



Environmental Impact Assessment Report

Drummarnock Wind Farm

Technical Appendix 15-1: Outline Construction
Environmental Management Plan

Drummarnock Wind Farm Limited

July 2024



Contents

1	Introduction	1
1.1	Background to the Outline CEMP	1
1.2	Aims and Objectives	1
1.3	Construction Environmental Management Approach	2
1.4	Project Description	3
1.5	Location	3
1.6	Planning History	4
2	Implementation	5
2.1	Schedule of Mitigation	5
2.2	Implementation and Control	5
3	Roles and Responsibilities	6
3.1	Health and Safety	6
3.2	Construction Management Team	6
3.2.1	Environmental Clerk of Works (EnvCoW)	6
3.3	Principal Contractor	7
3.4	All Site Personnel	7
3.5	Communication	7
4	Pre-Construction Surveys, Protected Species and Monitoring	8
4.1	Hydrology, Geology and Hydrogeology	8
4.1.1	Water Quality Monitoring	8
4.2	Ecology	8
4.3	Ornithology	9
4.3.1	Timing of Works, Pre-Commencement Surveys and Implementation of Disturbance-Free Buffer Zones	9
4.3.2	Environmental Clerk of Works	10
4.4	Archaeology/Cultural Heritage	10
4.5	Geotechnical Investigations (GI)	11
5	Construction Stages	12
5.1	Site Access	12
5.2	Post Construction Reinstatement	13
6	General Construction Good Practice	14
6.1	Handling of Excavated Materials	14

Contents

6.2	COSHH Chemicals, Oil and Fuel Storage	14
6.3	Surplus and Waste Material	14
6.4	Hazardous and Other Wastes	15
6.5	Regulatory Compliance	15
6.6	Dust Mitigation	15
6.7	Noise Management	16
6.8	Site Lighting	17
7	Environmental Incident Prevention Measures	18
7.1	Environmental Incident Response Strategy	18
7.2	Fuel Storage and refuelling	18
7.3	Spillage	18
8	Drainage and Surface Water Management	19
8.1	Hydrological Mitigation and Management Measures	19
8.2	Construction Site Licence	20
9	Water Quality Monitoring and Contingency	21
9.1	Incident Response	21
10	Construction Phase	22
10.1	Proposed Construction Compound	22
10.2	Welfare Facilities and Services	22
10.3	Borrow Pits	22
10.4	Access Tracks	23
10.5	Turbine Foundations	24
10.6	Crane Pads	25
10.7	Substation Compound and Control Building	25
10.7.1	Substation Compound	25
10.7.2	Cable Laying	25
11	References	27

Contents

Tables

Table 15-1-1: Mitigation Measures for Hydrology

19

Figures

Figure 15-1-1 Detailed Site Layout

Figure 15-1-2 Abnormal Loads Route

Figure 15-1-3 Indicative Turbine Foundation

Figure 15-1-4 Indicative Control Building

Figure 15-1-5 Indicative Cable Trench

1 Introduction

1.1 Background to the Outline CEMP

This document presents an outline Construction Environmental Management Plan (CEMP) for Drummarnock Wind Farm which sets out the principles and procedures for environmental management during construction of the wind farm (hereafter referred to as the Proposed Development).

Should planning permission be granted, this outline CEMP would be revised and updated to a CEMP, the content of which would be agreed with Stirling Council through consultation and enforced via a planning condition. The CEMP would be used by the Contractor to ensure appropriate environmental management is implemented throughout the construction phase of the Proposed Development.

The outline CEMP has been prepared to take account of Good Practice during Windfarm Construction (NatureScot, 2019)[1], Guidelines for Onshore and Offshore Windfarms (2010)[2] and Research and guidance on restoration and decommissioning of onshore windfarms (NatureScot 2013)[3] and provides the construction activities methodology pertinent to the Environmental Impact Assessment (EIA).

This document should be read in conjunction with the relevant EIA chapters, including the Chapter 3: Description of Development and Chapter 15: Schedule of Mitigation.

This outline Construction Environmental Management Plan has been produced to provide a framework for all agreed environmental mitigation measures, conditions, consents and licences that require be implemented for the Proposed Development located at National Grid Reference (NGR) NS 75471 87114, circa 10km southwest of Stirling, in the Fintry, Gargunnoch and Touch Hills.

The CEMP is a fluid document that would evolve during the different phases of the project. As such it would be subject to constant review to address:

- Any conditions required in the planning consent;
- To ensure it reflects best practice at the time of construction;
- To ensure it incorporates the findings of pre-construction site investigations;
- Changes resulting from the construction methods used by the contractor(s); and
- Unforeseen conditions encountered during construction.

This ensures proceedings adhere to all legislative and planning conditions as well as protecting any sensitive environmental resources within and adjacent to the Proposed Development.

1.2 Aims and Objectives

This document presents an outline CEMP, which sets out the principles and procedures for environmental management during construction of the Proposed Development.

The overall objectives of the outline CEMP are to:

- Outline the proposed mechanisms for ensuring the delivery of environmental measures to avoid or reduce environmental effects identified;
- Ensure procedures are in place so that there is a prompt response to effects requiring remediation, including reporting and any additional mitigation measures required to prevent a recurrence;
- Provide an outline of the content that would be supplied in the construction method statements and strategies that would be prepared in order to secure mitigation measures in relation to different design aspects of the Proposed Development;
- Ensure compliance with legislation and identify areas where it would be necessary to obtain authorisation from relevant statutory bodies;
- Ensure that the appropriate Proposed Development monitoring and reporting would be in place;
- Provide a framework for reporting, compliance auditing and inspection to ensure environmental aims and objectives are met; and
- Set out the expectations of the Applicant to guide contactors on their requirements with regards to environmental commitments and environmental management.

The outline CEMP is intended to be read as an iterative document, which will be further developed with cognisance of the conditions on the deemed planning permission from Stirling Council with input from other relevant consultees.

The final CEMP will comply with the relevant terms of the consent and attendant planning conditions and other agreements and commitments made during the consenting process.

1.3 Construction Environmental Management Approach

It is important to ensure all aspects of environmental management are clear and understood during every aspect of the construction. The outline CEMP document (referred to henceforth as the CEMP) compiles and distils all relevant agreed environmental mitigation measures, permissions, procedures and documentation for the full extent of the Proposed Development. The CEMP can therefore be considered as the source document from which relevant sections can be extracted to inform specific environmental aspects of construction activities.

The production of this CEMP ensures that environmental matters on site are given due thought and consideration throughout the construction process to best mitigate against any environmental issues that may occur.

Construction environmental management planning provides a mechanism through which all agreed environmental mitigation measures, conditions, consents and licences can be implemented on Site, ensuring legislative and planning compliance as well as protection of sensitive environmental resources.

The CEMP has been produced prior to construction works commencing on site and will remain a live document throughout the construction period. As such, the CEMP will be subject to change and update as circumstance dictates throughout the duration of the construction period. For example, a new environmental constraint such as a new protected species record may be identified during construction which requires additional control measures to be agreed and the documentation updated to include this change.

1.4 Project Description

The Proposed Development consists of 4 turbines up to a maximum 180m tip height with an indicative electricity export capacity of approximately 30MW and associated infrastructure.

The associated infrastructure includes:

- New access tracks;
- Construction of turbine foundations, crane hard standings and storage areas;
- Underground cabling;
- One onsite substation which would accommodate 33KV equipment to collect electricity from the site. The substation compound would include a control and metering building;
- Construction compound;
- Up to four borrow pits; and
- Up to six watercourse crossings.

The Proposed Development includes the provision for 6.59km of new access tracks, which includes two onsite access options (Option A and Option B). However, only one of these onsite access options will be constructed, and therefore of the 6.59km of proposed new tracks, a maximum of up to 5.8km would be constructed, dependent upon the access option utilised. To ensure a robust and conservative assessment, the EIA has assessed the full 6.59km to support the full appraisal of both access options.

It is expected that the foundation for the turbines will comprise a standard concrete gravity foundation constructed on poured concrete with steel reinforcement depending detailed geotechnical assessment.

Once the turbines have been installed, the access tracks and crane hardstand areas around the turbines will remain in place as permanent infrastructure.

The Proposed Development includes the use of up to four potential borrow pits for the excavation of on-site aggregate to be used in the construction of the Proposed Development.

1.5 Location

The Proposed Development is located approximately 10km south-west of Stirling, in the Fintry, Gargunnoch and Touch Hills. The nearest roads are an unclassified single-track road that runs south-west to north-east adjacent to the north-western boundary of the Site and an unclassified road that runs south-west to north-east adjacent to the south-eastern boundary of the Site.

The land cover within the Proposed Development Site is predominantly marshy grassland in the eastern part, with the western part dominated by a mosaic of blanket bog, shrub heath and unimproved acid grassland. The ground rises to the west to a peak of 373m from c.206m on the eastern side.

1.6 Planning History

Pre-Application Advice was sought from Stirling Council (SC) on 12th May 2020, and a Pre-Application Enquiry Response was issued in July 2020 (PREAPP-2020-0093).

An EIA Scoping Opinion was requested from SC in August 2020 through the submission of an EIA Scoping Report (Ref 40419-03). The EIA Scoping Report contained details of the Proposed Development Site baseline and the Proposed Development design at the time. It also proposed which environmental impacts would be assessed in the EIA, and the assessment methodologies that would be used.

2 Implementation

2.1 Schedule of Mitigation

Chapter 15: Schedule of Mitigation within the main EIA report summarises the various mitigation measures that have been proposed to offset the potential impacts of the Proposed Development.

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

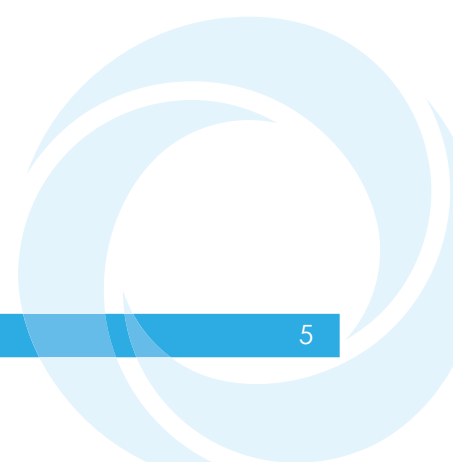
These mitigation measures would be required to be implemented prior to or during construction of the Proposed Development.

2.2 Implementation and Control

Changes that occur to the CEMP throughout the construction period, along with the reasoning behind these changes, are to be documented clearly and concisely. The CEMP version number should also be updated to reflect the change and recorded in the document section within the document. Depending on the nature of the change, there may be a requirement to involve stakeholders such as the planning authority or environmental regulators.

The Principal Contractor would be required to prepare and compile a series of method statements for their work or any of the other contractors and subcontractors work.

These method statements would detail how the contractors intend to implement the mitigation set out in the CEMP and would be integrated with their detailed Construction Method Statements.



3 Roles and Responsibilities

In order for the CEMP to be implemented and to ensure that the key responsibilities are given the attention and consideration they require during the construction period, it is essential that the implementation for each task is allocated to the appropriate member of the project team. This ensures no aspect of the CEMP is overlooked and every member of the team is aware of their role on observing and implementing the components of the CEMP.

The personnel who would be responsible for implementing, monitoring and responding to the CEMP would be the Applicant construction team Principal Contractor.

3.1 Health and Safety

The construction works would be undertaken in accordance with primary health and safety legislation, namely:

- Health and Safety at Work Act 1974 [4]; and
- Construction (Design and Management) (CDM) Regulations 2015 [5].

The construction works for the Proposed Development would fall under the CDM Regulations 2015[5]. As such, the Principal Contractor would provide a Construction Phase Plan (CPP) in accordance with the CDM regulations. This plan would include (but not be limited to) a construction programme, emergency procedures, site layouts and fire plans, method statements and details of the proposed induction programme. This induction programme would include both the Principal Contractor's site-specific rules, as well as the Client's requirements, and would include instructions to all staff regarding the emergency procedures within the Construction Phase Plan (including pollution prevention, waste, dust and noise management etc.) and relevant procedures.

3.2 Construction Management Team

The Applicant would appoint a Construction Management Team, led by a Construction Manager. It will be this team's responsibility to ensure that the Principal Contractor adheres to and complies with the principles of the CEMP and their Method Statements.

3.2.1 Environmental Clerk of Works (EnvCoW)

A named site EnvCoW will be established, and this role will be completed by a suitability experienced EnvCoW, who will oversee activity at key points for the duration of the construction and reinstatement periods (details to be agreed with Stirling Council and NatureScot).

The purpose of the EnvCoW is to monitor compliance and provide environmental advice and keep an active register of all issues that arise during the works. The EnvCoW would report as required to SEPA, NatureScot and Stirling Council.

In fulfilling their duties, the EnvCoW would have sufficient powers to:

- oversee construction work and identify where mitigation measures are required;
- authorise temporary stoppage of works if required; and

- to review working methods and advise whether alternative or more appropriate working methods require to be adopted.

The EnvCoW would undertake the following activities:

- to give toolbox talks to all staff onsite, e.g. an ecological induction, so staff are aware of the ecological sensitivities on the site and the legal implications of not complying with agreed working practices;
- to undertake pre-construction surveys (otter, badger and pine marten) and advise on ecological issues where required; and
- to carry out pre-construction inspections of areas which require reptile mitigation (i.e. supervision during vegetation clearance).

The EnvCoW would also undertake additional roles such as assisting with hydrological measures or checking for nesting birds (see Chapter 7: Ornithology and Chapter 8: Hydrology, Geology and Hydrogeology).

3.3 Principal Contractor

The Principal Contractor would be required to comply with and regularly review the CEMP throughout the construction period. This would include being aware of any changes or updates to the CEMP following the identification or any new environmental sensitivity or any Proposed Development changes. These changes would be controlled and implemented by the Applicant's Construction Management Team, as required.

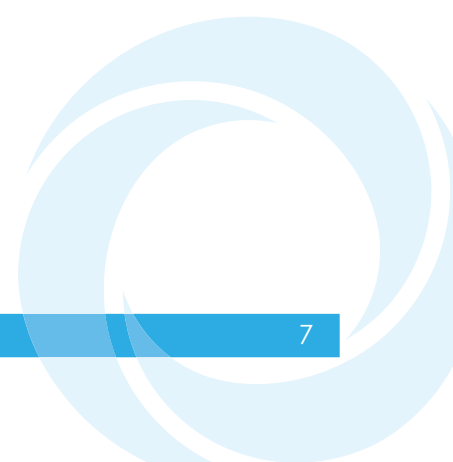
3.4 All Site Personnel

All site personnel, including all members of the Applicant and Principal Contractor's teams, all sub-contractors and sub-consultants would be required to:

- attend all inductions and site-specific training including toolbox talks carried out by the Principal Contractor and/or EnvCoW; and
- implement control measures throughout the site, as required.

3.5 Communication

Prior to the commencement of construction, the Applicant would inform Stirling Council prior to any construction starting on site and communication would be maintained with updates of any incidents or significant changes notified within one week of occurrence. The Applicant would provide contact details to Stirling Council of key site personnel prior to the start of the works.



4 Pre-Construction Surveys, Protected Species and Monitoring

4.1 Hydrology, Geology and Hydrogeology

4.1.1 Water Quality Monitoring

As per the recommendations in the Hydrology, Geology and Hydrogeology and Schedule of Mitigation (Chapter 8 and 15, respectively), a Water Quality Monitoring Plan (WQMP) will be developed to address surface and ground water quality and protection and include measures for different rainfall and flow conditions.

This document will be in place during construction, operation and decommissioning, and is required to record the existing water condition, inform design requirements, and avoid deterioration to water quality during construction.

The WQMP would be submitted to NatureScot, SEPA and Stirling Council for their approval.

4.2 Ecology

The following summarises the extent of the ecological assessment to date.

An Extended Phase 1 survey, National Vegetation surveys (NVC) and protected species surveys which included the following were undertaken:

- Bat emergence surveys;
- Bat activity surveys;
- Otter surveys;
- Water vole surveys;
- Red squirrel surveys; and
- Badger surveys.

Chapter 6: Ecology contains the details of the results from these surveys.

Due to the time that will have elapsed since the last surveys and the possibility that otter activity could have changed in the intervening period, and badger could have colonised the site, a pre-construction survey for otter and badger would be undertaken. This would cover all watercourses and other suitable habitat within 200m of wind farm infrastructure.

The results of the pre-construction surveys would inform the need for further survey and potential mitigation measures in respect of good working practices, or consultation with NatureScot.

All site personnel shall be briefed upon the presence of sensitive habitats and potential/confirmed presence of protected species as well as agreed appropriate working methods. An emergency response procedure will be communicated in the event of site personnel suspecting or detecting the presence of a protected species during works. In the event that a protected species is encountered within or near the working area, works will cease and the EnvCoW be contacted immediately for advice on appropriate working methods and when works can safely proceed.

No new ground will be cleared without prior inspection by the EnvCoW to ensure reptiles, should they be present, are encouraged to disperse before clearance. Clearance will occur in a manner to ensure dispersal routes for reptiles.

As there is potential for fauna to access the Proposed Development Site excavations/holes will be covered at the end of each working day, or a wooden plank placed inside to allow faunal species to escape, should they enter the hole. Any temporarily exposed open pipe system would be capped in such a way as to prevent wildlife gaining access.

No in-channel obstructions (floodlighting, fencing or diversions) will be permitted within watercourses unless specifically authorised in writing by the relevant authority (i.e., SEPA and/or a suitably experienced freshwater Ecologist).

Measures shall be implemented to reduce the potential for even non-significant construction impacts to bats, e.g., downward-directed artificial lighting will be used to shine light to the working area only and reduce 'light leakage' that may temporarily affect bat flightlines.

A Site speed limit of 15mph will be in place at all times to reduce the risk of collision and protected species mortality associated with construction vehicles.

4.3 Ornithology

Good practice measures, as outlined below, would be employed to reduce the possibility of damage and destruction (and disturbance in the case of sensitive species such as breeding waders and short-eared owl), to occupied bird nests during the construction phase.

4.3.1 Timing of Works, Pre-Commencement Surveys and Implementation of Disturbance-Free Buffer Zones

Under the Wildlife and Countryside Act 1981, it is an offence, with only limited exceptions, to:

Intentionally or recklessly take, interfere with, damage or destroy the nest of any wild bird whilst it is in use or being built (applies year round for nests of birds included in Schedule A1);

- Obstruct or prevent any wild bird from using its nest;
- Intentionally or recklessly take, interfere with or destroy the egg of any wild bird;
- Intentionally or recklessly disturb any wild bird listed in Schedule 1 while it is nest building, or at (or near) a nest containing eggs or young, or disturb the dependent young of such a bird;
- Intentionally or recklessly harass any wild bird included in Schedule 1A; or
- Knowingly cause or permit any of the above acts.

Avoidance of damage to, or destruction of nests, or disturbance to sensitive species whilst nesting can be achieved through careful timing of construction activities; for example, restricting activities in sensitive areas as far as practicable in the early part of the breeding season until the location and breeding status of nesting birds has been established.

If site clearance and construction activities are required to take place during the main breeding bird season, from mid-March to August inclusive, pre-commencement survey work would be undertaken to ensure that nest destruction and disturbance to sensitive species (i.e., breeding raptors and waders) are avoided. Where applicable, construction would not take place within specified disturbance-free buffer zones for certain sensitive species during the breeding season.

Disturbance-free buffer zones around nest sites of sensitive species would be applied and monitored closely. For breeding waders, disturbance-free buffer zones are only required until chicks have hatched and are capable of walking away from any sources of disturbance.

Based on 2020 survey data and the relevant literature (e.g., Goodship and Furness 2022), the following disturbance-free buffer zone is considered likely to be required to help prevent nest failure due to disturbance during construction. It should be noted that this represents a guide only and may vary according to topography and other factors at each nest site.

- Lapwing – 300m;
- Curlew – 300m;
- Snipe – 300m; and
- Short-eared owl – 500m

A Bird Protection Plan (BPP) would be developed by a suitably experienced ornithologist, and agreed in consultation with NatureScot, in advance of works commencing on the site. The BPP would set out in sufficient detail the measures and procedures that would be followed to ensure the protection of sensitive species as well as legally protected species during construction.

4.3.2 Environmental Clerk of Works

The role of the EnvCoW would include the following specific roles with regard to the ornithology interest of the site:

- Prior to the start of construction and/or the breeding bird season, the EnvCoW would make contractors aware of the ornithological sensitivities within the site (particularly with regard to the potential presence of sensitive breeding species, i.e. breeding waders and raptors); and
- The EnvCoW would undertake surveys for nesting birds throughout the construction period that falls within the nesting season and set up and monitor appropriate exclusion areas whilst nests of relevant species are in use.

4.4 Archaeology/Cultural Heritage

Appropriate mitigation measures for protecting or recording non-designated assets during construction have been set out in Chapter 10: Cultural Heritage of the EIA which may include:

- Micrositing may take place to allow adjustment within a 50m radius of the proposed turbine locations, and a similar tolerance either side of the access track locations;
- The fencing off or marking out the elements of Muirpark, farmstead, a known non-designated asset (SC HER Ref. 2730; low importance) refer to Appendix 10-1);

- Implementation of a working protocol should previously unrecorded heritage assets, including buried archaeological remains (e.g. archaeological deposits and features) be discovered; and
- Appointment of an Archaeological Clerk of Works (ACoW) to supervise targeted ground-breaking operations and provide onsite advice on avoidance of effects (e.g. providing onsite identification and recording of previously unrecorded heritage assets and liaising with the local authority archaeological adviser as necessary).

The Stirling Council Archaeology Service (SCAS) will be consulted to provide guidance on appropriate conditions to be applied to any prospective consent.

4.5 Geotechnical Investigations (GI)

GI and site investigation work will be undertaken, post consent. These investigations aim to determine the soil conditions and any potential risk related to it that should be borne in mind afterwards whereas the detail design is being developed. This outline CEMP document would be updated following the completion of the GI surveys.

5 Construction Stages

As this is an outline CEMP, the details of the construction staging of the Proposed Development are not yet confirmed, and this document would be updated following production of a Construction Method Statement (CMS) and Construction Phase Plan.

5.1 Site Access

The Principal Contractor will be responsible for developing and implementing a Construction Traffic Management Plan (CTMP) in accordance with HSG144 as set out in Chapter 9: Transport and Access.

The CTMP will identify measures to reduce the number of construction vehicles as well as considering ways to reduce or avoid the impact of vehicles through construction programming/routing and identification of an individual with responsibilities for managing transport and access effects.

The CTMP will also identify measures to reduce and manage construction staff travel by private car, particularly single occupancy trips. The CTMP will be developed during the detailed design phase of the Proposed Development. Potential measures could include (but are not limited to):

- Immediately upon commencement, all deliveries, operatives and visitors to The Proposed Development Site will report to the security gate. This will be communicated to all early works contractors at their pre-start meeting;
- The main contractor will develop a logistics plan highlighting the access point for the project, loading bay, pedestrian / vehicular segregation, welfare, storage, security and material handling that will be enforced following full site establishment;
- Approved haul routes will be identified to The Proposed Development Site and protocols put in place to ensure that HGVs adhere to these routes;
- All contractors will be provided with a site induction pack containing information on delivery routes and any restrictions on routes;
- Temporary construction site signage will be erected along the identified construction traffic routes to warn people of construction activities and associated construction vehicles;
- A construction traffic speed limit (for example, 20 mph) will be imposed through sensitive areas;
- The construction material 'lay down' areas will allow for a staggered delivery schedule throughout the day, avoiding peak and unsociable hours (i.e. before 6 am and after 10 pm);
- An integral part of the progress meetings held with all trade contractors is the delivery schedule pro-forma. All contractors will be required to give details of proposed timing of material deliveries to the Site. At this stage, they will be given a specific area for delivery;
- The CTMP and the control measures therein will be included within all trade contractor tender enquiries to ensure early understanding and acceptance / compliance with the rules that will be enforced on this project;
- Under no circumstances will HGVs be allowed to lay-up in surrounding roads. All personnel in the team will be in contact with each other and with Proposed

Development Site management, who in turn will have mobile and telephone contact with the subcontractors;

- Roads will be maintained in a clean and safe condition; and
- A wheel cleaning facility will be installed on-site during the construction period in order to reduce mud and debris being deposited onto the local road network.

The Applicant will work in partnership with Stirling Council and the supply chain to reduce the impact of the development on the local community.

5.2 Post Construction Reinstatement

Best practice techniques for vegetation and habitat reinstatement would be adopted and implemented on areas subject to disturbance during construction as soon as practicable.

Information on the reinstatement will be available in the Habitat Management Plan (HMP).

6 General Construction Good Practice

6.1 Handling of Excavated Materials

The extent of any excavations will be kept to a minimum and where excavation is required excavated materials will be stored according to best practice taking care to separate, as far as is reasonable, turves, topsoil's, soil, and boulders.

Should it be necessary to excavate soils, these materials will be carefully stockpiled adjacent to the working area for re-use and re-instatement. Localised measures, such as stockpile covers, silt fencing, and filter strips will be used to manage runoff from stockpiles.

The maximum permissible height for any soil stockpiles will be 2m and these will not be stored within 50m of any watercourse.

These measures will ensure that any potential run off issues are controlled and dealt with in a suitable manner so that any and all potential impacts are avoided or at the very least minimised.

6.2 COSHH Chemicals, Oil and Fuel Storage

All COSHH chemicals, oil drums and containers or other potential contaminants stored on the site will be controlled in accordance with the following guidance:

- GBR's 26, 27 & 28 contained in The Water Environment (Miscellaneous) (Scotland) Regulations 2017; and
- The Control of Substances Hazardous to Health Regulations, 2002 (COSHH).

All storage will be isolated, placed on drip trays or bunded so that no oil or other contaminants are allowed to reach water courses or ground water. A list of these substances should be kept on site.

Storage of such materials and any re-fuelling activities will be located a minimum of 50m away from any watercourse and out with any flood zones. All static plant such as generators will have an integral bund or use internal nappies at all times.

6.3 Surplus and Waste Material

Initiated as part of the Defra Red Tape Challenge, aiming to reduce bureaucracy for business, the Site Waste Management Plans Regulations 2008 (SWMP) [8] were repealed on 01 December 2013. However, it has been adopted as good practice to produce a Site Waste Management Strategy (SWMS) for large scale construction sites and to append planning applications and as such are recommended to be adopted in this project.

The SWMS will be included as part of the final CEMP. This will include appropriate level of detail on how construction waste materials would be managed, including the management and definition of excavated materials.

The Principal Contractor and any other contractors and subcontractors would take all reasonable steps to ensure that all waste from the site is dealt with in accordance with the requirements under The Environmental Protection (Duty of Care) (Scotland)

Regulations 2014 (Car Regs) and that materials would be handled efficiently, and waste managed appropriately.

Appropriate waste management, disposal and waste carrier documentation and licences would be obtained (e.g. complete waste transfer notes prior to waste leaving site, ensure all waste carriers have a valid waste carrier's registration certificate, ensure wastes are disposed of at a correctly licensed site, complete notification for hazardous waste to SEPA).

Waste streams would include wastes generated by plant, machinery and construction workers over the period of the works, for example waste oils, sewage, refuse (paper, carton, plastic etc.), wooden pallets, waste batteries, fluorescent tubes etc.

6.4 Hazardous and Other Wastes

The Project Team are not aware of any potential for contaminated soils or other hazardous wastes to be located at any locations which require excavation. However, should any be identified the Site Manager will be notified immediately, soils will be kept separate and where possible isolated until they can be assessed and dealt with in an appropriate manner.

All staff will be made aware of the soils and the associated requirements and appropriate waste management procedures will be applied to the disposal of the contaminated materials.

6.5 Regulatory Compliance

Waste would need to be transferred to a licensed waste management site or site with a waste exemption. The Principal Contractor would need to check that the site is licensed and that the licence permits the site to take the type and quantity of waste involved.

A 'Waste Transfer Note' must be completed by all parties involved and must be retained for a period of two years. Sub-contractors excavating and hauling waste offsite must complete their own Waste Transfer Notes and copy them to the Principal Contractor. It is not necessary to have a Waste Transfer Note for each load of waste and a Waste Transfer Note can be issued weekly or monthly as a season ticket.

It is the responsibility of the Principal Contractor to ensure that other parties involved in the transport, storage and disposal of waste were legally entitled to carry out their duties.

6.6 Dust Mitigation

Good practice measures would be adopted during construction to control the generation and dispersion of dust such that significant impacts on neighbouring habitats should not occur. The hierarchy for mitigation would be prevention – suppression – containment.

Good practice measures can include:

- Site speed limits to be set at 15mph on tracks and 10mph on trackway;
- Provide adequate protection for fine or dry materials from wind exposure (e.g. cover over materials on site and in lorries);
- No burning of waste on site;

- All vehicles will comply with relevant Euro Standards for emissions levels; and
- All vehicle drivers will be required to switch off their vehicle engines when stationary to reduce exhaust emissions and keep their engines in tune and catalysis and / or particulate filters working efficiently.

6.7 Noise Management

Noise during the construction phase, including noise from construction traffic on access tracks, will be minimised through the adoption of Best Practicable Means (BPM). Methods for mitigating and minimising noise will be set out in the final CEMP that will be prepared before construction commences.

Noise during construction works will be controlled by generally restricting works to standard working hours (07:00 to 19:00 Monday to Friday and 07:00 to 13:00 on Saturdays) and excluding Sundays and Scottish local and national holidays, unless specifically agreed otherwise with Stirling Council.

Outside these hours, construction activities on-site will be limited to turbine erection, maintenance, emergency works, dust suppression, and the testing of plant and equipment, unless otherwise approved in advance in writing by Stirling Council. It is therefore expected that only the weekday daytime noise limit will be applicable, but this is dependent on the working hours required at the time of construction.

It is not yet known whether blasting activities will be required. With regards to potential blasting activities, BS 5228 states that practical measures, including good blast design, that have been found to reduce air overpressure and/or vibration are:

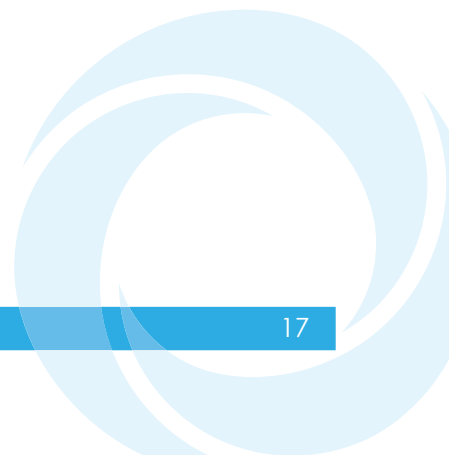
- Ensuring appropriate burden to avoid over or under confinement of the charge;
- Accurate setting out and drilling;
- Appropriate charging;
- Appropriate stemming with appropriate material such as sized gravel or stone chippings;
- Using delay detonation to ensure smaller maximum instantaneous charges;
- Using decked charges and in-hole delays;
- Blast monitoring to enable adjustment of subsequent charges;
- Designing each blast to maximize its efficiency and reduce the transmission of vibration; and
- Avoiding the use of exposed detonating cord on the surface to minimize air overpressure – if detonating cord is to be used in those cases where down-the-hole initiation techniques are not possible, it should be covered with a reasonable thickness of selected overburden.

If blasting is required, the above factors will be considered as part of the final CEMP, and a combination of minimising blasting activities and ensuring nearby residents are fully warned will mitigate adverse effects from these activities which are high in sound and vibration energy but of very short duration.

With regard to noise from construction traffic, a site management regime will be developed to control the movement of vehicles to and from the site. This will be implemented through a Construction Traffic Management Plan (CTMP), as discussed further in Chapter 9: Transport and Access of the EIAR.

6.8 Site Lighting

Temporary site lighting may be occasionally required for specific activities to ensure safe working conditions. This is more likely to be a requirement during construction activities in the winter months. It is intended the type of lighting would be non-intrusive and specifically designed to negate or minimise any effect to likely receptors and any other environmental considerations.



7 Environmental Incident Prevention Measures

7.1 Environmental Incident Response Strategy

An Environmental Incident Response Strategy will be developed as part of the final CEMP. The Principal Contractor would be responsible for developing and implementing this as a method statement as part of their CPP. This method statement would provide reference to procedures to be followed in the event of a specific incident.

7.2 Fuel Storage and refuelling

Clearly defined areas for the storage of oil and fuel will be identified as part of the site establishment process within the site compound and tower specific set ups.

On-site storage of oil and fuels will be avoided if possible; where temporary on-site storage is required, the volumes to be stored should be minimised as far as practical through efficient management of deliveries, plant, and planning of works.

Re-fuelling will take place at the site compound where possible however, due to the type of project this may not always be possible.

Fuel will be stored in accordance with GPP2, in bunded fuel cubes at the site compound or at a designated area at the work site. In either case, storage- and refuelling- locations will be >50m from any watercourses and plant nappies and spill kits will be in place. Re-fuelling will be supervised and undertaken in line with GBRs 26, 27 and 28, GPP2 and PPG7.

Plant nappies will be placed under all items of plant when not in use.

Minimal quantities of oils will be stored at the site compound, on drip trays and in a locked storage area with appropriate spill kit(s) available at the site compound.

It is recommended that biodegradable hydraulic oil is used in major items of plant i.e. excavators and lorry mounted cranes.

Spill kits will be available at all storage and re-fuelling areas and in all plant, (mobile and static), and vehicles on site. These will be sized appropriately for the plant and equipment to be used on site.

Any hazardous materials will be stored in a secure labelled COSHH cabinet and a list of these should be kept on site.

Storage of such materials and any re-fuelling activities will be located a minimum of 50m away from any watercourse and out with any flood zones.

7.3 Spillage

Spillage of fuel, oil and chemicals would be minimised by implementation of an Emergency Pollution Prevention Strategy (EPPS) which would be prepared by the Principal Contractor as part of the Construction Phase Plan. In the event of any spillage or pollution of any watercourse the emergency spill procedures as described in the EPPS would be implemented immediately. Procedures developed in the EPPS will be adhered to for storage of fuels and other potentially contaminative materials to minimise the potential for accidental spillage.

8 Drainage and Surface Water Management

8.1 Hydrological Mitigation and Management Measures

Full details on the hydrology of the site are included in Chapter 8: Hydrology, Geology and Hydrogeology. The following management measures are suggested to protect the hydrology of the site.

Table 15-1-1: Mitigation Measures for Hydrology

Mitigation Measure	Phase	Reason
Construction Method Statement environmental and construction proposals component	Construction	To ensure safe environmental and water environment construction methods
Develop Pollution Prevention Plan (PPP)	Construction	To identify activities of greatest risk and prepare controls.
Appointment of an EnvCOW ensuring the requirements of the CEMP, DMP and PMP are implemented, undertake regular site inspections.	Construction	So that activities remain compliant with legislation, planning conditions and good practice.
All infrastructure and drainage to be positioned a minimum of 50m from watercourses (where possible). Where not possible, a post micro-siting numbered plan with design and photos etc. of final locations of infrastructure will be provided).	Construction	To protect watercourses from sediment pollution and flow disturbance.
Develop a Drainage Impact Assessment (DIA) and implement a Drainage Management Plan (DMP) with detailed methods for the collection and treatment of surface water runoff	Construction, Operation and Decommissioning	To understand drainage in points, protect watercourses and install precautionary drainage. The DIA will inform the temporary and permanent drainage design and the DMP to protect watercourses.
All watercourse crossings to be WAT-SG-25 compliant, to be bottomless arch designed based on best practice guidelines and designed to accommodate the 1 in 200 year event with 20% added for climate change	Construction	To avoid effects on the flow, bottom, banks and ecology of watercourses
Prepare and implement a Water Quality Monitoring Plan (WQMP) to address surface and ground water quality and protection and include measures for different rainfall and flow conditions.	Construction, Operation and Decommissioning	To record the existing water condition, inform design requirements, and avoid deterioration to water quality during construction.
Develop the Outline Peat Management Plan (OPMP) into a detailed Peat Management Plan (PMP)	Construction and Operation	To minimise peat disturbance and maximise re use of peat soil
Achieve a peat balance between peat excavation, reinstatement and	Construction	To avoid the need for residual peat excavations to be taken off site

Mitigation Measure	Phase	Reason
reuse		
Carry out monitoring of vegetative recovery of the finished borrow pit surfaces, effectiveness of constructed berms in holding peat in place, and moisture content of the peat deposits	Construction and Operation	To measure the effectiveness of peat reuse in borrow pits
Implement precautionary appropriate mitigation and control measures for working in peat as in PLHRA Technical Appendix 8-2	Construction	To avoid peat landslides
Carry out further data collection, site visit and risk assessment of Muirpark PWS	Construction and Operation	To provide security of supply should there be interruptions to the PWS supply
Baseline monitoring of the Muirpark PWS source including pre and post construction monitoring	Construction and Operation	
Agree temporary contingency plans with owner of Muirpark agricultural pond	Construction	To provide security of registered PWS supply should there be interruptions or contamination.
Regularly monitor water flow and quality during works adjacent to the Muirpark agricultural pond	Construction	To provide security to agricultural use of the pond supply

8.2 Construction Site Licence

In accordance with Controlled Activity Regulations (CAR) prior to any construction at site a Construction Site Licence application would be made to SEPA. The Licence, which is regulated by SEPA, is used to ensure that runoff from a construction site does not cause pollution of the water environment. The Construction Site Licence requires the development of a pollution prevention measures, which once agreed with SEPA is adhered to on site.

9 Water Quality Monitoring and Contingency

Water quality monitoring during the construction phase would be undertaken for the surface water catchments that serve the site, to ensure that none of the tributaries of the main channels are carrying pollutants or suspended solids. Monitoring would be carried out at a specified frequency (depending upon the construction phase) on these catchments.

As stated previously, a WQMP will be developed for submission to the relevant statutory bodies.

The WQMP will be implemented to monitor surface water quality, fish populations and macroinvertebrate community prior to, during and post-construction. A robust baseline of water quality in surface watercourses/drainage channels downstream of construction works will be established prior to construction commencing and used as a benchmark of water quality for the construction phase monitoring.

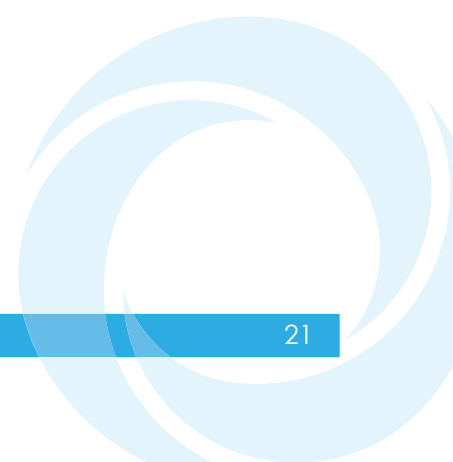
A Private Water Supply (PWS) Risk Assessment has been undertaken and has identified Muirpark PWS which is within the footprint of the Proposed Development. It is therefore recommended that further monitoring and assessment of this PWS is completed.

9.1 Incident Response

Drainage networks provide a conduit for rapid transport of silty water and potential contamination from surface spills of fuels / oils, concrete or chemicals. A pollution incident would include any discharge to the drainage network that could potentially cause environmental damage. Examples of pollution incidents include:

- Fuel drips or spills during refuelling;
- Leaking plant or equipment;
- Leaks from fuel or chemical containers;
- Contaminated water or sediment / silt entering a watercourse or drainage network;
- Windblown dust and waste;
- Excess silt deposition in drainage ditches, channels, culverts following heavy rainfall events;
- Operational failures of pumps and pipelines; and
- Failures of treatment or sediment controls.

The Environment Incident Response Strategy will provide emergency response contacts, reporting procedures, and procedures for dealing with all potential pollution incidents during the construction of the Proposed Development.



10 Construction Phase

This section describes in more detail the key components of construction and the impact they may have on the environment.

The overall site design has been developed in accordance with recommendations adopted from the EIA Report and to reflect the requirements and specifications for transporting wind turbine components to the proposed turbine locations.

10.1 Proposed Construction Compound

The works would include formation of a temporary construction compound during the construction phase of the Proposed Development, located at NGR 275412, 687327.

The construction compound would have a footprint of 100m x 80m (8,000m²), and would be likely to contain the following:

- Pre-fabricated buildings for use as site offices;
- Welfare facilities;
- Parking for construction staff and visitors;
- Fuelling point or mobile fuel bowser;
- Secure storage areas; and
- Waste storage facilities.

Where and when compound lighting is required, it would be designed to minimise light pollution to the surrounding area. All lights would face inwards.

The compound would also be used as a storage compound for various components, fuels and materials required for construction.

The compound would be built by removing topsoil and vegetation followed by land levelling and grading. The final surface might consist of granular material layers .

The stripped topsoil would be stored adjacent to the compound in a linear bund no greater than 2m in elevation.

Surface water run-off from the compound would be collected via a perimeter ditch.

10.2 Welfare Facilities and Services

Welfare facilities include portable toilets with sewage waste being tankered offsite by an appropriately licensed waste contractor. The facilities would in-built water supply for sanitation etc. The toilets would be self-contained with no connection to any supply or drainage system.

Electricity would be provided by onsite generators.

10.3 Borrow Pits

Up to four borrow pits are proposed to produce various grades of aggregate for different on site uses in order to limit the need for importing stone.

Prior to construction a site investigation (SI) would be undertaken to determine the quantity and suitability of the rock at each location. Detailed design for each borrow pit would be undertaken at this point.

A detailed drainage system would be installed based on that design to control surface water ingress and manage run off. The drainage system would include swales, infiltration and cut off trenches as well as sumps and silt traps to contain suspended solids. The drainage system would allow for any dewatering and would include a settlement pond as required.

Overlying vegetation and soils would be removed and stored in stockpiles adjacent to the working area of each borrow pit with the drainage system.

Rock extraction would be undertaken using a mixture of mechanical crushing and blasting. The borrow pits would be fenced whilst in operation to prevent public access during operation. Any plant located at the borrow pits would be equipped with spill kits.

Rock stockpiles would be stored in already-worked areas of the borrow pit(s) or, on other safe and stable designated areas.

10.4 Access Tracks

Access tracks would be constructed to a minimum running width of 5m (increasing at bends), plus shoulders of approximately 1m on either side, to accommodate the maximum transport requirements. Track shoulders may be up to a width of 2-3m to accommodate cabling along the access track alignment.

Access tracks would be formed on suitable underlying material (superficial soil or rock with sufficient bearing capacity) in the following manner:

- Stripping of surface vegetation (turves) and careful stockpiling of this material;
- Excavating the remaining superficial soil materials and stockpiling this material;
- Deposit of rock fill material directly onto the proposed access track alignment; and
- Spreading of material and compaction typically using vibratory rollers.

Maintenance of the running surface would then be undertaken by way of brushing or scraping to minimise significant deterioration. Loose track material generated during the use of access tracks would be prevented from reaching watercourses by maintaining an adequate cross fall on the tracks.

Dust suppression would be undertaken in prolonged periods of dry weather by spraying a minimal amount of water onto the running surface. The site access tracks, hardstandings and trackside drains would be inspected on a regular basis.

Where the access tracks are of a 'cut and fill design', drainage would be facilitated by installing a lateral drain upslope of the track and cross drains no less than 30m apart depending on the track alignment under the running surface.

Run-off from the access tracks and existing drainage ditches would be directed into swales that would be designed to intercept, filtrate and convey the runoff. The access tracks would be designed to have adequate cross fall to avoid ponding of rainwater.

The swales and drainage ditches would have outlets at regular intervals to reduce the volume of water collected. Check dams would be installed in order to increase the attenuation of run-off and allow sediment to drop out.

Where the presence of peat has been identified to be greater than 0.5m in depth, floating tracks are proposed to be used (where gradients allow and where lengths and cut and fill requirements do not preclude their construction). A layer of crushed stone (depth dependant on ground conditions) will be laid on geotextile/geogrid reinforcement to form the track.

Where necessary, risk from run-off would be mitigated by directing drainage to settlement ponds. Erosion processes on the track side embankments and cuttings would be mitigated by ensuring that gradients are below stability thresholds.

If any unstable ground is encountered during access track construction, the following procedure would be adopted:

- Cessation of construction activities in the affected area;
- The ground assessed by a suitably qualified engineer with involvement of the EnvCoW to determine any potential risk of landslip; and
- Ground stabilisation or relocation/realignment of the track within micro-siting allowance should a significant risk be identified.

10.5 Turbine Foundations

The turbines would be erected on reinforced concrete gravity foundations. Proposed turbine foundation locations would be inspected by the EnvCoW to ensure that all potential environmental constraints have been identified, demarcated and/or mitigated for prior to the on-set of construction in that area.

The final location of the turbines would be within approved micro-siting allowances of the consented positions in accordance with Planning Conditions.

The regularity of inspections (daily, weekly, as appropriate) during construction would be determined in advance for each particular section, based on anticipated ground conditions, known environmental sensitive receptors, prevailing weather conditions, and anticipated rate of progress.

Construction of the turbine foundations would be the responsibility of the Civil Contractor.

The limits of each of the foundation excavations would be surveyed and pegged out in advance of any proposed works, and the EnvCoW would be consulted to ensure all necessary pre-construction checks have been completed.

The typical construction activities associated with the turbine foundations are detailed as follows:

- Stripping and separate stockpiling of surface vegetation, superficial soil and rock;
- Installation of cut-off ditches at the perimeter of foundation excavations to divert the clean water away from the work areas. Silt traps and settlement lagoons would be installed should dewatering of excavations be required;
- Casting and levelling the blinding concrete.
- Installation of steel reinforcement cages. The formwork would be pre-fabricated and of sufficient quality and robustness to allow repeated use. Formwork would be cleaned after each use and re-sprayed or painted with mould oil within the blinded foundation excavation prior to being fixed in place. The placement of containers with mould oil would be strictly monitored to ensure that storage is only in banded

areas (i.e. in the construction compound) on sealed hardstanding. Spraying of mould oil and storage of such sprayed materials would be undertaken in such a way as to avoid pollution;

- The steel reinforcement would then be finished to the required design specification. The steel reinforcement would then be delivered to site and stockpiled adjacent to the respective turbine base;
- Pouring of structural concrete, as appropriate for the prevailing ground conditions to complete the turbine base. Pouring would follow best working practice procedures and fresh concrete would be protected from hot and cold weather as required; and
- Backfilling to the turbine base would proceed in layers of approximately 0.3m with compaction as necessary. Further layers of material would be laid until the original till level is attained. Soil would be replaced from the appropriate storage area.

Following the completion of all construction activities, the area surrounding the base would be reinstated.

10.6 Crane Pads

As with the construction compound, vegetation and superficial soil would be removed and stored separately adjacent to the removal area for later reinstatement.

The pad area would be levelled and graded. Filling material would then be placed and compacted in layers using compaction equipment.

Geotextile may be used depending on the suitability of the underlying strata. The final surface would be formed from selected granular material and trimmed to allow surface water run-off to drainage ditches.

10.7 Substation Compound and Control Building

10.7.1 Substation Compound

The substation compound would be formed by the excavation and stockpiling of topsoil and vegetation, followed by levelling and grading.

The main control building would be a single storey structure composed of either prefabricated panels or a brickwork finish, built on a pre-cast concrete base.

Welfare facilities including a toilet would be provided in the control building for the duration of the operation of the Proposed Development. Sewage waste would be tankered offsite by a licensed approved waste contractor.

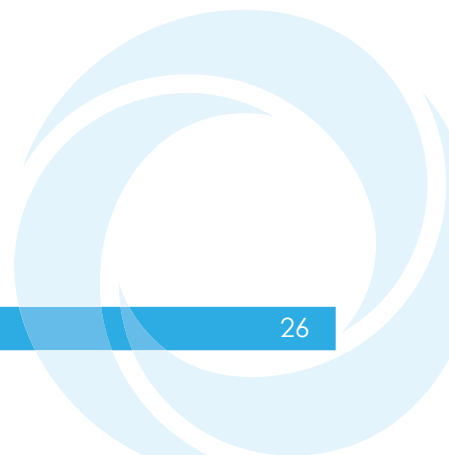
10.7.2 Cable Laying

Underground power cables would run from each turbine location to the onsite substation and would typically be buried in the track verges. in a trenching operation.

The position of trenches would be marked out and the line stripped of vegetation and superficial soils and set aside for reinstatement.

Cables would be incorporated in the access track body along elevated sections or watercourse crossings crossing points.

Following testing, the trench would be backfilled and compacted in layers with suitable material and reinstated with previously excavated superficial soils (from which stones would have been removed). Sand would be imported to site and would be placed around the cables as protection. Suitable duct marker tape would be installed in the trench prior to backfilling.



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<http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>
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- 13 GPP2 Above Ground Oil Storage Tanks: GPP 2, January 2018
- 14 PPG3 Use and design of oil separators in surface water drainage systems: PPG 3, April 2006
- 15 GPP4 Treatment and disposal of wastewater where there is no connection to the public sewer: GPP 4, November 2017
- 16 GPP5 Works and maintenance in or near water: GPP 5, January 2017
- 17 PPG6 Working at Construction and Demolition Sites: PPG6, 2012

Drummarnock Wind Farm

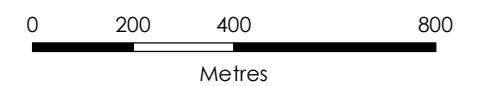
wind2

Figure 15-1-1
Site Layout

Key

- Site boundary
 - ▲ Proposed turbine
 - ⊗ Watercourse crossing - new
- Infrastructure**
- Crane hardstanding
 - Auxiliary crane hardstanding
 - Blade storage area
 - Nacelle storage area
 - Tower storage area
 - Boom assembly area
 - Turning head
 - Borrow pit
 - Substation
 - Construction compound
 - Onsite access track - cut
 - Onsite access track - floating

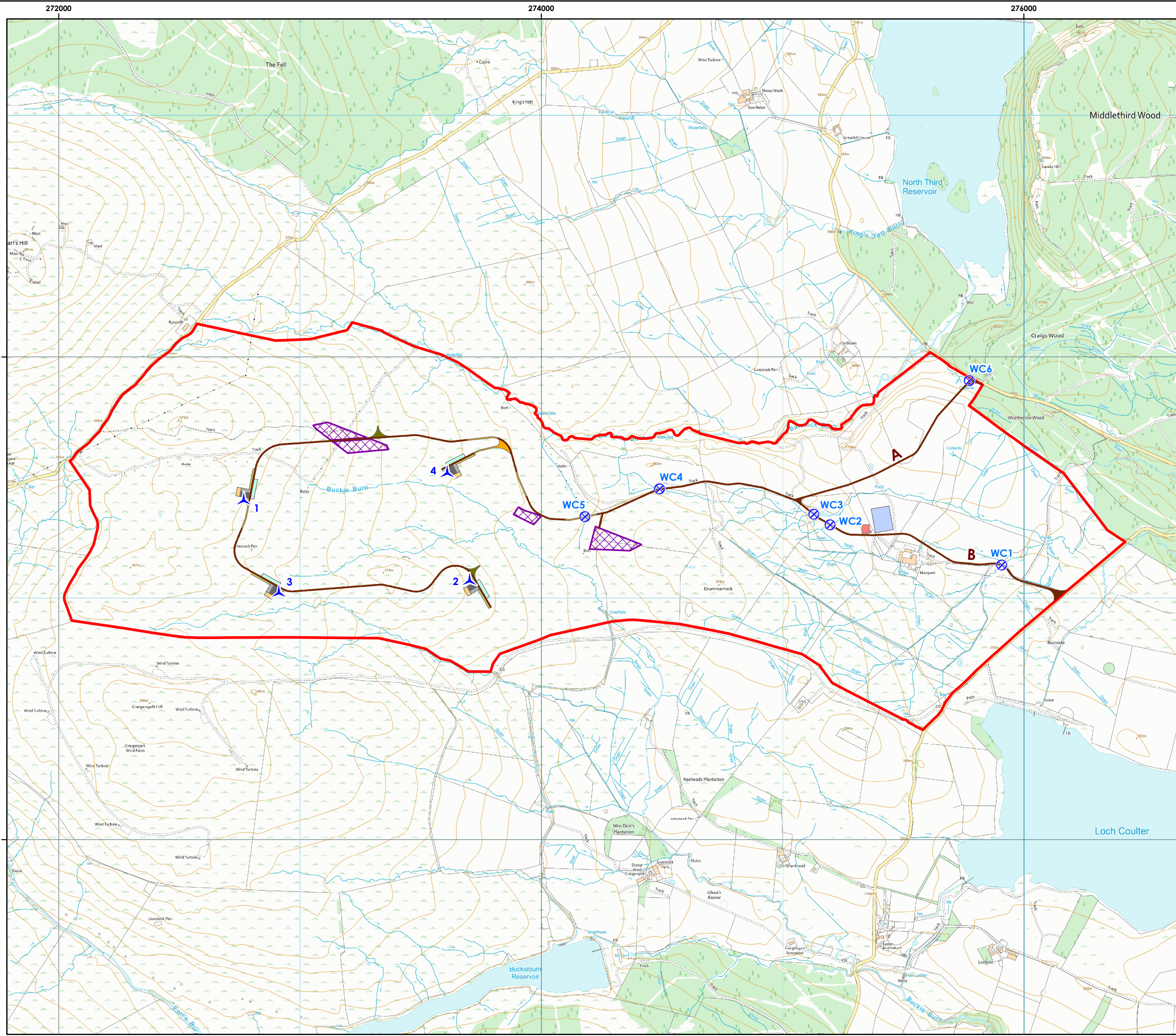
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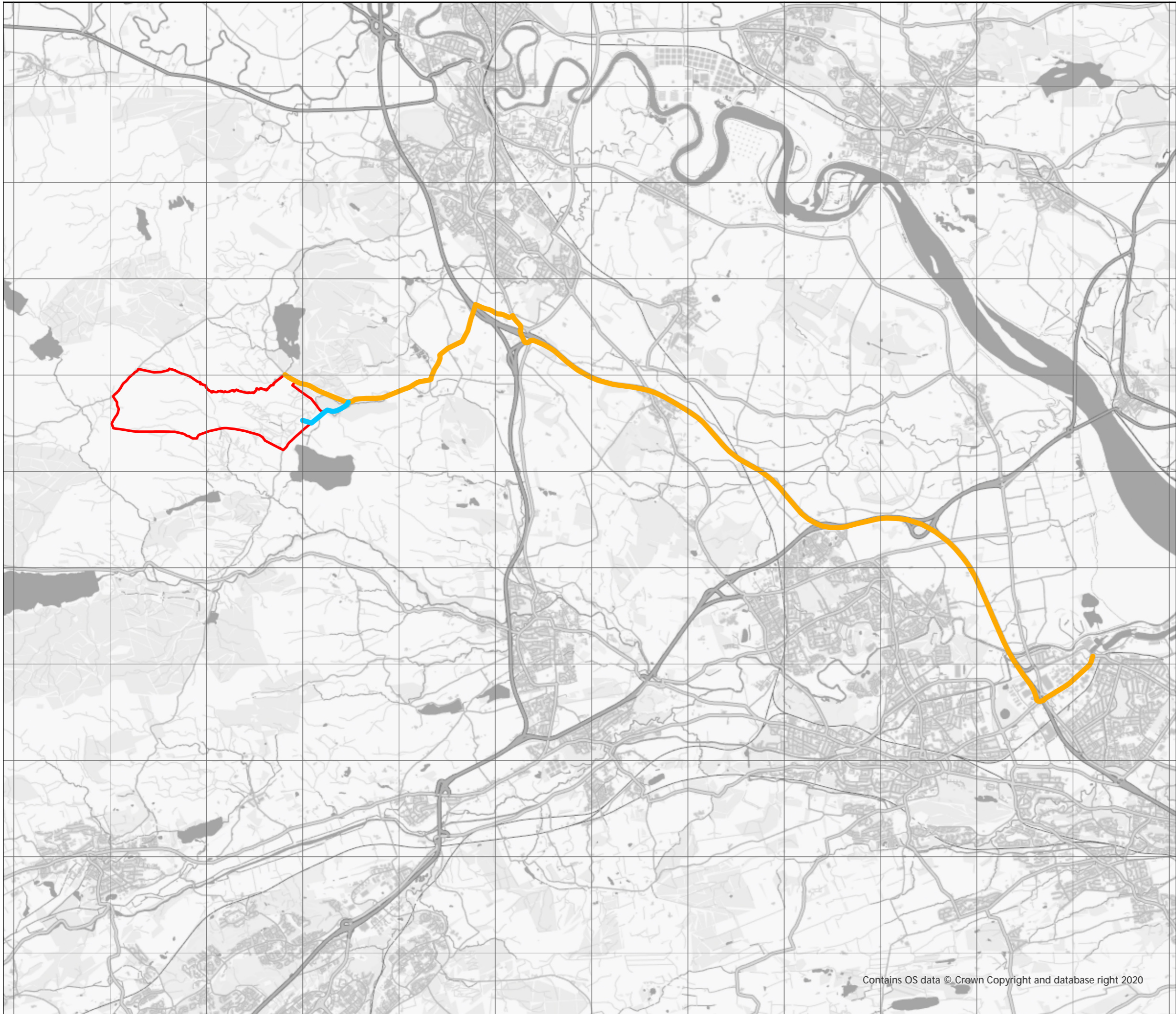


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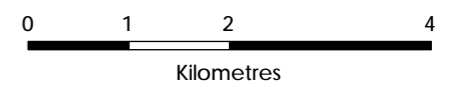
Drummarnock Wind Farm



Figure 15-1-2
Abnormal Loads Route

Key

- Site Boundary
- Abnormal Loads Route**
- Route 1
- Route 2



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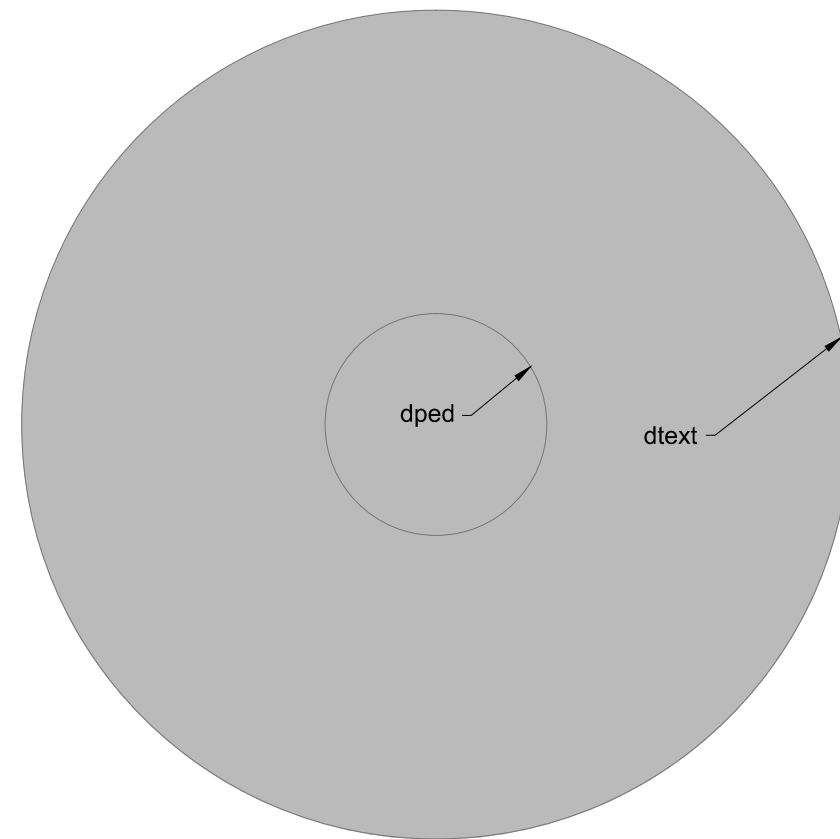


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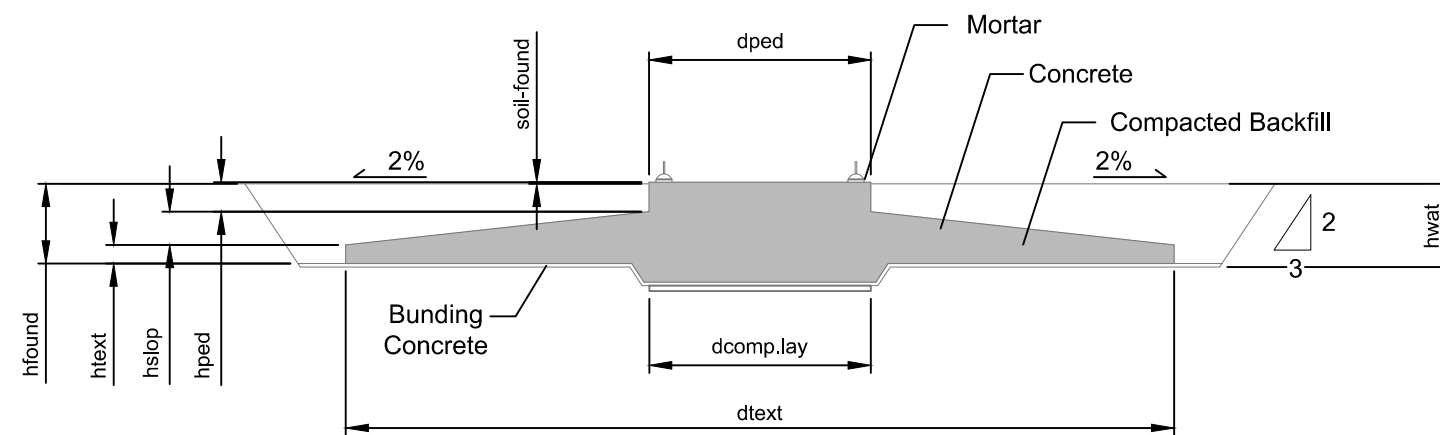
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Figure 15-1-3
Indicative Turbine Foundation

PLAN

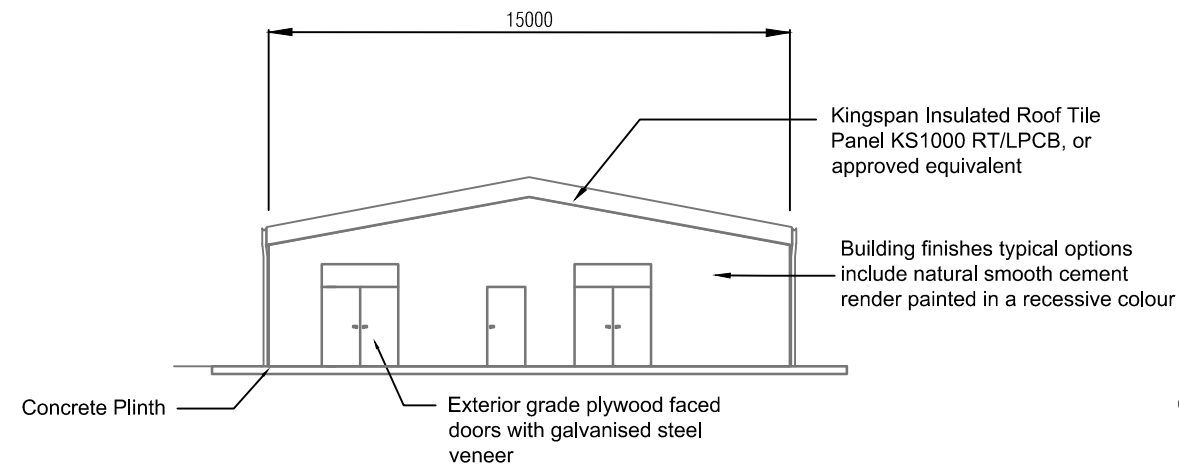


SECTION

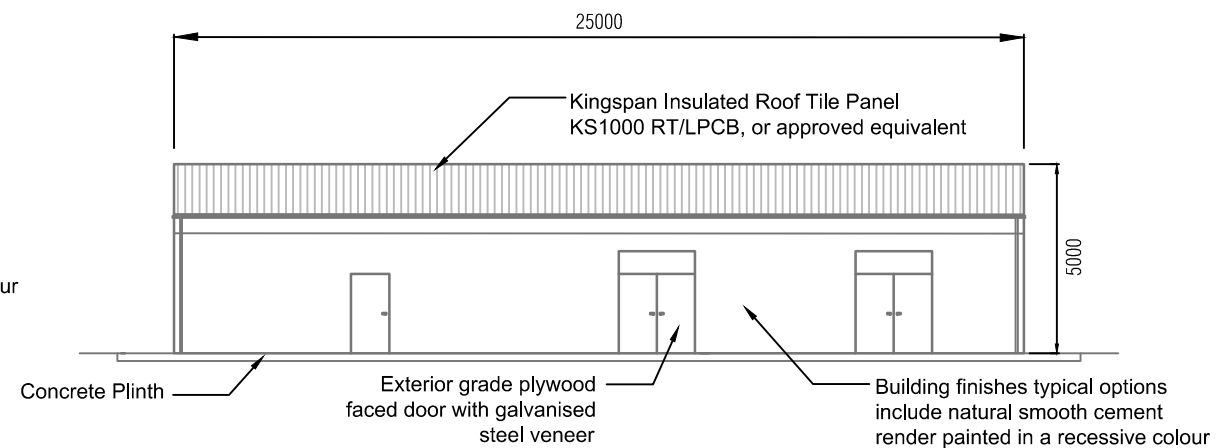


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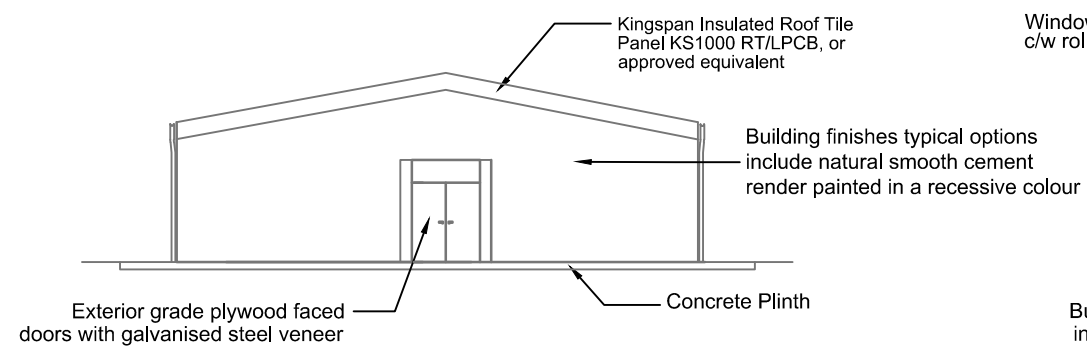
Figure 15-1-4
Indicative Control Building



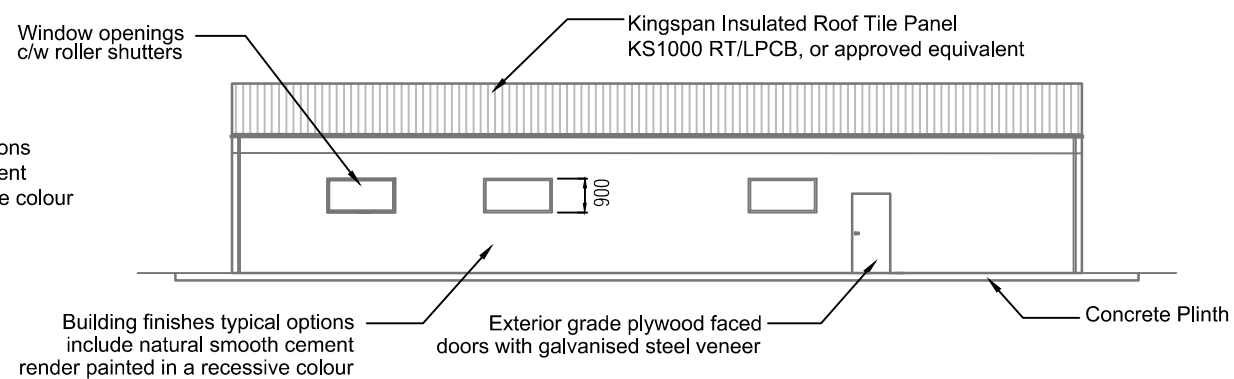
CONTROL BUILDING ELEVATION



CONTROL BUILDING ELEVATION



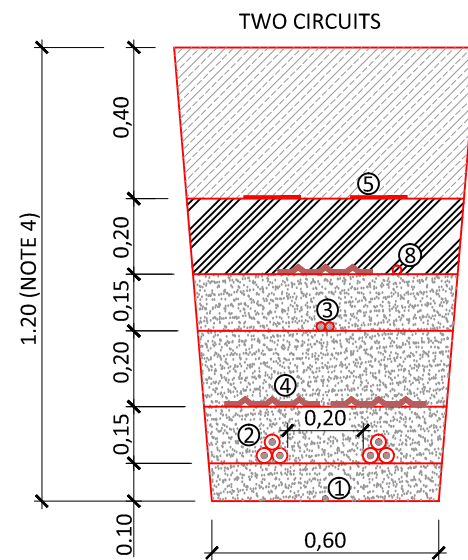
CONTROL BUILDING ELEVATION



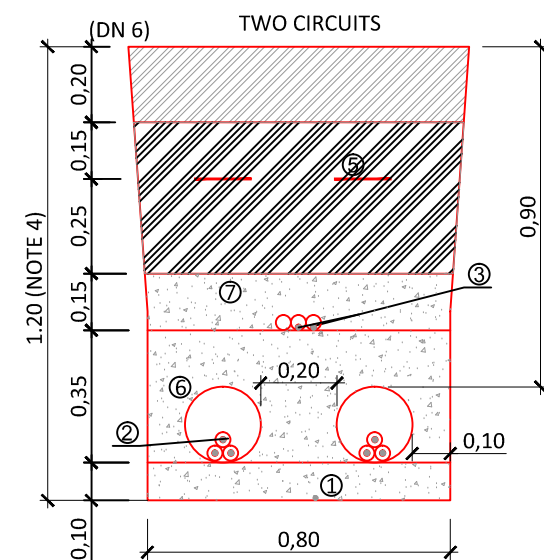
CONTROL BUILDING ELEVATION

Figure 15-1-5
Indicative Cable Trench

TYPICAL TRENCH CROSS SECTION



TRACK CROSSING TRENCH CROSS SECTION



LEGEND	
	Crushed stone
	Washed river sand (Protective bedding soil)
	Selected material, manually compacted (Backfill material)
	Selected material, mechanically compacted (Backfill material)
	Concrete C15 HM-20
①	Earth wire
②	MV Power Cables
③	Communication cable F.O.
④	Prefabricated tiles for mechanical protection and signaling
⑤	Warning tape 200mm (Yellow)
⑥	HDPE PIPE Ø200mm
⑦	HDPE pipe Ø40mm. One piece of pipe for the crossing, no joints.
⑧	RFID transponder