turbines (see ES Figures 1.1, 1.2 and 1.3). Each turbine would be installed in stages, first the tower sections, then the nacelle and finally the rotor. The lifting of the turbine components would require two cranes for a period of up to four weeks towards the end of the construction phase so the cranes would be on site for a very short part of the construction phase.

viii. HGV deliveries to site and movement of the vehicles on-site during the construction phase.

ix. Progressive site reinstatement and restoration as each part of the project is completed and temporary areas are no longer required. This would include the removal of the temporary site compound and all its contents, the re-grading and

seeding of the temporary compound area, track margins (including the cut and fill faces), crane hardstandings, lay down areas and auxiliary crane pads and any other disturbed areas using site-derived materials, re-seeding and hedgerow planting, plus the bund and planting around the substation and control building.

Construction Materials

Stone

3.74 Approximately 14,373m3 of stone will be required to construct the temporary access tracks, turbine working areas and temporary compound. It is expected that all of the material will be sourced from local quarries and bought in by road.

3.75 Additional material will be required for the cable trenches as surround and backfill material; again this will be sourced from locally imported material.

Reinforced Concrete

3.76 Approximately 1,050m3 (350m3 per turbine) of reinforced concrete will be required to construct the turbine bases. In addition, approximately 150 tonnes (50 tonnes per turbine) of reinforcing steel will be required to be fixed in the turbine bases and reinforced slabs at the Substation.

Sewerage & Waste

3.77 Foul sewage from the development during construction will be stored in tanks for offsite disposal. The tanks will be sized to suit the site and emptied at intervals as required for disposal at an approved treatment works.

3.78 Any surplus materials arising during the construction of the development will be disposed of in accordance with a site waste management plan which will be included as part of the final CEMP.

3.79 The chosen Contractor will be required to make provision for the disposal from the works and temporary works of all waste products and litter.

3.80 All waste products shall be removed off site to a suitable location for disposal to the approval of the Engineer and the relevant authority. Contaminated or hazardous material, uncovered during construction or brought onto site, will be disposed of by the chosen BoP Contractor.

Decommissioning

3.81 The expected productive lifetime of the turbines is estimated at about 35 years. At that time, it would be necessary to decide whether to refurbish, replace or remove the turbines. If refurbished or replaced an application would be made to extend its operational life.

3.82 Within the 24 months prior to decommissioning of the site, but no later than 12 months prior to decommissioning, a full ecological survey of the site would be undertaken to inform decommissioning. The report will include ecological mitigation measures, as appropriate, based on the ecological assessment findings to be followed during decommissioning, and beyond.

3.83 Not later than 12 months before the expiry date of the permission a decommissioning and site restoration scheme would be submitted to the Local Planning Authority for its approval in writing. The site decommissioning and restoration scheme shall include, but not be limited to:

i. details of the removal of all the wind turbines and the surface elements of the development plus one metre of the wind turbine bases below ground level;

ii. details of means of the removal, including how this will avoid effects on protected species and habitats;

iii. timing of the removal of new tracks, structures, buildings and other associated infrastructure;

iv. earth moving and soil replacement;

v. restoration of the landscape;

vi. temporary protective fencing around landscape features to be retained on-site(and when the fencing is to be removed);

vii. reinstatement of any public rights of way, paths and footpaths;

viii. monitoring and remedial actions; and

ix. the management of traffic.

3.84 The financial costs of decommissioning, at current material values, would be met by the recycling value of the turbine components, principally steel and copper. It is estimated that decommissioning a wind farm of this size would take approximately 6 – 8 months.