13. Schedule of Mitigation

Introduction

This chapter summarises the various mitigation measures that have been proposed to offset the potential impacts of the Proposed Development. These mitigations have been proposed to reduce the level of any impact thus ensuring it is not significant.

Alongside each mitigation measure identified, the proposed mechanism by which it will be adopted, implemented or enforced has been provided as well as the period in which the mitigation measure will be undertaken.

Table 13.1: Schedule of Mitigation

ES Chapter	Potential Effect	Mitigation Proposed	Means of Implementation and timing
Ecology	General	Measures required to address ecological concerns described in this ES will be incorporated into an Ecological Management Plan (EMP) (either within the Construction Environmental Management Plan or a standalone document) which will be agreed with the planning authority at the pre-construction stage. The EMP will set out the initial broad objectives for mitigation, monitoring, ecological protection, and enhancement, including contributions to off-site habitat enhancement. It will set out a framework and timetable for ecological measures throughout the lifetime of the Wind Farm, including any pre-construction measures that are required.	Ecological Management Plan (EMP) will be agreed with the planning authority prior to construction and implemented during construction, operation and decommissioning as proposed.

ES Chapter	Potential Effect	Mitigation Proposed	Means of Implementation and timing
	Impact on ornithology during construction	For any elements of the work that cannot be completed outside the breeding season, construction phase surveys for active nests ahead of ground works will take place. If breeding birds are found within the development footprint, work in the affected area will be re-scheduled until after the young birds have successfully fledged (or breeding has failed). It may be possible to clear areas for subsequent development ahead of the breeding season, and keep these areas cut short to prevent birds from nesting. Maintenance of the sward in these areas would have to be regular and informed by checks by an ecological clerk of works.	EMP will be agreed with the planning authority prior to construction and implemented during construction and operation as proposed.
	Impact on bats during operation	Monitoring will initially comprise fatality searches for bats using dog search teams during year one post-construction. Methods will reflect those at other wind farm sites in Wales, and will include searches for dead bats during both summer and autumn. Searches will be completed at all turbines and will be supplemented by searcher efficiency and carcass scavenging rate surveys. The results of monitoring in year one post-construction will be reported to NRW and BCBC, and the requirement for further monitoring in subsequent years determined following consultation.	EMP will be agreed with the planning authority prior to construction and implemented during construction and operation as proposed.
	Impacts on reptiles and amphibians during construction	All vegetation within the footprint of the Proposed Development should be managed prior to commencement of the construction phase. All vegetation within the footprint of the Wind Farm infrastructure will be reduced to ground level over a two-stage cutting regime to allow reptiles and amphibians to disperse from the construction area. These areas will be checked by an ecologist prior to ground works taking place. Vegetation in these areas will not be allowed to re-grow once reduced down to ground and cutting should be carried out regularly as required throughout the construction period.	EMP will be agreed with the planning authority prior to construction and implemented during construction as proposed.

ES Chapter	Potential Effect	Mitigation Proposed	Means of Implementation and timing
	Impact on water vole during construction	Thorough checks of areas of wet habitats within the footprint of the Proposed Development will be completed immediately prior to vegetation management to ensure absence of water vole. These measures will avoid killing or injury of water vole during construction.	EMP will be agreed with the planning authority prior to construction and implemented during construction as proposed.
	Impact on badger during construction	Although no impact on badgers is predicted, and no setts have been located, it is possible that badgers could move on to the site and create a sett that would have to be taken account of appropriately prior to work starting. During the construction phase, checks should be made by ecologists while on the site for any evidence of badgers using the site more frequently. If a sett is located at any time then its implications for development should be assessed and an appropriate mitigation identified. NRW and the LPA will be informed of how this was dealt with and consulted when necessary if the situation is complicated.	EMP will be agreed with the planning authority prior to construction and implemented during construction as proposed.
Cultural heritage	Impact on non designated historic assets of archaeological interest during construction	Proposed mitigation measures related to permanent physical effects would be proposed to be initially by trial trenching followed by suitable excavation/monitoring depending on the results of the trial trenching, along with appropriate recording, reporting and archiving of the resource. However, as no significant effects on non-designated historic assets of archaeological interest are anticipated, no specific mitigation measures are proposed.	No significant effects on non-designated historic assets of archaeological interest are anticipated and as such no specific mitigation measures are proposed.
	Impact on Scheduled Monuments	Proposed off-setting measures to include a Monument Management Plan. The outline of the Plan has been agreed in correspondence between the Applicant and CADW in documents ID CW001.1 and ID CW001.2 in the Pre Application Consultation Report and the Plan would include: Improving Access; Interpretation/Information Panels; Management of the Monuments During Construction and During Operation.	Implementation through planning condition during construction and operation.

ES Chapter	Potential Effect	Mitigation Proposed	Means of Implementation and timing
Hydrology and hydrogeology	Pollution of watercourses due to pollution event	Specific measures for the mitigation of a pollution event include: • the placement of drip trays under plant/vehicles when not in use; • the regular inspection and maintenance of plant to prevent leakage of fuel or oil; • the use of interceptors to prevent oil/fuel/grit discharging into watercourses; • the bunding of any fuel or oil store to at least 110% of the volume of the contaminant being stored (or to contain 125% of the largest tank's capacity in the case of multiple storage tanks); • the siting of potentially polluting activities such as refuelling and vehicle maintenance within the identified construction compounds/parking area; • the use of impermeable membranes wherever there is a risk of a potentially polluting substance infiltrating the ground.	Construction and Decommissioning Method Statement (CDMS), which will be agreed with the planning authority prior to construction and implemented during construction.
		A set of procedures to be adopted in the case of a pollution event occurring will be kept on site at all times. All construction staff will be made aware of these procedures and the location where they are kept. The procedures will detail the location(s) of potential sources of contamination, the responsible person on site to deal with any contamination event, emergency contacts in the event of a spill and initial actions to be taken should any spill occur. Spill kits will be kept on site at all times and staff will be made aware of their location and procedures for use.	CDMS, to be agreed with the planning authority prior to construction and implemented during construction.
	Pollution of watercourses due to sedimentation or erosion event	A Sustainable Drainage Management Plan (SDMP) (included in Appendix 3.2) will be issued to the Contractor and will form part of the Contract documents. The mitigation measures identified in the SDMP will inform the final wind farm sustainable drainage strategy. The specific	Sustainable drainage management plan, to be agreed as part of the CDMS with the planning authority

ES Chapter	Potential Effect	Mitigation Proposed	Means of Implementation and timing
		mitigation measures against sedimentation and erosion outlined in the SDMP will be implemented by the Contractor.	prior to construction and implemented during construction.
	Pollution of watercourses due to runoff event	The implementation of the controlling runoff measures identified in the SDMP will maintain the existing flow regime as far as practicably possible. Runoff from tracks and hardstands will be attenuated in swales and settlement ponds. Attenuated flows will be discharged over existing vegetation prior to discharging into receiving watercourses, as per the existing drainage regime for the site.	Sustainable drainage management plan, to be agreed as part of the CDMS with the planning authority prior to construction and implemented during construction.
	Impacts on peat hydrology	Measures to preserve site hydrology identified in the SDMP will be implemented during the construction phase to prevent changes to peat hydrology. Good construction practice and methodologies will be incorporated into the CDMS and monitored during the construction phase. They will include but not be limited to the following: • Measures to include the identification and demarcation of zones of sensitive drainage or hydrology in areas of construction; • The minimisation of 'undercutting' of peat slopes, but where this is necessary, a more detailed assessment of the area of concern would be required; • Measures to raise peat stability awareness for construction staff by incorporating the issue into the Site Induction (e.g. peat instability indicators, best practice and emergency procedures); • Measures to ensure that accelerated degradation and erosion of exposed peat deposits does not occur as the break up of the peat top mat has significant implications for the morphology, and thus hydrology, of the peat (e.g. the minimisation of off-track plant movements within areas of peat); and	Sustainable drainage management plan, to be agreed as part of the CDMS with the planning authority prior to construction and implemented during construction.

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		• The development of robust drainage systems that will not create areas of concentrated flow and that will require minimal maintenance.	
		An appropriately experienced and qualified engineering geologist / geotechnical engineer will be appointed as a supervisor, to provide advice during the setting out, micro-siting and construction phases of the proposed Wind Farm. This will ensure that the detailed design and construction practices take into account the particular ground conditions and the specific works at each infrastructure location throughout the construction period to further minimise potential risks relating to peat instability.	CDMS to be agreed with the planning authority prior to construction and implemented during construction.
	Pollution from borrow pits	Cut-off drainage and / or face crest bunding will divert surface flow around the operational areas and leave only incident rainfall to collect in the borrow pit. All cut-off drains will be constructed in advance of any operations occurring within the site. Borrow pit floor levels will slope gently down to the rear of the areas forming a natural pool to retain any surface water and enable suspended sediments to settle out. Water collected in a sump in the low point of the borrow pit will then be pumped to a settlement pond (located within the proposed borrow pit areas). No water from excavations and dewatering activities will be allowed to enter surface waters directly. Stockpiles (of superficial deposits and aggregate) will be located in suitable locations to ensure that there is no risk of material washing out and contaminating watercourses.	Sustainable drainage management plan, to be agreed as part of the CDMS with the planning authority prior to construction and implemented during construction.
	Pollution from foul drainage	There are no public sewers in proximity to the site. Disposal of sewerage from temporary and permanent facilities on the site will be designed prior to construction commencing in accordance with the methods outlined in GPP4: Treatment and Disposal of Sewage where no Foul	CDMS, to be agreed with the planning authority prior to construction and implemented during construction and operation.

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		Sewer is available, and treatment systems will be sized in accordance with British Water Code of Practice – Flows & Loads. Permanent welfare facilities will be located within the control building and substation compound, in the form of one toilet and two sinks. The preferred option for treatment is via a septic tank with effluent to discharge to a soakaway. Infiltration tests will be carried out to confirm the infiltration properties of the existing ground in the vicinity of the compound. The necessary approvals will be sought prior to the installation of any sewage treatment system.	Obtaining necessary permits prior to installation.
	Pollution from earthworks stockpiles	The CDMS will prescribe methods and timing involved in excavating, handling and storing topsoil and subsoil for use in reinstatement. A method statement to govern the process will be produced and will be based on the following principles: • Careful consideration will be given to the location of topsoil and subsoil storage areas for all facilities during construction, either by siting in a flat dry area away from watercourses or by the addition of cut-off drains above the storage, which will help to maintain a buffer from streams. The areas will be regularly inspected to ensure that erosion of the material is not taking place. • The size and location of storage areas will be carefully assessed to prevent the risk of rainwater moving storage materials. In areas where there is a risk of high rainwater and erosion potential, cut off drains will be employed on the ground above storage areas to divert flow away. • Settlement lagoons and silt traps will be inspected regularly especially after a period of heavy rainfall. This inspection period will be agreed during the development of the	CDMS, to be agreed with the planning authority prior to construction and implemented during construction.

ES Chapter	Potential Effect	Mitigation Proposed	Means of Implementation and timing
		Construction Method Statement. Maintenance will be carried out in periods of dry weather where possible.	
	Pollution from excavated peat	The CDMS will prescribe methods involved in excavating, handling and storing peat for use in reinstatement. A method statement to govern the process will be produced and will be based on the following principles: Where present, the surface layer of peat and vegetation will be stripped separately from the subsoil. This will involve an excavation depth generally between 0.3m and 0.5m. Peat will be stored temporarily, separate from the subsoil material. Careful handling is essential to retain any existing structure and integrity of the excavated materials and thereby maximise the potential for excavated material to be used. To minimise handling and transportation of peat, peat will be replaced, as far as is reasonably practicable, in the location from which it was removed. Additional peat required to address local deficits for track verges should be taken from the closest possible source of peat excavation. Temporary storage of peat will be minimised. Temporary stockpiles may be sprayed with water if necessary during particularly dry periods of weather to prevent the peat drying out. Suitable temporary storage areas will be sited in areas with shallow peat depths and shallow gradient. Reinstatement will, in all instances, be undertaken at the earliest opportunity to minimise storage of turves and other materials. Timing the construction work as much as possible to avoid periods when peat materials are likely to be wettest.	CDMS, to be agreed with the planning authority prior to construction and implemented during construction.

ES Chapter	Potential Effect	Mitigation Proposed	Means of Implementation and timing
		Temporary storage and replacement of peat excavated from borrow pits should where possible occur adjacent to and within the source pit.	
	Pollution of watercourses from refuelling	A location map of all potential contamination sources will be produced, and will include fuel, oil and chemical storage areas; vehicle compounds, refuelling sites, waste depots and on-site sewage systems. Mitigation is to be incorporated in accordance with NRW's Pollution Prevention guidance notes. Best practice will be adopted for handling potentially polluting substances, such as fuel, oil, cement, and concrete additives, including: • Designated facilities designed and used for storage and refuelling, away from watercourses. • A list of emergency procedures, responsive to a risk assessment of areas of high sensitivity. • Site induction of all personnel on emergency spillage procedures and staff trained in emergency procedures. A contact list for emergency services, the relevant environmental regulators, the local water supply and sewerage undertakers, the Health and Safety Executive and specialist clean up contractors, if required; and • Emergency response equipment available at appropriate locations.	CDMS, to be agreed with the planning authority prior to construction and implemented during construction and operation. Operational site procedures.
		In the unlikely event of an environmental pollution incident, there will be an emergency response procedure to address any accidental pollution incident. For example, a procedure requiring the use of spill kits to contain the material and procedures to ensure that NRW is notified on their Pollution Hotline number (0300 065300) within 30 minutes of an incident (unless unsafe to do so), will be applied. The procedure will	CDMS, to be agreed with the planning authority prior to construction and implemented during construction and operation.

ES Chapter	Potential Effect	Mitigation Proposed	Means of Implementation and timing
		remain in place throughout the operational phase of the Proposed Development.	Operational site procedures.
Traffic, transport and access	Impact on public road network during construction, operation and decommissioning	A Construction Traffic Management Plan will be agreed with the relevant Highways Authorities and the police prior to any works being carried out and would be implemented during the construction phase in consultation with the relevant authorities. To include the following: • Deliveries would be scheduled in consultation with the appropriate authorities to minimise disruption as far as reasonably practicable. • The police would be notified of the movement of abnormal vehicles and authorisation would be obtained prior to any abnormal vehicle movements. Any movements will comply with legislation regarding the movement of abnormal loads e.g. notice procedures will be accompanied by a police escort where required. • Maximum of four abnormal vehicles in any one convoy unless agreed beforehand with the relevant authorities. • Marking of vehicles as long/abnormal loads. • Warning signs to advise other road users of 'Caution Slow Plant Turning Ahead' would be placed at intervals from both directions along the A4107 approaching the site entrance during the construction phase.	Construction Traffic Management Plan (CTMP) to be agreed with the relevant authorities prior to construction / turbine delivery. Implemented during construction.
		Video footage of the pre-construction phase condition of public roads agreed with the Highways Authorities would be recorded around the site entrance and access routes to provide a baseline record of the state of	Construction Traffic Management Plan (CTMP) to be agreed with the relevant

ES Chapter	Potential Effect	Mitigation Proposed	Means of Implementation and timing
		the road prior to any construction work commencing. This would enable any repairs and maintenance work required to the road due to any damage caused by the passing of heavy vehicles associated with the wind farm construction to be identified following the construction phase. The roads would be returned at least to the baseline condition at the end of the construction phase. Any damage caused by wind farm traffic during the construction period that would be hazardous to public traffic would be repaired immediately.	authorities prior to construction / turbine delivery. Implemented during construction.
		In the unlikely event of a component failure in the operational phase, a replacement will be brought to the site. This movement will be handled in the same manner as during the construction phase.	Construction Traffic Management Plan (CTMP) to be agreed with the relevant authorities prior to construction / turbine delivery. Implemented during operation.
		During decommissioning traffic to and from the site will be managed in the same way as during the construction phase. A traffic management plan will be agreed with the relevant Highways Authorities and the police prior to any works being carried out and would be implemented during the decommissioning phase in consultation with the relevant authorities.	Decommissioning Traffic Management Plan, to be agreed with the relevant authorities prior to decommissioning.
Acoustic	Noise impact during wind farm operation	Due to consideration in the design of the Wind Farm, no mitigation measures are required for the operation of the proposed turbines as the Proposed Development complies with noise criteria when considered on its own. If planning permission is granted for the proposed Wind Farm, the decision notice would likely contain planning conditions which would provide a degree of protection, in the form of limits relating to noise level and tonality, to nearby residents in the event that noise from the Wind Farm causes disturbance.	Planning condition

ES Chapter	Potential Effect	Mitigation Proposed	Means of Implementation and timing
		Volume 4 Appendix 10.8 contains a set of conditions that RES considers appropriate. Any final conditions attached to the proposal, if accepted, would be according to the discretion of the decision maker.	
	Noise impact during construction	There are many strategies to reduce construction noise by the limitation of activities that would result in predicted noise levels being lower than the specified target. Any such measures should be considered adequate and the mitigation adopted should not be limited to the measures proposed. These include consideration of the following: • For all activities, measures would be taken to reduce noise levels with due regard to practicality and cost as per the concept of 'best practicable means' as defined in Section 72 of the Control of Pollution Act 1974. • BS 5228-1:2009 states that the 'attitude of the contractor' is important in minimising the likelihood of complaints and therefore consultation with the local authority along with letter drops are advised to inform residents of intended activity. Non-acoustic factors, which influence the overall level of complaints such as mud on roads and dust generation, would also be controlled • Consideration would be given to noise emissions when selecting plant and equipment to be used on site • All equipment should be maintained in good working order and fitted with the appropriate silencers, mufflers or acoustic covers where applicable • Stationary noise sources would be sited as far away as reasonably possible from residential properties and where necessary and appropriate, acoustic barriers could be used to screen them	CDMS, to be agreed with the planning authority prior to construction and implemented during construction.

ES Chapter	Potential Effect	Mitigation Proposed	Means of Implementation and timing
		• The movement of vehicles to and from the site would be controlled and employees instructed to ensure compliance with the noise control measures adopted	
		Site operations would be limited to 0700-1900 Monday to Saturday except during turbine erection and commissioning or during periods of emergency work. Should it be considered necessary to reduce noise levels from the conservative predicted levels to adhere to the 55 dB(A) target level for Saturdays 1300-1900, the following mitigation measures would be considered: • Reduce the number of construction activities occurring simultaneously; • Restrict the distance of construction activity from nearby properties during these times; & • Reduce construction traffic as appropriate.	CDMS, to be agreed with the planning authority prior to construction and implemented during construction.
		With specific regard to blasting, it is proposed that the following mitigation measures are implemented: Good practice on blasting shall be followed; • The vibration and air overpressure reduction methods outlined in Section 8.6.9.2 of BS 5228-2:2009 shall be adhered to where appropriate; • Advance warning shall be given to nearby residents; • Blasting should only occur between the hours of 0800-1800 on Mondays-Fridays or between the hours of 0800-1300 on Saturdays • No more than three blasts per day should occur. Depending upon the charge sizes required it may be prudent to perform trial blasts with smaller amounts of explosive and measure vibration	CDMS, to be agreed with the planning authority prior to construction and implemented during construction.

ES Chapter	Potential Effect	Mitigation Proposed	Means of Implementation and timing
		magnitudes at various distances to more accurately determine how vibration propagates at the site.	
Shadow flicker and reflected light	Impact on amenity	Mitigation measures can be incorporated into the operation of the Wind Farm to reduce the instance of shadow flicker. Mitigation measures range from planting tree belts between the affected dwelling and the responsible turbine(s), installing blinds at the affected dwellings or shutting down individual turbines during periods when shadow flicker could theoretically occur. As there are no properties within 1100m, mitigation is not expected to be required.	Following notification of shadow flicker, further investigation would be carried out and appropriate measures implemented.
Socioeconomics, land use and public access	Impact on public rights of way during construction and operation.	The Proposed Development includes proposals for permanent diversions to bridleway BW64GWV and footpath FP103GWV in order to maintain a suitable distance from the wind turbines and a temporary diversion to footpath FP31 OGV is proposed to maintain a suitable set back distance from the borrow pits. (See Figure 12.1: Public Rights of Way Diversions). Should planning permission for the Proposed Development be granted, RES would lodge an application to divert the rights of way under the Town and Country Planning Act 1990, and any other consents that may be necessary, in consultation with Bridgend County Borough Council.	Application for consent under Town and Country Planning Act 1990.

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	Impact on common land due to wind farm infrastructure during construction and operation.	As a result of the Proposed Development RES would seek to de-register 16.81 ha of common land to make way for the Wind Farm infrastructure. To off-set this RES has secured 16.81 ha of replacement land directly bordering the existing common, which will be available from the start of construction. During construction 16.81 ha of common land may be affected on a temporary basis by construction activities. RES has reached agreements with each of the active commoners to compensate them for any temporary disturbance during construction. An application to cover the proposed changes to the common land will be submitted along with the planning application in accordance with section 16 of the Common Land Act (2006).	Application for consent under section 16 of the Common Land Act 2006.
	Impact on existing infrastructure on site.	RES will ensure that access to the existing communications masts is maintained during construction and throughout the lifetime of the Proposed Development. The 11 kV overhead line which serves the communications masts will be diverted and undergrounded in the vicinity of turbine T7, in agreement with Western Power Distribution, to ensure suitable clearance distances are achieved.	CDMS, to be agreed with the planning authority prior to construction and implemented during construction and operation.