



Pennant Walters Ltd

Mynydd Glyn Wind Farm

CEMP

Appendix B WMP Final



This report was prepared by WSP Environment & Infrastructure Solutions UK Limited (formerly known as Wood Environment & Infrastructure Solutions UK Limited), company registration number 02190074, which is carrying out these services as a subcontractor and/or agent to Wood Group UK Limited

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Technical note:

Mynydd y Glyn Wind Farm Water Management Plan

1. Introduction

1.1 Purpose of this Document

1.1.1 The objectives of this Technical Note are to set out working methods to protect surface water and groundwater from pollution and other adverse impacts including change to flow and water levels during the construction and operational phases of the proposed Mynydd y Glyn Wind Farm (the 'Proposed Development'). This document forms an appendix to the Draft Construction Environmental Management Plan (CEMP).

1.2 Development Proposal

1.2.1 A summary description of Proposed Development is provided below. A more detailed description is provided in the Draft ES **Chapter 4: Description of the Proposed Development**.

1.2.2 The Proposed Development includes the Wind Farm development (up to seven wind turbines and associated infrastructure including internal access tracks off the main access corridor, crane pads at each turbine location, laydown and storage areas, on-site substation, underground power cables linking the turbines and the on-site substation, two temporary construction compounds (TCCs)) and Grid Connection infrastructure (overhead line (OHL) and underground cable).

Site location

1.2.3 The Proposed Development Site lies within the Rhondda Cynon Taf County Borough Council (RCTCBC) administrative area and is located approximately 600 m from the south-eastern edge of the village of Porth (National Grid Reference: ST 03626 89459).

1.2.4 The predominant land use across the Proposed Development Site is greenfield land (dominated by grassland and small areas of forest) with small areas of built development including farms and access tracks and Church Village near the WPD electrical connection point at Upper Boat.

1.2.5 The Wind Farm development site extends over three hydrological catchments, the northern part draining to the Afon Rhondda Fawr, the southern part draining to the Nant Muchudd and a small section of the access road in the west draining to Afon Elai. The Grid Connection (OHL and underground cable) extends over four hydrological

catchments, the OHL section draining to the Nant Muchudd and the underground cable section draining (from west to east) to Afon Rhondda Fawr, Nant Clun and Afon Taf. The Afon Rhondda Fawr, Afon Elai, Afon Taf and Nant Clun are classified by Natural Resources Wales (NRW) as Main Rivers whilst their tributaries are Ordinary Watercourses.

1.3 Structure of this Document

1.3.1 The document is structured as follows:

- Section 2 – provides a description of the proposed surface water management, groundwater management and required consents/permits during the construction phase of the Proposed Development;
- Section 3 – sets out mitigation measures designed to prevent the potential release of pollutants from the Proposed Development construction areas; and
- Section 4 – sets out the flood emergency management measures for the construction phase of the Proposed Development.

2. Water Management

2.1 Introduction

2.1.1 This Section provides a description of the proposed surface water management (**Section 2.2**), groundwater management (**Section 2.3**) and required consents/permits (**Section 2.4**) during the construction phase of the Proposed Development.

2.2 Surface Water Management

2.2.1 Flooding from surface water sources is a potential risk when the intensity of rainfall is greater than the local drainage and infiltration capacity, causing water to flow overland. Where low-points or barriers to flow are present, particularly deep areas of flooding may occur. It is therefore important to consider changes in surface water runoff patterns during the construction of the Proposed Development.

2.2.2 The creation of new hardstanding surfaces during construction and operational phases has the potential to increase surface water runoff rates and volumes and modify runoff pathways. Appropriate management of surface water will therefore be necessary to ensure risks to on-site and off-site (downgradient) third party receptors are appropriately addressed.

2.2.3 The following measures will be implemented by the Site Contractor to manage surface water runoff during the construction and operational phases of the Proposed Development:

- surface water runoff from new areas of hardstanding will be collected in SuDS prior to discharge to ground. Further investigation of the viability of infiltration as a means by which surface water runoff could be discharged to ground will be undertaken post submission of the final ES to inform final design for construction. In the case that the soakaway testing concludes that infiltration is not solely sufficient in managing runoff, and discharge to the watercourses is required, this will be subject to a Consent from NRW and from RCTCBC as the local SuDS Approval Body (SAB). Any discharge to surface water would be restricted to the greenfield runoff rate; and
- temporary dewatering of excavations would be suspended if a flood alert or flood warning is in place downstream (and the on-site discharges could feasibly contribute to the flood event).

2.3 Proposed SuDS Solution

2.3.1 The indicative SuDS solution proposed for the construction and operational phases of the Proposed Development is set out in **Table 2.1**.

2.3.2 During the operational phase, the Grid Connection underground cables would be entirely below ground and would not affect surface runoff rates. It is assumed that the Grid Connection OHL wooden poles would have a negligible footprint and therefore no requirement to manage runoff.

Table 2.1 Indicative proposed SuDS Solution

Proposed Development element	Indicative SuDS
Construction phase	
TCCs	Permeable surfacing with a minimum depth of 300mm uncompact Type 3 stone (with a minimum porosity of 0.3) to be used across the TCCs (2,500m ²). If infiltration rates are favourable, then surface water will infiltrate at source. If an outlet is required, then a perforated pipe will collect water within the stone and direct it towards the nearest open channel, alongside the access track.
Operational phase	
Access tracks	Open channels located on the downslope of the tracks to manage runoff from the tracks and where the land falls towards the tracks, a cut-off ditch is provided. Gradients will vary across the Proposed Development Site for the windfarm and therefore it will be necessary to use check dams within the open channels to attenuate flows and promote infiltration. Cross drains would be provided beneath the access tracks surface to convey overland runoff before being discharged into a nearby watercourse.
Substation	It is anticipated that runoff from the substation roof will be collected in an underground water storage tank, which will then be recycled as greywater for re-use in the substation building. If infiltration rates are favourable, then any overflow will be directed towards a nearby infiltrate trench or soakaway. If rates do not allow sufficient infiltration to take place, then the connection would be to the nearest open channel. The substation internal track will be a permeable surface and the remaining areas will be topsoiled. If infiltration rates are favourable, then surface water will infiltrate at source. If an outlet is required, then a perforated pipe will collect water within the stone and direct it towards the nearest open channel, alongside the access track.
Wind turbines and crane pads	As the turbine pads and crane pads are buried after construction, the runoff from these areas will be similar to the existing runoff and therefore a drainage system is not required.

2.4 Groundwater Management

- 2.4.1 Excavations associated with the construction phase are of limited duration, footprint and depth including the turbine foundations (20m diameter x 4m depth) and underground cables (0.3-0.6m width x 0.9 to 1.0m depth). The potential for encountering groundwater during excavations is considered to be limited, and where encountered, it is likely to be of low sensitivity, perched and in small quantities.
- 2.4.2 Any water dewatered from excavations (groundwater and rainfall) would be discharged to adjacent ground, away from watercourses as far as possible. If infiltration is not possible, and discharge to the watercourses is required, this will be subject to a Consent from NRW and RCTCBC and dewatering would be suspended if a flood alert or flood warning is in place downstream (and the on-site discharges could feasibly contribute to the flood event).

- 2.4.3 Any discharge to surface water would be restricted to the greenfield runoff rate and will be treated in a suitable basin/trench before discharging.

3. Pollution Prevention Plan

3.1 Introduction

3.1.1 This Section sets out mitigation measures designed to prevent the release of pollutants from the Proposed Development during construction and operational phases. This is because contaminated runoff has the potential to impact on the water quality of receiving water bodies (**Section 10.9** of Draft ES **Chapter 10: Water Environment**). An overview of the relevant pollution prevention guidance is first provided in **Section 3.2** followed by a description of the pollution control measures for watercourses (**Section 3.3**) and groundwater (**Section 3.4**) and the water quality monitoring programme (**Section 3.5**).

3.2 Pollution Prevention Guidance

3.2.1 NRW direct developers to a range of guidance documents covering pollution prevention published on the NetRegs website¹. Some of these documents have been rebranded as Guidance for Pollution Prevention (GPP) documents, whilst others remain as Pollution Prevention Guidance (PPG) documents, awaiting updates. This suite of guidance will be followed during construction and operation of the Proposed Development to prevent pollution of the water environment. This is not an exhaustive list and will need to be developed further by the Applicant prior to construction.

- GPP 1: Understanding your environmental responsibilities - good environmental practices;
- GPP 2: Above ground oil storage tanks;
- GPP 3: Use and design of oil separators in surface water drainage systems;
- GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer;
- GPP 5: Works and maintenance in or near water;
- PPG 6: Working at construction and demolition sites;
- PPG 7: Safe storage – The safe operation of refuelling facilities;
- GP 8: Safe storage and disposal of used oils;
- GPP 13: Vehicle washing and cleaning;
- PPG 18: Managing fire water and major spillages;
- GPP 20: Dewatering underground ducts and chambers;
- GPP 21: Pollution incident response planning; and
- GPP 26: Safe storage - drums and intermediate bulk containers.

¹ See: Netregs (2021). Guidance for Pollution Prevention (GPPs) - Full list [Online] Available at: <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/> (Accessed 10 October 2022)

3.3 Protection of Watercourses

3.3.1 Construction activities may adversely affect the quality of surface water or groundwater as a result of contaminated runoff from, or spillages within, the construction areas. In addition, routine inspection and maintenance activities of the Proposed Development infrastructure (e.g. wind turbines and OHL) during the operational phase may result in accidental spillage of pollutants into the water environment. Control and mitigation measures to be implemented to prevent pollution are set out below.

Specific measures for preventing pollution from surface water discharges

3.3.2 Pollution control measures with respect to surface water discharges include:

- surface runoff and any pumped groundwater from the construction areas will be collected, attenuated, and treated in SuDS prior to discharge, either by infiltration to ground only or in combination with a direct discharge into an open surface water body (surface water disposal route to be confirmed post-ES). The SuDS considered include swales and SuDS basins; and
- if dewatering of the excavations is required, appropriate treatment will be provided before discharge to surface water or groundwater. No silty water will be pumped directly into any watercourse.

Specific measures for preventing pollution from watercourse crossings

3.3.3 If watercourse crossings are required to enable access over any watercourses, site specific pollution control measures for the watercourse crossings will be employed in line with the PPG guidelines detailed in **Section 3.2**, with the provisions of PPG5 being particularly pertinent. These include:

- if dewatering of excavations is required appropriate treatment of the pumped water will be provided before discharge to adjacent ditches or ground, and this could include the use of silt busters (or similar), if necessary;
- surface water runoff from exposed ground and stockpiles will be collected and treated (for example silt busters (or similar)) prior to discharge to adjacent ditches or ground; and
- all equipment containing hazardous fluids will have double skinned fuel tanks or be parked on drip trays with appropriately sized PVC berms to contain any fluid spills or storm water runoff. Spill kits will be carried on all plant that operates with hazardous fluids.

Specific measures for preventing pollution from stockpiles and exposed ground

3.3.4 Pollution control measures with respect to stockpiles and exposed ground include:

- minimise the amount of exposed ground and soil stockpiles from which water drains and the period of time such water drains (any surplus excavated materials would be disposed of off-site as early as possible);
- only remove vegetation from the area that needs to be exposed in the near future (ensure a vegetated strip will be left adjacent to any watercourses in accordance with the 20m stand-off distance from any watercourse);

- stockpiles will be present for the shortest practicable timeframe, with materials being reinstated as the construction work progresses. Stockpiles which remain present for three months or longer will be carefully managed using seeding techniques;
- excavated materials during construction works will be segregated and stored or re-used on-site in compliance with the CL:AIRE Definition of Waste: Code of Practice). The appointed contractor will prepare a Materials Management Plan prior to construction, responding to the final design and balance of materials that need to be managed. Any temporary onsite storage of excavated materials suspected or confirmed to be contaminated will be on impermeable sheeting, covered over and with adequate leachate / runoff drainage to prevent migration of contaminants from the stockpile. Materials will be segregated where possible to prevent cross-contamination occurring. Such materials will only be reused if they are confirmed as suitable for use in line with the requirements of the Materials Management Plan; and
- detention basins, swales, silt fencing and straw bales will be provided where necessary to remove suspended solids from runoff from stockpiles before discharge into the watercourses (see above).

Specific measures for preventing pollution from concrete and cement

3.3.5 Pollution control measures with respect to safe storage and use of concrete and cement, concrete and cement mixing and washing areas should:

- be sited no closer than 30m from any watercourse or surface water drain to minimise the risk of contaminated runoff entering a watercourse;
- have settlement and re-circulation systems for water re-use, to minimise the risk of pollution and reduce water usage; and
- dispose of contained water to either foul sewer (possibly requiring consent from Dwr Cymru Welsh Water) if possible or tanker off site.

Specific measures for preventing pollution from storage and use of oils and chemicals

3.3.6 Pollution control measures with respect to safe storage and use of oils and chemicals include:

- fuel storage will be in accordance with the Control of Pollution (Oil Storage) (Wales) Regulations 2016² and other NRW recommended guidance (in particular the following documents on the NetRegs website³: GPP1, GPP2, GPP3, PP7, GPP8 and GPP26). All stores of fuel will be located at least 10 m from any watercourses, at least 50 m from any well, borehole or spring, and away from areas at risk of flooding;
- areas that are used for fuel storage, plant maintenance and refuelling will be surfaced with fully impermeable materials to prevent any infiltration of contaminated runoff and within a secondary containment system such as a bund;

² Natural Resources Wales (2016). Control of Pollution (Oil Storage) (Wales) Regulations 2016 [Online] Available at: <https://gov.wales/sites/default/files/consultations/2018-01/150624-guidance-note-en.pdf#:~:text=Control%20of%20Pollution%20%28Oil%20Storage%29%20%28Wales%29%20Regulations%202016,the%20Welsh%20Government%E2%80%99s%20long-term%20water%20strategy%20aims.%205>. (Accessed 10 October 2022)

³ See: Netregs (2021). Guidance for Pollution Prevention (GPPs) - Full list [Online] Available at: <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/> (Accessed 10 October 2022)

- any tanks containing oils, fuels and chemicals will be double skinned. There will be a bunded capacity of 100% of the maximum tank volume for non-hazardous fluids. For hazardous chemicals, fuels or oils bund capacity will be the larger of 110% of the largest tank volume for single tank bunds, (or, in the case of multi tank bunds, 110% of the largest tank capacity or 25% of the combined tank capacity, whichever is the largest);
- an accident response protocol will be developed to ensure any spillages or potential pollution incidents are dealt with appropriately including the provision of containment for spills of contaminated liquids. Appropriate spill kits should be stored in the immediate vicinity of the storage facility, and trained staff should be available in case of incident;
- plant and machinery will be maintained to minimise the risks of oil leaks or similar;
- areas for transfer of contaminating materials/substances (i.e., from vehicular tankers to onsite storage tanks) will be protected in a similar manner to the measures outlined for the storage areas;
- all oiling, and greasing will take place above a drip tray or on an impermeable base to protect underground strata and be located away from drains, watercourses, or abstraction locations;
- drip trays will be placed below static mechanical plant;
- if possible, use a biodegradable hydraulic oil in plant, when working in or near watercourses;
- if possible, use water based or low solvent products; and
- avoid products containing lead as a drying agent and those containing hazardous solvents (toluene or chlorinated hydrocarbons).

Specific measures for preventing pollution from refuelling activities

3.3.7 The following pollution control measures with respect to refuelling will be implemented (risk of spillage is greatest when refuelling plant):

- refuel mobile plant in designated areas, or on impermeable base a minimum of 30m away from drain, watercourses, or abstraction locations;
- use a bunded bowser;
- supervise all refuelling and bulk deliveries;
- check the available capacity in the tank before refuelling;
- don't jam open a delivery valve;
- check hoses and valves regularly for signs of wear;
- turn off valves after refuelling and lock them when not in use;
- position drip trays under pumps to catch minor spills;
- keep a spill kit with sand, earth, or commercial products for containment of spillages; and
- provide incident response training to staff and contractors.

Specific measures for preventing pollution from vehicle and wheel washing

- 3.3.8 Pollution control measures with respect of vehicle and wheel washing on site include:
- vehicle washing and cleaning will be carried out in areas that are clearly marked and isolated from surface water drainage systems, unmade ground, and porous surfaces (designated washing bays); and
 - a designated washing bay should be designed so that runoff is isolated using channels, gullies, gradients, directed to a silt trap or sediment tank to remove larger particles, and either collected in a sealed system for re-use or authorised disposal or discharged to public foul sewer (subject to approval).

3.4 Protection of Groundwater

- 3.4.1 The pollution prevention measures outlined above, along with good construction practices would ensure that any oils, fuels, solvents, and other pollutants used during the construction process will not discharge to the ground. Such measures would also ensure that surface water bodies that may be hydraulically linked to groundwater would not be impacted upon by groundwater.

3.5 Water Quality Monitoring

- 3.5.1 A water quality monitoring programme will be agreed with NRW and implemented during the construction phase. This could include monitoring of the discharges to surface water (if any proposed) to demonstrate that the discharges aren't having an impact on the receiving watercourse. The frequency, duration and monitored parameters of the monitoring programme will be agreed with NRW prior to the commencement of monitoring activities.

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Document revisions

No.	Details	Date
1	Draft CEMP Appendix B WMP	10/10/2022

