



**Highfield**  
energy

24 FEB 2020

LTR DATED \_\_\_\_\_ FROM \_\_\_\_\_

LDG- \_\_\_\_\_

ASP- \_\_\_\_\_

ASHFORD WIND FARM  
CONSTRUCTION MANAGEMENT PLAN  
REV B

OCTOBER 2017

AN BORD PLEANÁLA

30 JAN 2020

LTR DATED \_\_\_\_\_

LDG- \_\_\_\_\_

ASP- \_\_\_\_\_

Handwritten marks and scribbles in the top right corner.

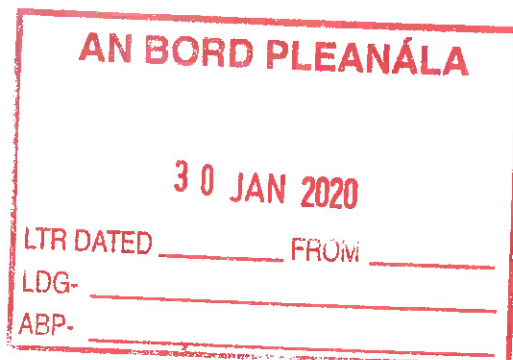
AMERICAN COLLEGE  
1911-12  
1911-12

# ASHFORD WIND FARM

## Version Control

Document Name: Ashford Wind Farm – Construction Management Plan

Document Version	Date	Comment	Author	Reviewer	Approver
A	25/09/2017	Initial Draft	JOC	JB	JB
B	08/10/2017	Planning Submission	JOC	JB	JB





# ASHFORD WIND FARM

## Contents

1. Introduction	5
1.1 Description of the project	5
1.2 Proposal	5
2. Project Implementation	7
2.1 Construction Contracts	7
2.1.1 Civil Balance of Plant	7
2.1.2 Electrical Balance of Plant	8
2.1.3 Turbine Supply, Installation and Commissioning	8
2.1.4 ESNB Grid Connection Agreement	8
2.2 Site Management	8
2.2.1 Site Management Team	8
2.2.2 Site Meetings	8
2.2.3 Contractor Reporting	9
2.2.4 Working Hours	9
3. Site Design	10
3.1 Drainage	10
3.2 Site Tracks	10
3.3 Hardstands and Assembly Areas	11
3.4 Substation	11
3.5 Turbine Foundations	11
4. Construction	12
4.1 Temporary Site Compound	12
4.1.1 Storage proposals for hazardous materials, hydrocarbons & other construction materials	12
4.1.2 Control measures for cement leachate	13
4.1.3 Material deliveries	13
4.2 Drainage	13
4.3 Excavations and Material Storage	14
4.3.1 Temporary Material Storage	14
4.3.2 Total Surplus Material Generated	15



# ASHFORD WIND FARM

4.4	Borrow Pit .....	15
4.5	Site Tracks.....	15
4.6	Hardstands .....	15
4.7	Foundations.....	16
4.7.1	Construction Sequence.....	16
4.7.2	Concrete Wash-out.....	16
4.7.3	Turbine Base Dewatering .....	17
4.8	Substation .....	17
4.8.1	External Finish.....	17
4.8.2	Compound Fence .....	17
4.9	Grid Connection Works.....	17
4.10	Electrical Works.....	18
4.11	Reinstatement.....	18
4.11.1	General.....	18
4.11.2	Temporary Site Compound .....	18
4.11.3	Site Tracks and Hardstands.....	18
4.11.4	Borrow Pit.....	18
5.	Installation .....	19
5.1	Turbine delivery and installation.....	19
5.2	Turbine Erection.....	19
5.3	Turbine Commissioning .....	20
5.4	Electrical Substation Energisation .....	20
6.	Operation & Maintenance .....	21
7.	APPENDICES .....	22
7.1	Appendix 1 – Construction Drainage Report .....	23
7.2	Appendix 2 – Site Layout .....	25
7.3	Appendix 3 – Typical Site Track.....	27
7.4	Appendix 4 – Typical CRANE Hardstand .....	29
7.5	Appendix 5 – Turbine Delivery Route .....	31

AN BORD PLEANÁLA  
24 FEB 2020  
LTR DATED \_\_\_\_\_ FROM \_\_\_\_\_  
LDG- \_\_\_\_\_  
ABP- \_\_\_\_\_

**AN BORD PLEANÁLA**  
  
**30 JAN 2020**  
LTR DATED \_\_\_\_\_ FROM \_\_\_\_\_  
LDG- \_\_\_\_\_  
ABP- \_\_\_\_\_





# ASHFORD WIND FARM

## 1. Introduction

### 1.1 DESCRIPTION OF THE PROJECT

Ashford wind farm is located approximately 1.5 km south of Ashford, Co. Limerick, Mauricetown Wind Farm Ltd has obtained planning consent to construct a wind farm consisting of up to six number wind turbine generators with a blade tip height of up to 132 metres (hub height of up to 85 metres and rotor diameter of up to 93 metres) and crane hardstandings for each turbine, the construction of a meteorological mast, electrical substation, underground electrical cabling, access tracks, borrow pit, temporary construction compound, retention and completion of access tracks, and ancillary services. The site is approximately 104 hectares in extent and is located on a moderate to steep sloping site at an altitude ranging from 140 m to 350 m asl.

The site, has obtained planning permission from An Bord Pleanála

- An Bord Pleanála ref PL13.240910
- Limerick County Council ref 12/379

The principal land use in the vicinity is agriculture (cattle grazing) with some commercial forestry. There are three isolated areas within the proposed development site that have been designated as part of the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (NPWS site code: 4161). Lands to the West and South of the proposed development site are continuous with the main part of the SPA and comprise conifer plantation, rough pasture and heath / bog.

### 1.2 PROPOSAL

The following Construction Management Plan (CMP) outlines the construction practices and environmental management measures which are to be implemented during the construction phase of the project. The aim of this CMP is to ensure that the project is constructed in accordance with best practice, with the minimum impact on the surrounding environment. This CMP shall be incorporated into the various construction, installation, commissioning, maintenance and operations contracts for the consented development. This CMP also addresses specific planning conditions imposed on the development under planning consent ref 12/379 (PL13.240910).

The mitigation measures identified in the Environmental Impact Statement (EIS), subsequent revisions submitted to the planning authority and An Bord Pleanála, and other particulars submitted to the planning authority shall be implemented in full by all contractors throughout the entire development.

In compiling this CMP, the recommendations of the project technical, environmental and ecological consultants in conjunction with the planning conditions and previous correspondence with Limerick County Council have been considered. The aim of this CMP is to ensure that all activities on site are carried out in accordance with industry best practice to minimise the impact of the development on the receiving environment.

**AN BORD PLEANÁLA**

**30 JAN 2020**

LTR DATED \_\_\_\_\_ FROM \_\_\_\_\_

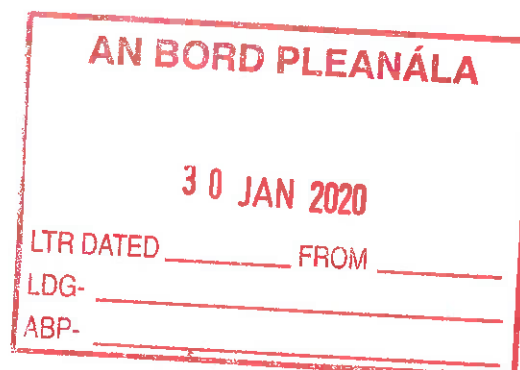
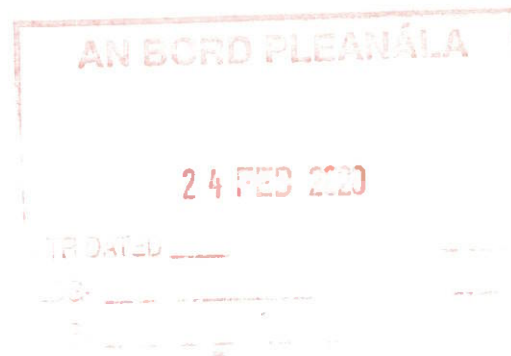
LDG- \_\_\_\_\_

App. \_\_\_\_\_



# ASHFORD WIND FARM

All work practices deployed and method statements prepared during the works shall take account of the details and mitigation measures outlined in this CMP. This CMP shall be updated in conjunction with the various contractors, incorporating any updated mitigation measures approved during the development.





## 2. Project Implementation

### 2.1 CONSTRUCTION CONTRACTS

This CMP aims to organise the project into distinctive elements to allow various contributors and contractors to identify requirements and restrictions specific to the scope of work being undertaken at any given time.

The project will consist of the following construction related Contracts:

- Civil Balance of Plant
- Electrical Balance of Plant
- Turbine Supply, Installation and Commissioning
- ESBN Grid Connection Agreement

Each contract shall be assigned to a competent contractor following a suitable procurement process. A copy of this CMP shall be provided to all parties during the tender process and shall be included as a schedule to each Contract, therefore each contractor shall be contractually obliged to comply with the contents of this CMP.

The contractor shall also undertake to update this CMP as the works progress as the final detailed designs are agreed and implemented.

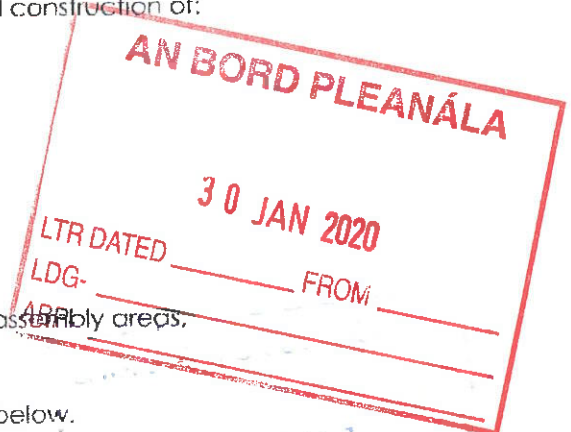
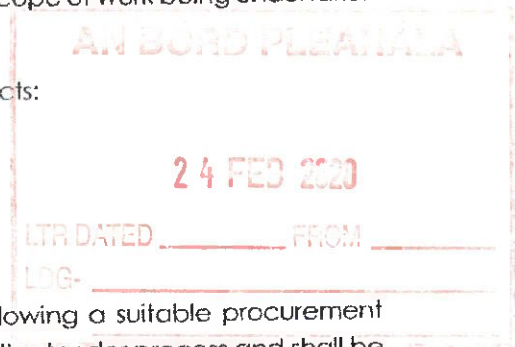
The project developer shall appoint a dedicated Construction Project Manager (OE) to ensure that all control measures outlined in the EIS and this CMP are being adhered to by the various contractors throughout development site and at the off-site mitigation habitat lands.

#### 2.1.1 Civil Balance of Plant

The Civil Balance of Plant Contractor (CBOP) will be appointed following a suitable procurement process. The CBOP will be responsible for the design, construction and certification of the site civil infrastructure. This will include but is not limited to the design and construction of:

- Site drainage and environmental control measures;
- Construction compound;
- Upgrade of existing site tracks;
- New site tracks;
- Crane hardstandings;
- On site cable ducting;
- Site access route upgrade works;
- Crane hardstanding, turbine component laydown and assembly areas;
- Site reinstatement;

A detailed breakdown of these works is contained in Section 3 below.





# ASHFORD WIND FARM

## 2.1.2 Electrical Balance of Plant

The Electrical Balance of Plant Contractor (EBOP) will be responsible for the design and construction of the 38kV substation building, equipment compound and subsequent electrical fit out. This will include the installation testing and commissioning of the wind farm switch gear, equipment support structures and plinths in the compound, substation LV fit out, communications room fit out and site cabling – which will be contained in the cable ducts installed by the CBOP.

## 2.1.3 Turbine Supply, Installation and Commissioning

The Turbine Supplier will be responsible for the delivery, installation, commissioning and testing of the wind turbine generators, this will also include the design and construction of the reinforced concrete bases. The required infrastructure will be in place prior to the turbine suppliers mobilisation to site. The CBOP will construct the crane hardstands, assembly areas and access road works in accordance with the turbine supplier's requirements.

## 2.1.4 ESNB Grid Connection Agreement

The development has secured a grid connection from ESNB to connect the wind farm development to the national grid. The connection point for the wind farm is at the ESNB room in the on-site 38kV substation. All cables associated with the site will be buried underground.

## 2.2 SITE MANAGEMENT

### 2.2.1 Site Management Team

The developer will appoint a Construction Project Manager (OE), Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) to coordinate, supervise and inspect the works through the entire process.

All personnel on site will adhere to any instruction given by the PSCS. Failure to comply with an instruction will result in immediate dismissal from site.

Each lead contractor must nominate a suitably experienced, competent project manager, environmental manager and safety manager for the duration of their work on site. The appointed persons will attend all site meetings while the contractor is active on the site.

### 2.2.2 Site Meetings

A kick off meeting will be held with all appointees prior to the commencement of works on site. This meeting will take place off site. Meetings will be held on site on a weekly basis throughout the project construction phase, these will be coordinated by the PSCS and will be held in the meeting room at the site construction compound. Toolbox talks on best practice for the various ongoing elements of work will be held on a regular basis, at the commencement of each new work element and at the discretion of the PSCS.

AN BORD PLEANÁLA

30 JAN 2020

LTR-DATED \_\_\_\_\_ FROM \_\_\_\_\_

17003 Construction Management Plan





# ASHFORD WIND FARM

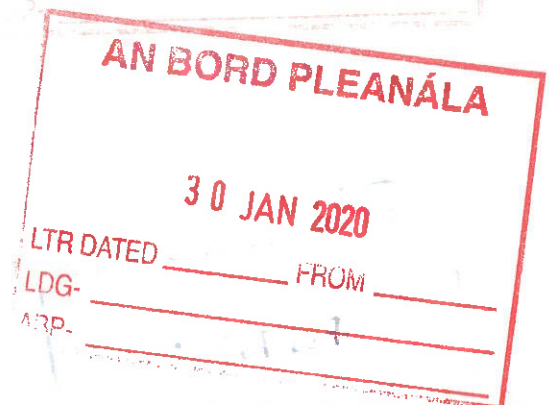
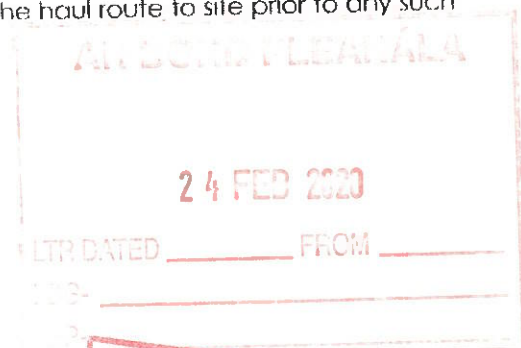
## 2.2.3 Contractor Reporting

Each Contractor will be responsible for submitting a weekly report to the Site Management Team prior to the weekly meeting. The Contractors project manager shall also submit a monthly report on the last Thursday of each month. This report shall outline all tasks completed during the month, any incidents or observations from health, safety or environmental point of view and include a look ahead for all activities programmed to take place the following month highlighting all site activity and work areas.

## 2.2.4 Working Hours

As stated in the EIS (Section 2.12), heavy goods vehicle access and noisy construction activities on the site shall typically be from 08:00 and 20:00 hours Monday to Friday and 08:00 and 16:00 hours on Saturdays throughout the works unless otherwise agreed with Limerick County Council. The turbine components to be transported to site will be subject to an abnormal load permit and the conditions stated therein. Abnormal load movements of wind turbines to similar developments are generally carried out at night time, therefore to comply with the abnormal load permit deliveries may be required outside of the hours stated above.

The design for the foundation reinforced concrete bases does not allow for a cold joint to be formed, therefore a single pour is required – this is currently best practice for wind turbine base construction. It is likely that some deliveries may be required to occur outside the hours stated above, however such concrete deliveries will be limited to six occasions (once for each turbine base) during construction – This is normal construction practice for a development of this kind. The developer and site manager will liaise with residents along the haul route to site prior to any such movements if required.





# ASHFORD WIND FARM

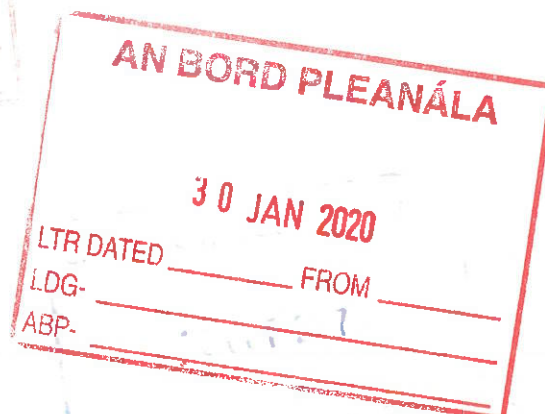
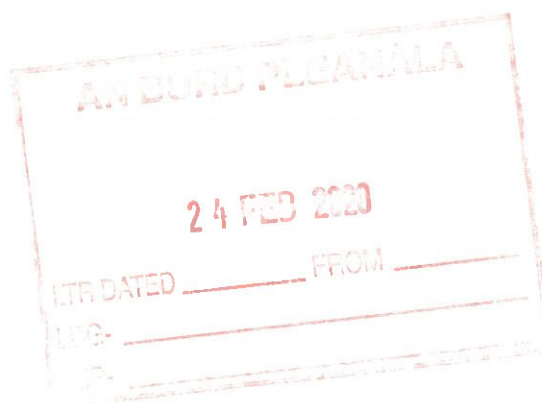
## 2.2.3 Contractor Reporting

Each Contractor will be responsible for submitting a weekly report to the Site Management Team prior to the weekly meeting. The Contractors project manager shall also submit a monthly report on the last Thursday of each month. This report shall outline all tasks completed during the month, any incidents or observations from health, safety or environmental point of view and include a look ahead for all activities programmed to take place the following month highlighting all site activity and work areas.

## 2.2.4 Working Hours

As stated in the EIS (Section 2.12), heavy goods vehicle access and noisy construction activities on the site shall typically be from 08:00 and 20:00 hours Monday to Friday and 08:00 and 16:00 hours on Saturdays throughout the works unless otherwise agreed with Limerick County Council. The turbine components to be transported to site will be subject to an abnormal load permit and the conditions stated therein. Abnormal load movements of wind turbines to similar developments are generally carried out at night time, therefore to comply with the abnormal load permit deliveries may be required outside of the hours stated above.

The design for the foundation reinforced concrete bases does not allow for a cold joint to be formed, therefore a single pour is required – this is currently best practice for wind turbine base construction. It is likely that some deliveries may be required to occur outside the hours stated above, however such concrete deliveries will be limited to six occasions (once for each turbine base) during construction – This is normal construction practice for a development of this kind. The developer and site manager will liaise with residents along the haul route to site prior to any such movements if required.





# ASHFORD WIND FARM

## 3. Site Design

Preliminary designs were included in the planning application for the development. Each Contractor will be required to produce a detailed construction design in line with the preliminary designs and criteria set out in the EIS, this CMP and the separately attached Construction Drainage Report. The PSDP will coordinate all design for the project, the OE is to be afforded a reasonable opportunity to comment on the designs prior to commencement.

### 3.1 DRAINAGE

As with any development of this type, the aim of all drainage works will be to slow the passage of water to minimise the volume of suspended solids discharged to the existing drainage network and wider environment. The design will also seek to maintain the existing drainage regime in so far as is possible. The Construction Stage Drainage Report (Appendix 1) clearly outlines the drainage requirements for the development and these are to be incorporated into all designs by the appointed Designers carrying out detailed designs for the various infrastructural elements.

### 3.2 SITE TRACKS

From the site entrance, existing access tracks will be upgraded and new tracks created as necessary to reach the wind turbines and ancillary infrastructure. This will include a temporary access track to access the borrow pit area. The tracks will be used by construction vehicles and will be retained throughout the lifetime of the wind farm for use by maintenance vehicles and by the landowners. The width of the access track will be approximately 5m, although the track may be wider for short sections, such as at passing places and bends.

The internal track design has been developed to use existing access tracks where possible, new access tracks will be required to reach all turbine locations. The new access tracks are designed to run alongside hedgerows where possible and to minimise the length of hedgerow that will be impacted while keeping the track slopes within turbine supplier specifications. The tracks will be constructed of crushed rock from stone excavated on site. If the stone from the borrow pit is found to be unsuitable, material will be imported that is inert or of similar geo chemistry to the local geology. Excavated tracks will be adopted throughout the site. This type of construction involves excavation and removal of the surface material and other unsuitable material to a depth of about 300mm and placement of crushed rock. The detailed design for track construction type will be carried out by the CBOPs appointed Designer and shall take account of the loadings provided by the turbine manufacturer and the material properties of the stone won on site. The drainage network along the roads shall comply with the criteria set out in Appendix 1. The layout and typical construction details of the site roads are detailed in Appendix 2 and 3, which are the details previously provided with the Environmental Impact Statement submitted with the planning application.

AN BORD PLEANÁLA

21 FEB 2020

FROM



# ASHFORD WIND FARM

Internal access tracks will be constructed to each turbine from the site entrance. Approximately 3,300 metres of access track (consisting of 950m of upgrading of existing track and 2,350m of new track sections) will be needed to reach all infrastructure. Where possible the access track and hardstandings are adjacent to minimise impacts. Moulding alongside the access tracks (or berms) will be included, on sections of track where appropriate, to reduce landscape and visual impact.

### 3.3 HARDSTANDS AND ASSEMBLY AREAS

An area of crane hard-standing of approximately 45m x 22m will be constructed adjacent to each turbine, depending on the final turbine choice for turbine erection, maintenance and decommissioning. All crane hardstands shall be designed by the CBOP's appointed Designer taking account of the loadings provided by the turbine manufacturer and will consist of a compacted stone structure. The dimensions of the hardstands shall meet requirements set out in the turbines suppliers specification and the material properties of the stone won from site.

The drainage network along the crane hardstands shall comply with the criteria set out in Appendix 1. The layout and typical construction details of the crane hardstands are detailed in Appendix 4. The soil management practices will be in place to minimise the risk of soil erosion and silt discharge - details of mitigation and control measures to be used are included in Appendix 1.

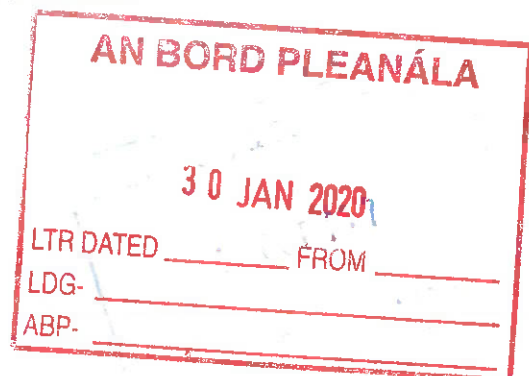
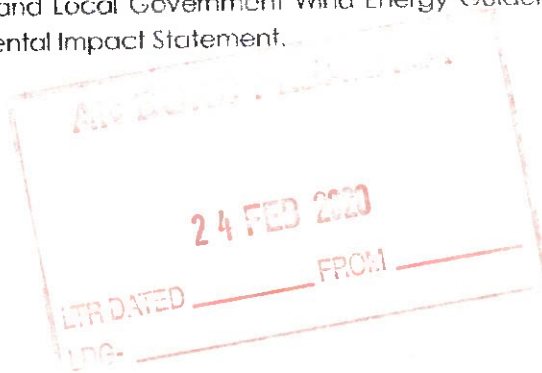
### 3.4 SUBSTATION

The EBOP's appointed Designer shall be responsible for the design of the on-site 38kV substation and compound. All designs shall adhere to the requirements set out in the EIS, this CMP, the Building Regulations and ESB Networks functional specifications.

### 3.5 TURBINE FOUNDATIONS

The Turbine Supplier shall be responsible for the design of the wind turbine foundations. An experienced geotechnical engineer shall be responsible for the formation and engineering fill design. The geotechnical engineer is to be retained throughout the construction phase including the approval of formation level and throughout the construction of the turbine foundations.

It is noted that micro-siting for suitable ground conditions as per the Department of Environment, Heritage and Local Government Wind Energy Guidelines is included for in section 2.3.3 of the Environmental Impact Statement.







## 4. Construction

24 FEB 2020

### 4.1 TEMPORARY SITE COMPOUND

LTR DATED \_\_\_\_\_ FROM \_\_\_\_\_

On mobilisation the CBOP shall establish the temporary construction compound which shall provide for offices and welfare facilities for all workers on site. The site compound will consist of a hardcore area. The site compound is located adjacent to the site entrance and can be accessed via the existing site tracks. The CBOP will remove the topsoil which will be placed in a temporary stockpile adjacent to the compound. This topsoil will be used to reinstate the compound area after completion of construction.

The compound will be marked out and fenced to prevent damage to adjacent land. Prior to the establishment of the compound, an intercept drain with associated silt traps will be constructed at the compound location in accordance with Appendix 1. Topsoil will then be stripped and geotextile material may be laid if required, then a working surface constructed from crushed stone, to approximately 300mm in depth. The topsoil will be stored adjacent to the site for subsequent use in reinstatement.

The major components of the turbines, electrical cabling and substation building will be delivered directly to site. A small temporary cabin at the site entrance will be installed for the construction phase to regulate site access for security and health & safety reasons. The construction compound will be used for parking, unloading delivery vehicles and storing materials and equipment. In accordance with the planning conditions, toilets for construction staff will be of sealed drainage types (chemical toilets) to ensure that no discharges will be made into the local environment.

The compound will be reinstated at the end of the construction period. Reinstatement will involve removing the imported material and underlying geotextile, if used. The exposed substrate will be removed and then the topsoil layer and turves replaced respectively.

The construction compound will be secured to prevent theft or vandalism.

#### 4.1.1 Storage proposals for hazardous materials, hydrocarbons & other construction materials

In accordance with the planning conditions and the Environmental Impact Statement, deleterious materials will require careful management within the construction compound and during the construction phase of the project. Measures are outlined in the Construction Drainage Report attached, and control measures are also to include that:

- Refuelling shall be completed off site for regular, road-going vehicles and will reduce the volume of fuel to be stored on site.
- All vehicles and plant will be regularly inspected for fuel, oil and hydraulic fluid leaks. Suitable equipment to deal with spills will be maintained on-site.
- An incident management plan within the contractor's method statement must include an approved, certified clean-up consultancy, nominated by the contractor and available on 24 hour notice to commence a clean-up in the event of a hydrocarbon spillage from plant or vehicles; and,

AN BORD PLEANALA

30 JAN 2020



# ASHFORD WIND FARM

- The use of a 4x4 jeep which will transport a double skinned bowser to refuel onsite plant. The jeep will also carry spill kits.
- Access to oil stores within the construction compound will be controlled using a locked steel container. The site compound will be surrounded by a suitable security fence and locked when there are no site personnel present.
- Leakages of oil from oil stores will be prevented by storing these oils in bunded tanks which have a capacity of 110% of the total volume of the stored oil. Ancillary equipment such as hoses and pipes will be contained within the bunded storage container. Taps, nozzles or valves will be fitted with a lock system.
- The volume of leakages will be prevented through monitoring oil storage tanks/drums for leaks and signs of damage. This will be carried out daily by the Environmental Manager.
- The on site transformer within the substation compound shall also be bunded to a minimum of 110% of its hydrocarbon capacity to contain any spills that would occur in the event of plant failure.

## 4.1.2 Control measures for cement leachate

Measures for control of cement leachate are outlined below in section 4.7.

## 4.1.3 Material deliveries

In line with responses to the planning conditions, all material deliveries are to follow a construction access route from the R515 to site, via the local road running from Coolnaglagh to the site entrance at Glenduff.

## 4.2 DRAINAGE

There are two existing surface drainage channels located within the site. These channels flow southeast, crossing an existing access track south of the proposed T3 location. In accordance with planning condition 5 (1) no in stream works at these locations are permitted within the hen-harrier breeding season or the fish spawning season. Any programming of in-stream works or works immediately adjacent to these areas impacting on watercourses is to take account of this timing restriction.

These streams flow south east before joining the Killagh River just outside the southeast corner of the site. The Killagh River drains the southern half of the site including the locations around turbines T1, T2, and T3. The northern half of the site including the locations of turbines T4, T5 and T6 is drained by the Bunoke River. Both Killagh and Bunoke Rivers flow northeast to join the River Deel which reaches the sea at the Shannon Estuary.

Prior to any ground excavation works for the construction of the site access tracks, hardstands and opening of the borrow pit, the drainage design and mitigation measures set out in the Construction Drainage Report Appendix 1 shall be implemented.

AN BORD PLEANALA  
24 FEB 2020  
LTR DATED \_\_\_\_\_ FROM \_\_\_\_\_  
LOG- \_\_\_\_\_

AN BORD PLEANALA  
30 JAN 2020  
LTR DATED \_\_\_\_\_ FROM \_\_\_\_\_  
LOG- \_\_\_\_\_



# ASHFORD WIND FARM

## 4.3 EXCAVATIONS AND MATERIAL STORAGE

Excavation works will be required for the substation building site tracks, turbine foundations and crane hardstands. Exact methodologies shall be detailed in the CBOP detailed design and method statement, but at all times shall adhere to the commitments made within the Construction Drainage Report, including that;

Where practicable the vegetated top soil shall be stripped over the area of the excavation and stored growing side up for reuse, the vegetated soil will be excavated and stored to one side for reuse during the landscaping and site reinstatement phase. Where excavated, subsoil shall be stored separately to topsoil.

As per the Environmental Impact Statement, indicative ground conditions at the site are quite favourable. The road and hardstand sub base will be laid directly upon competent subsoil. It is anticipated that the turbine foundations will have a shallow formation level. Further excavation will be required for turbine bases however it is anticipated that this material will be used as structural backfill above the turbine base.

As per the planning conditions, soil, rock and sand excavated during construction shall not be left stockpiled on site following completion of works. It is not anticipated that there will be any excess soil stockpiled on site, or requiring disposal off site. In the unlikely event that excess soil is excavated, which cannot be reused on site, then such soil will be disposed of /re-used in an environmentally sensitive manner in consultation with Limerick County Council.

All excavation works will be monitored by a suitably qualified archaeologist. All contractors shall comply with the instructions issued by the project archaeologist.

### 4.3.1 Temporary Material Storage

Surplus material generated on site shall be required to be stored temporarily at various stages during the construction phase. As most of the surplus will result from construction work at the turbine foundations and hardstands, temporary storage areas can be used near the turbine foundations. Outline locations of the temporary storage areas are identified in Appendix 1, together with environmental protection measures located downslope of these temporary storage areas. These temporary material stockpiles shall also be suitably battered in line with best practice to avoid any risk of slippage.

Top soil shall be stored separately (within the designated storage area). Temporary shallow drains with suitable sediment traps to tie in with the permanent drainage system shall be constructed around the areas to remove the potential for increased sediment run off from these areas as detailed.

Excessive spoil movements will be minimised by disposing of the material within or immediately adjacent to the construction footprint from where it was excavated.

Once construction is complete the temporary storage sites will be reinstated and re-vegetated to prevailing condition.

AN BORD PLEANALA



# ASHFORD WIND FARM

A silt fence shall be installed downslope from the temporary storage area to capture all silt discharge – see Appendix 1

No material will be left stockpiled on site following completion of construction works.

## 4.3.2 Total Surplus Material Generated

All excavated material will be placed at temporary material storage locations. This material will be used to back fill around the turbine foundations and to provide engineering ballast above the turbine in line with the design requirements. Suitable surplus material will be used to landscape and grade the roads & hardstands into the existing profile of the land and to assist in screening areas such as the substation building, roadways and crane hard standings. Topsoil stored separately shall be re-used on top of the reinstated areas throughout the site to ensure that revegetation matches the existing flora and fauna on site.

## 4.4 BORROW PIT

An existing borrow pit is located north of the access track connecting the proposed turbines 1 and 4. It is proposed to obtain rock from this borrow pit for construction of the wind farm. The rock will be extracted using a suitably sized excavator. Excavated material will be crushed if required and graded in accordance with the CBOP detailed design for the access tracks and crane hardstands. The material properties will be tested and used in the design calculations for the site tracks and crane hardstands.

All excavated top soil at the borrow pit will be stored carefully to maintain the seed bank and vegetation for re-use during the borrow pit reinstatement. Following completion of construction phase the borrow pit will be graded and reinstated across the surface in accordance with the planning conditions.

## 4.5 SITE TRACKS

Following implementation of the site drainage and environmental protection measures, the site tracks are to be constructed in accordance with the design standards outlined above.

The access tracks shall be retained throughout the operational life of the wind energy scheme for the maintenance and decommissioning of the wind farm.

## 4.6 HARDSTANDS

Following implementation of the site drainage & environmental protection measures and construction of the site tracks the crane hardstands are to be constructed in accordance with the design standards outlined above.

The crane hardstands shall be retained throughout the operational life of the wind energy scheme for the maintenance and decommissioning of the wind farm.

AN BORD PLEANALA

3-0 JAN 2020

17003 Construction Management Plan

24 FEB 2020

LTR DATED \_\_\_\_\_ FROM \_\_\_\_\_

DG- \_\_\_\_\_

AN BORD PLEANALA





# ASHFORD WIND FARM

## 4.7 FOUNDATIONS

Reinforced concrete bases in accordance with the Turbine Suppliers designs shall be used to securely locate the wind turbines. Due to the nature of the site it is likely that shallow gravity foundations will be used at all locations (i.e. due to ground conditions piling is not envisaged).

### 4.7.1 Construction Sequence

- Where practicable the vegetated top soil will be stripped over the area of the excavation and stored growing side up for reuse. the vegetated soil will be excavated and stored to one side for reuse during the landscaping around the finished turbine.
- The soil/subsoil will be excavated to a level with a suitable bearing capacity. It is noted that micro siting for suitable ground conditions as per the Department of Environment, Heritage and Local Government Wind Energy Guidelines is included for in section 2.3.3 of the Environmental Impact Statement.
- A layer of concrete blinding will be laid approximately 100 mm thick directly on top of the newly exposed formation tamped and finished with a screed board to leave a flat level surface. The concrete should be protected from rainfall during curing and all surface water runoff from the curing concrete is to be prevented from entering surface water drainage directly using best practice for this type of work.
- High tensile steel reinforcement will be fixed in accordance with the design drawings & schedules. The foundation anchorage system will be installed, levelled and secured to the blinding using steel box section stools.
- Ductwork will be installed as required, and formwork erected around the steel cage and propped from the excavation sides as required.
- Concrete will be placed using a concrete pump and compacted using vibrating poker to the levels and profile indicated on the drawings.
- Upon completion of the concreting works the foundation base will be covered and allowed to cure.
- The foundation will be backfilled with a cohesive material, where possible using the material arising during the excavation and landscaped using the vegetated soil set aside during the excavation.

The volume of concrete required during each foundation pour will be continuously monitored and a check prior to ordering the final loads for each pour will minimise the volume of excess concrete delivered. Excess concrete may be used as a blinding layer for other work areas

### 4.7.2 Concrete Wash-out

Concrete lorries/mixers shall not be washed on site and under no circumstances shall washout / cement leachate from such lorries/mixers enter any streams, watercourses or rivers. A fully bunded dedicated wash-down area for concrete chutes only will be constructed next to the temporary construction compound. The concrete truck chute washout area will be constructed as follows:

- The topsoil shall be stripped out and temporarily placed in a nearby material storage area



# ASHFORD WIND FARM

- The wash down area will consist of a polythene lined bunded area of approximately 50m<sup>3</sup> capacity. This capacity will be sufficient to accommodate the chute wash down for six turbine base pours and any concrete works required for the substation and met mast areas. The bunding membrane will be installed directly onto the subsoil and shall conform to international quality standards.
- The turbine supplier's environmental manager will monitor the pH of the cement leachate in the wash down bund.
- Upon completion of the project the area will be decommissioned by removal offsite to a licensed facility and backfilling the area with the material arising during excavation, together with landscaping as required.

## 4.7.3 Turbine Base Dewatering

Any dewatering to turbine base excavations shall be achieved using portable pumping equipment. The resulting discharges shall be directed to the environmental protection measures for treatment prior to discharge to any natural watercourse or drain in order to avoid pollution risk. It should be noted that this volume shall be of limited quantity and produced over a relatively short period. Inspection shall be carried out by the turbine supplier's environmental manager prior to commencement of excavation works.

## 4.8 SUBSTATION

The wind farm substation shall be similar in construction to a single storey house in terms of numbers of deliveries and the construction material used. All excavation works and material handling shall be carried out in accordance with the criteria set out in this CMP. De-watering of the foundation and cable entry pits shall be carried out in a similar fashion to Section 4.7.3 above and concrete wash out shall be in accordance with Section 4.7.2 above. The substation compound area will be surfaced with crushed limestone which will be imported to site.

### 4.8.1 External Finish

The walls of the substation building shall be finished with roughcast render in accordance with Class F2- Normal finish of exposed work. External render shall comply with IS EN 13914-1 "Design, preparation and application of external rendering and internal plastering. Part 1 External rendering". The external render shall have a finished thickness of 15-25mm and shall be light grey in colour. The roof of the substation shall be finished in blue/black 'truetone' slates and ridge capping to match.

### 4.8.2 Compound Fence

The substation compound shall be enclosed with a palisade fence approximately 2.65m in height. The fence shall be hot dipped galvanised and finished with a green powder coating.

## 4.9 GRID CONNECTION WORKS

The wind farm will connect to the National Grid at a proposed switching station at Dromdeoveen via a 38kV underground cable. The grid connection works will be designed and constructed to



# ASHFORD WIND FARM

ESBN specification for the works and will be completed under ESBN supervision. All works shall be completed in compliance with this CMP.

## 4.10 ELECTRICAL WORKS

The electrical works will consist of installing the electrical equipment in the substation and installing electrical cables between the turbines and the on site 38kV substation. All the site cabling will be buried underground. The electrical switchgear will be pre-commissioned off site which will reduce the electrical contractors' site presence. The electrical component and cable deliveries will follow the proposed route to site as indicated for the wind turbine components and will be made using standard rigid body road trucks. Typically, there will be 3 to 6 electrical workers on the site periodically for up to 20 weeks.

## 4.11 REINSTATEMENT

### 4.11.1 General

Reinstatement and restoration of earthworks, soils and vegetation will be carried out in accordance with industry best practice. Revised measures will be implemented if any of the restoration techniques are found to be unsuccessful. Restoration will include reinstatement of disturbed areas around access track, borrow pit, crane hardstandings, temporary construction compound and electrical substation.

### 4.11.2 Temporary Site Compound

The temporary site compound will be removed at the end of the construction period. Reinstatement will involve removing the imported material and underlying geotextile, if used. The exposed substrate will be removed and then the topsoil and turf layers which have been stored close by will be replaced respectively.

### 4.11.3 Site Tracks and Hardstands

The access tracks and hardstands will be kept to a minimum and properly landscaped immediately following completion of works. Such landscaping will include reinstating original vegetation along verges and repairing any wheel ruts.

### 4.11.4 Borrow Pit

The borrow pit will be graded and reinstated after construction with a vegetation cover suitable for the foraging hen harrier habitat (in accordance with the planning conditions). Excavated areas that are not located within 100 metres of the Special Protected Area, shall be graded and finished with the excess spoil arising from road, hardstand and turbine foundation construction. Any topsoil that was removed shall be replaced, this will help to promote the reestablishment of the appropriate vegetation for ecological enhancement as the original seed bank and vegetation will be contained in the preserved top soil.

AN BORD PLEANÁLA

30 JAN 2020

AN BORD PLEANÁLA

24 FEB 2020



# ASHFORD WIND FARM

## 5. Installation

The installation phase will consist of mechanical and electrical works required for the erection, commissioning and initial operation of the wind turbines.

The installation phase will consist of:

- Turbine component delivery
- Turbine erecting (mechanical completion)
- Electrical cable installation (installed in existing ducts)
- Electrical substation energisation
- Turbine commissioning

All site activities throughout the installation phase will be supervised by competent site supervisors to ensure that the installation operations do not cause disturbance to the environment outside of the work area during this period.

### 5.1 TURBINE DELIVERY AND INSTALLATION

The major turbine components will be delivered to the site under an abnormal load permit. Deliveries of turbine components are generally restricted to night time when traffic volumes on the public road ways are at their lowest level. The chosen turbine delivery route requires the least amount of modifications required to safely access the site with abnormal loads. A Turbine Delivery Route is included in Appendix 5.

Each turbine will be delivered in a number of components and assembled on site. Typically for each turbine there shall be 3 deliveries of tower components, one nacelle delivery, one generator delivery, one electrical component delivery and 3 blade deliveries totalling nine deliveries per turbine. These deliveries will be made using multi axle trailers with similar axle loadings to regular road trucks to prevent damage to the public roads. Typically, one turbine will be erected per week, assuming weather conditions are suitable, with the entire delivery and erection of turbines expected to be completed within 8 weeks.

It is proposed to use established, standard wind turbine coating colours RAL 7038 (agate grey) and/or RAL 7035 (light grey) for the external finishes to the wind turbines. These would be standard colour finish for wind turbines in Ireland (including existing wind turbines in Co. Limerick) and an indication of the colours can be viewed at <https://www.ralcolorchart.com/>

### 5.2 TURBINE ERECTION

The turbine components will be lifted into place by the main crane. The operation of the crane is controlled by strict health and safety procedures under the supervision of the appointed Project Supervisor Construction Stage for the site - once all parameters have been satisfied the crane will lift each component into place and the installation team (4-6 technicians) will secure each component in place. This generally takes 5 days per wind turbine.

24 FEB 2020

AN BORD PLEANÁLA

30 JAN 2020

LTR DATED \_\_\_\_\_ FROM \_\_\_\_\_

LDG- \_\_\_\_\_

ABP- \_\_\_\_\_

ABP-  
LDG-  
LTR DATED FROM  
30 JAN 2020  
AIR FORCE PLANAIA



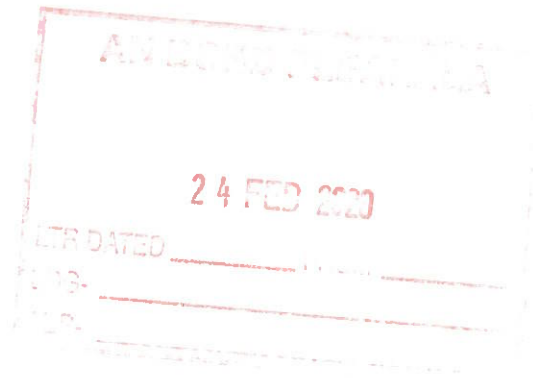
# ASHFORD WIND FARM

## 5.3 TURBINE COMMISSIONING

Once the turbine is mechanically complete the installation / commissioning team will terminate all electrical connections and proceed with turbine commission and testing. Once this phase is completed the turbine is now ready to generate electricity.

## 5.4 ELECTRICAL SUBSTATION ENERGISATION

The final stage of the installation phase will be the energisation of the electrical substation. FSB Networks will complete the final safety procedures and tests in the substation and the wind farm will then export power to the National Grid.



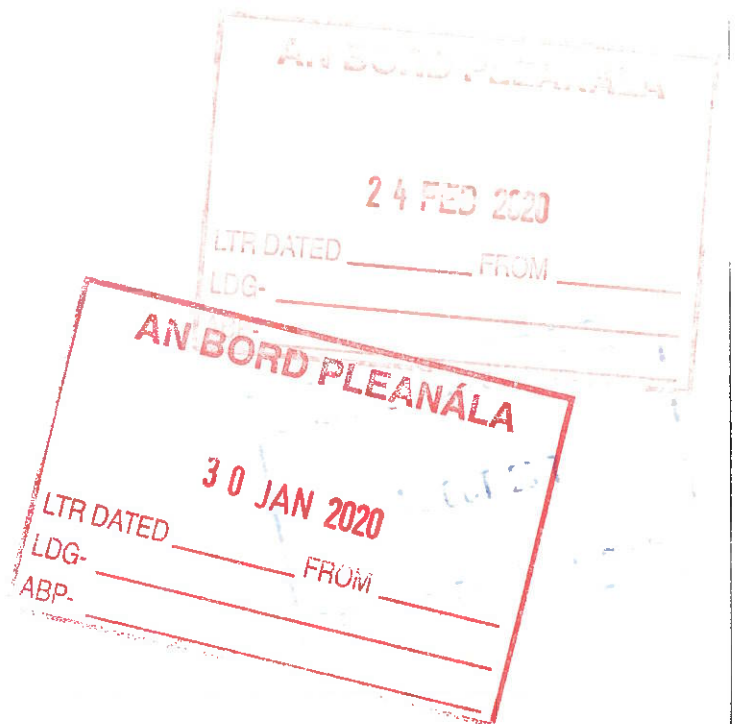


## 6. Operation & Maintenance

A dedicated Asset Manager will be appointed and will be responsible for the day to day operation and maintenance of the site post energisation (post completion of construction). The Asset Manager will remotely monitor all equipment in the substation and turbines daily. Site visits will also be carried out on a regular basis throughout the life time of the wind farm. The Asset Manager will be responsible for the up keep of the site, including roads, drainage and landscaping maintenance. Monitoring of environmental control measures will continue throughout the operation phase, particularly during the initial period until reinstated areas have successfully re-vegetated.

The Asset Manager will be the primary point of contact for Limerick County Council during the operational phase. Once appointed the Asset Manager will provide the relevant contact details to Limerick County Council.

In general, scheduled and unscheduled maintenance is limited to vehicle movements of approximately 1 per week on average. The vehicles used are mid-sized or large commercial vans so there are no heavy goods vehicle movements associated with the normal operation of the wind farm. In the unlikely case that a major component replacement is required this will necessitate the transport of an oversize loads to the site. The Operation and Maintenance delivery route shall be similar to the Turbine Delivery Route outlined in Appendix 5.





## 7. APPENDICES

### Appendix 1 Construction Drainage Report

Appendix A- Geology, Hydrology & Hydrogeology Assessment (EIS)

Appendix B- Proposed Drainage Layout

Appendix C- Pro-Construction Aquatic Ecological Assessment

Appendix D- Terram Filtration Material Technical Datasheet

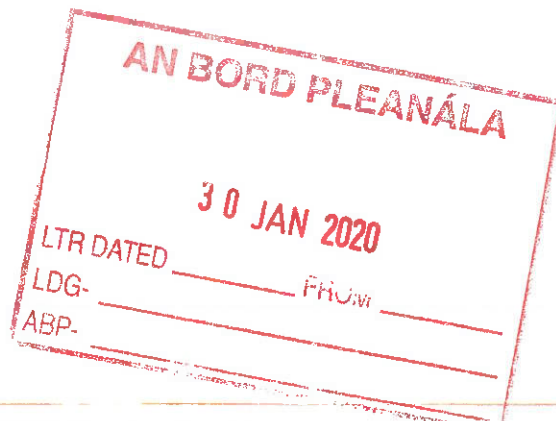
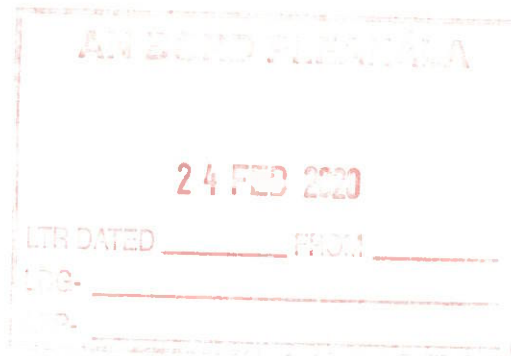
Appendix E- Sample Silt Trap Log

Appendix 2- Site Layout

Appendix 3 Typical Site Track

Appendix 4- Typical Crane Hardstand

Appendix 5- Turbine Delivery Route





# ASHFORD WIND FARM

## 7.1 APPENDIX 1 – CONSTRUCTION DRAINAGE REPORT

AN BORD PLEANÁLA

24 FEB 2020

LTR DATED \_\_\_\_\_ FROM \_\_\_\_\_

LDG- \_\_\_\_\_

ABP- \_\_\_\_\_

AN BORD PLEANÁLA

30 JAN 2020

LTR DATED \_\_\_\_\_ FROM \_\_\_\_\_

LDG- \_\_\_\_\_

ABP- \_\_\_\_\_

RECEIVED

