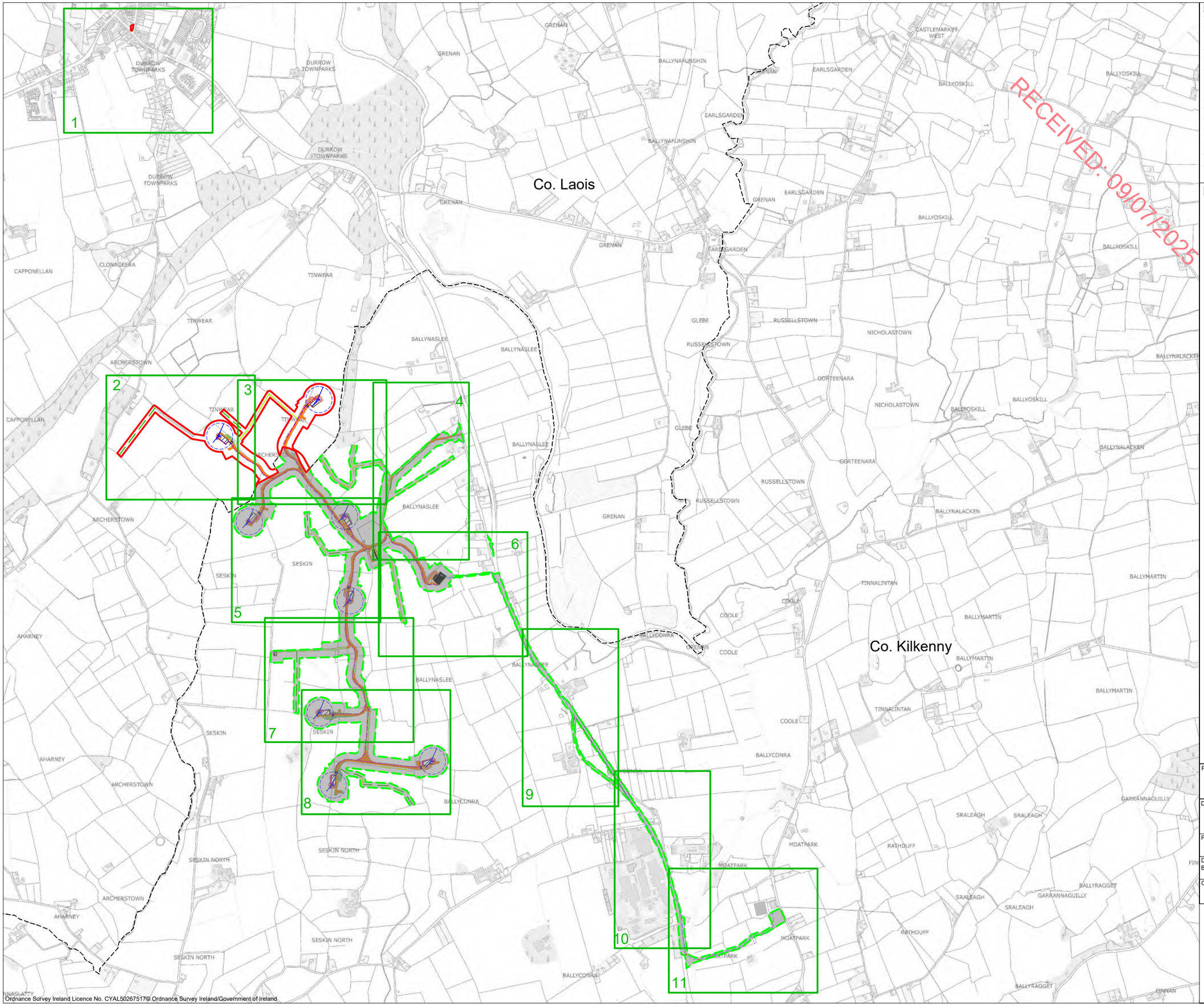
# APPENDIX 4-1

## *SITE LAYOUT DRAWINGS*

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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Laois
- Planning Application Boundary Kilkenny
- Existing Road to be Upgraded
- Proposed New Road
- Temporary Hardcore Surface
- Temporary Hardcore Surface & Ground Protection Mats
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Borrow Pit
- Cut
- Fill
- Proposed Underground Grid Connection Cabling Route
- County Boundary
- Proposed Hedgerow Enhancement
- Proposed New Hedgerow/Hedgerow Translocation

N

PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Site Layout Key Plan**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 03 | 1:20,000 @ A3 |

| DRAWN BY: | CHECKED BY: | DATE: | REVISION.: |
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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Laois
- Temporary Hardcore Surface & Ground Protection Mats

N

PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Site Layout Plan Sheet 1 of 11**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 03A | 1:2,500 @ A3 |

| DRAWN BY: | CHECKED BY: | DATE: | REVISION.: |
|---|---|---|---|
| JOB | AC | 01.07.2025 | P01 |

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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.



**T2**
ITM 641224, 674883
Level - 172m O.D.

90000

49500

40000

40000

Refer to DWG
231103 - 05

## Drawing Legend

- Planning Application Boundary Laois
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Cut
- Fill
- County Boundary
- Proposed Hedgerow Enhancement
- Proposed New Hedgerow/Hedgerow Translocation

N

PROJECT TITLE:
**Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE:
**Site Layout Plan Sheet 2 of 11**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 03B | 1:2,500 @ A3 |

| DRAWN BY: | CHECKED BY: | DATE: | REVISION.: |
|---|---|---|---|
| JOB | AC | 01.07.2025 | P01 |

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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Laois
- Planning Application Boundary Kilkenny
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Cut
- Fill
- County Boundary
- Proposed Hedgerow Enhancement
- Proposed New Hedgerow/Hedgerow Translocation



**T1**
ITM 641792, 675091
Level - 152m O.D.

90000
49500
40000
Refer to DWG 231103 - 04

Laois
Kilkenny

**T3**

N

| | |
|---|---|
| PROJECT TITLE: | **Seskin Renewables Wind Farm, Co. Kilkenny/Laois** |
| DRAWING TITLE: | **Site Layout Plan Sheet 3 of 11** |
| PROJECT No.: **231103** | DRAWING No.: **231103 - 03C** |
| SCALE: **1:2,500 @ A3** | |
| DRAWN BY: **JOB** | CHECKED BY: **AC** |
| DATE: **01.07.2025** | REVISION.: P01 |
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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.



## Drawing Legend

- Planning Application Boundary Kilkenny
- Existing Road to be Upgraded
- Proposed New Road
- Temporary Hardcore Surface
- Internal Underground Electrical Cabling Trench
- Borrow Pit
- Cut
- Fill
- Proposed Hedgerow Enhancement
- Proposed New Hedgerow/Hedgerow Translocation

Field Gate refer to DWG 231103 - 27 for Details

Permanent Wind Farm Signage refer to DWG 231103 - 25 for Details

Wheelwash refer to DWG 231103 - 26 for Details

Borrow Pit Refer to DWG 231103 - 22

Temporary Construction Compound Refer to DWG 231103 - 16

28010

18560

40000

Note:
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N

PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Site Layout Plan Sheet 4 of 11**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 03D | 1:2,500 @ A3 |

| DRAWN BY: | CHECKED BY: | DATE: | REVISION.: |
|---|---|---|---|
| JOB | AC | 08.07.2025 | P01 |

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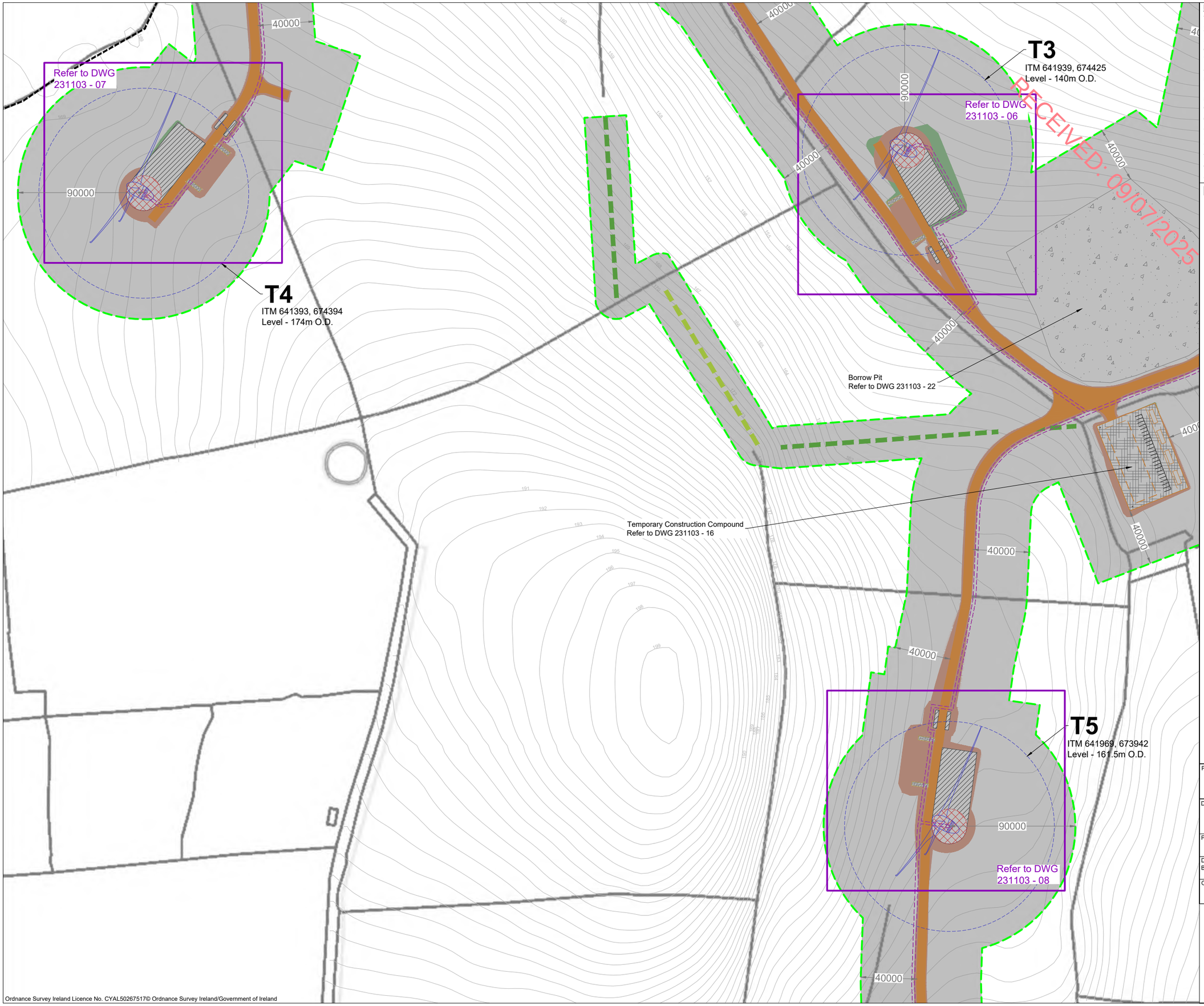




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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Kilkenny
- Existing Road to be Upgraded
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Works Area
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Borrow Pit
- County Boundary
- Proposed Hedgerow Enhancement
- Proposed New Hedgerow/Hedgerow Translocation

Note:
This drawing is provided for information purposes only & is subject to a separate Application to Kilkenny County Council

N

PROJECT TITLE:
**Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE:
**Site Layout Plan**
**Sheet 5 of 11**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 03E | 1:2,500 @ A3 |

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| JOB | AC | 01.07.2025 | P01 |

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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Kilkenny
- Existing Road to be Upgraded
- Proposed New Road
- Temporary Hardcore Surface
- Internal Underground Electrical Cabling Trench
- Cut
- Fill
- Proposed Underground Grid Connection Cabling Route
- Proposed Hedgerow Enhancement

Note:
This drawing is provided for information purposes only & is subject to a separate Application to Kilkenny County Council

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PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Site Layout Plan Sheet 6 of 11**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 03F | 1:2,500 @ A3 |

| DRAWN BY: | CHECKED BY: | DATE: | REVISION.: |
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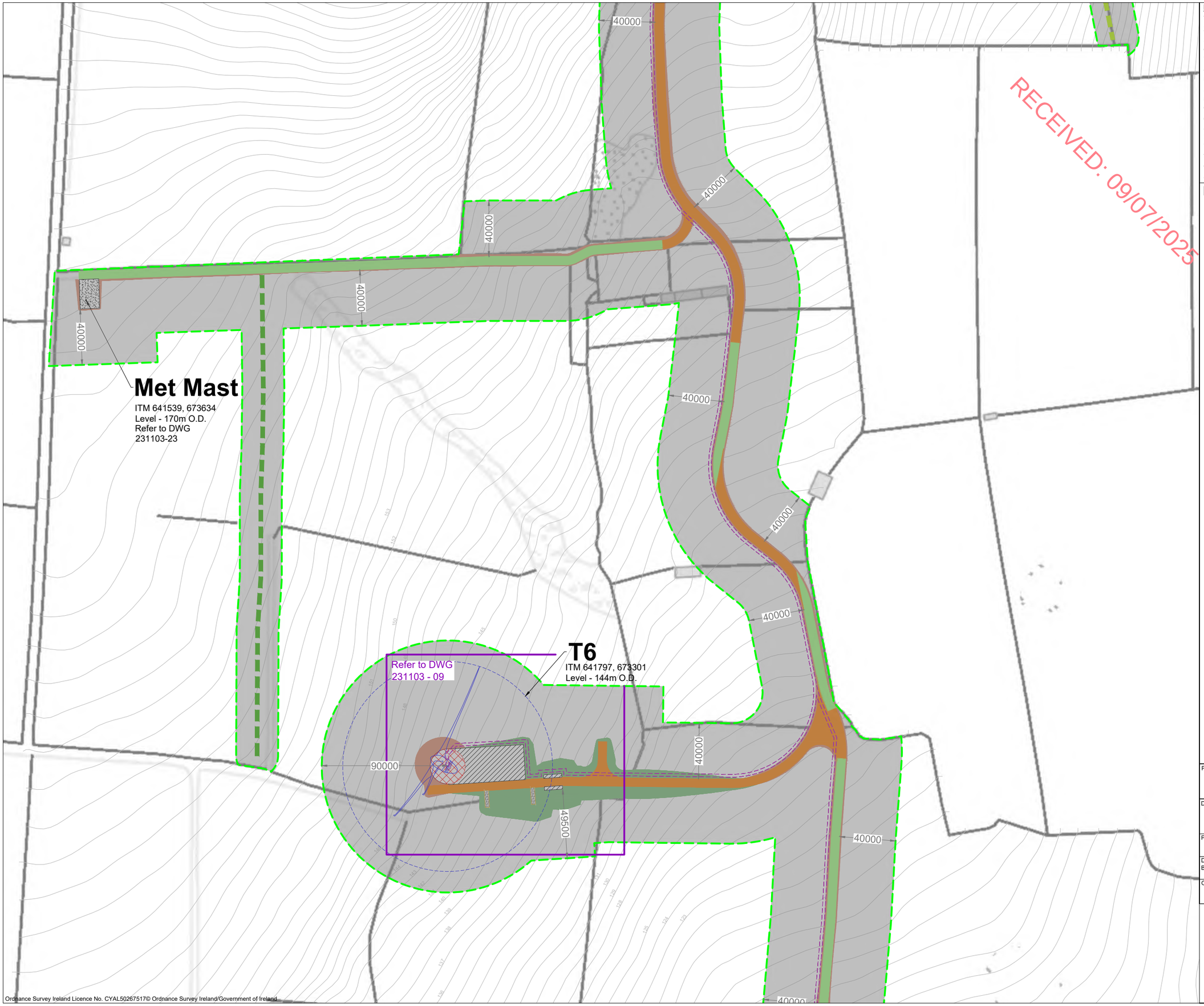




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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Kilkenny
- Existing Road to be Upgraded
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Cut
- Fill
- Proposed Hedgerow Enhancement
- Proposed New Hedgerow/Hedgerow Translocation

Note:
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PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Site Layout Plan Sheet 7 of 11**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 03G | 1:2,500 @ A3 |

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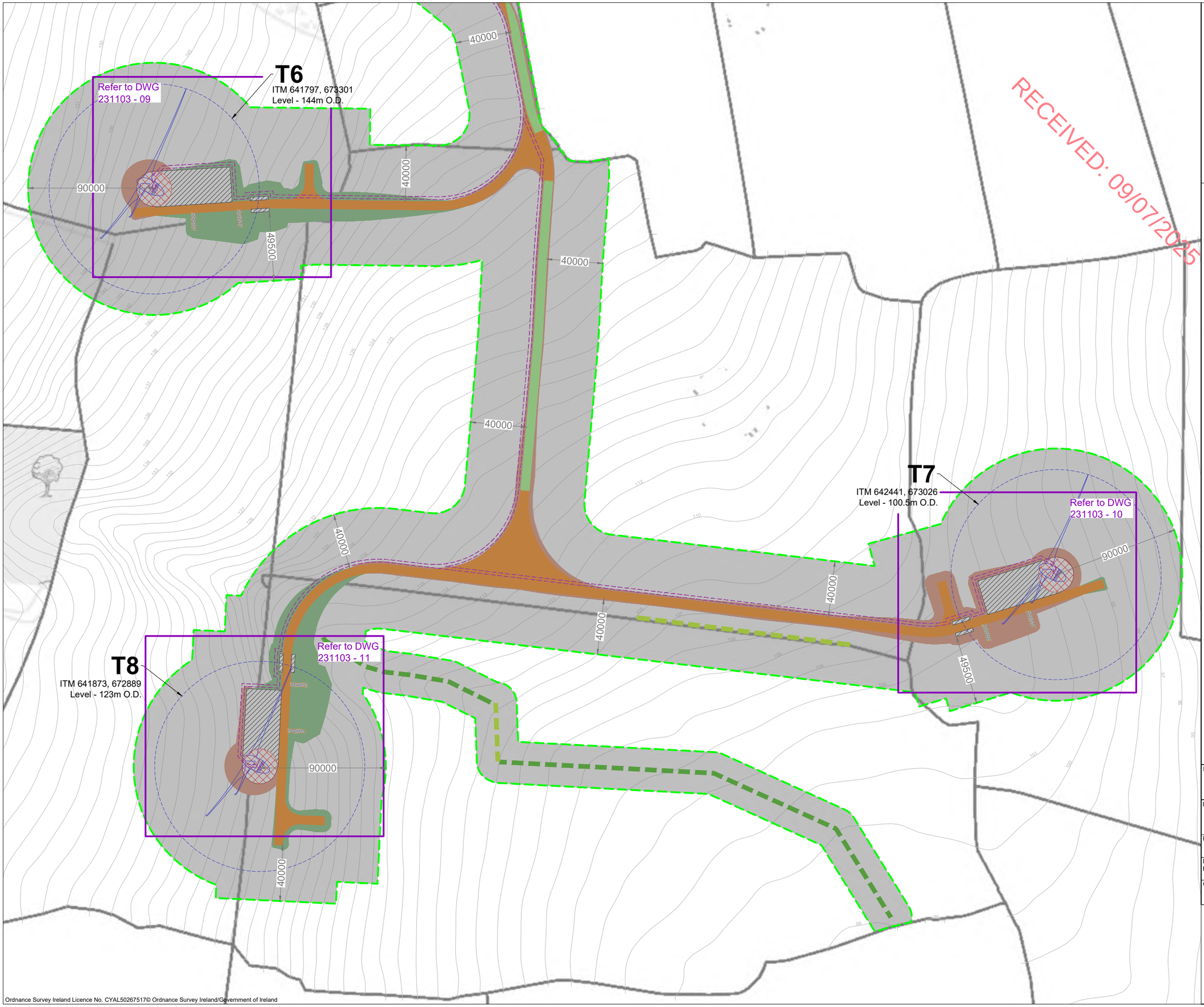




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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Kilkenny
- Existing Road to be Upgraded
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Cut
- Fill
- Proposed Hedgerow Enhancement
- Proposed New Hedgerow/Hedgerow Translocation

Note:
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N

PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Site Layout Plan Sheet 8 of 11**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 03H | 1:2,500 @ A3 |

| DRAWN BY: | CHECKED BY: | DATE: | REVISION.: |
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| JOB | AC | 01.07.2025 | P01 |

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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.



## Drawing Legend

- Planning Application Boundary Kilkenny
- Proposed Underground Grid Connection Cabling Route
- Joint Bay & Comms Chamber
- County Boundary

Note:
This drawing is provided for information purposes only & is subject to a separate Application to Kilkenny County Council

N

PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Site Layout Plan Sheet 9 of 11**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 03I | 1:2,500 @ A3 |

| DRAWN BY: | CHECKED BY: | DATE: | REVISION.: |
|---|---|---|---|
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Joint Bay & Comms Chamber
Refer to DWG 231103 - 30 & 31
For Details

13050

8620

15860

15120

Joint Bay & Comms Chamber
Refer to DWG 231103 - 30 & 31
For Details

19840

25290



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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.



## Drawing Legend

- Planning Application Boundary Kilkenny
- Proposed Underground Grid Connection Cabling Route
- Joint Bay & Comms Chamber

Note:
This drawing is provided for information purposes only & is subject to a separate Application to Kilkenny County Council

N

PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Site Layout Plan Sheet 10 of 11**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 03J | 1:2,500 @ A3 |

| DRAWN BY: | CHECKED BY: | DATE: | REVISION.: |
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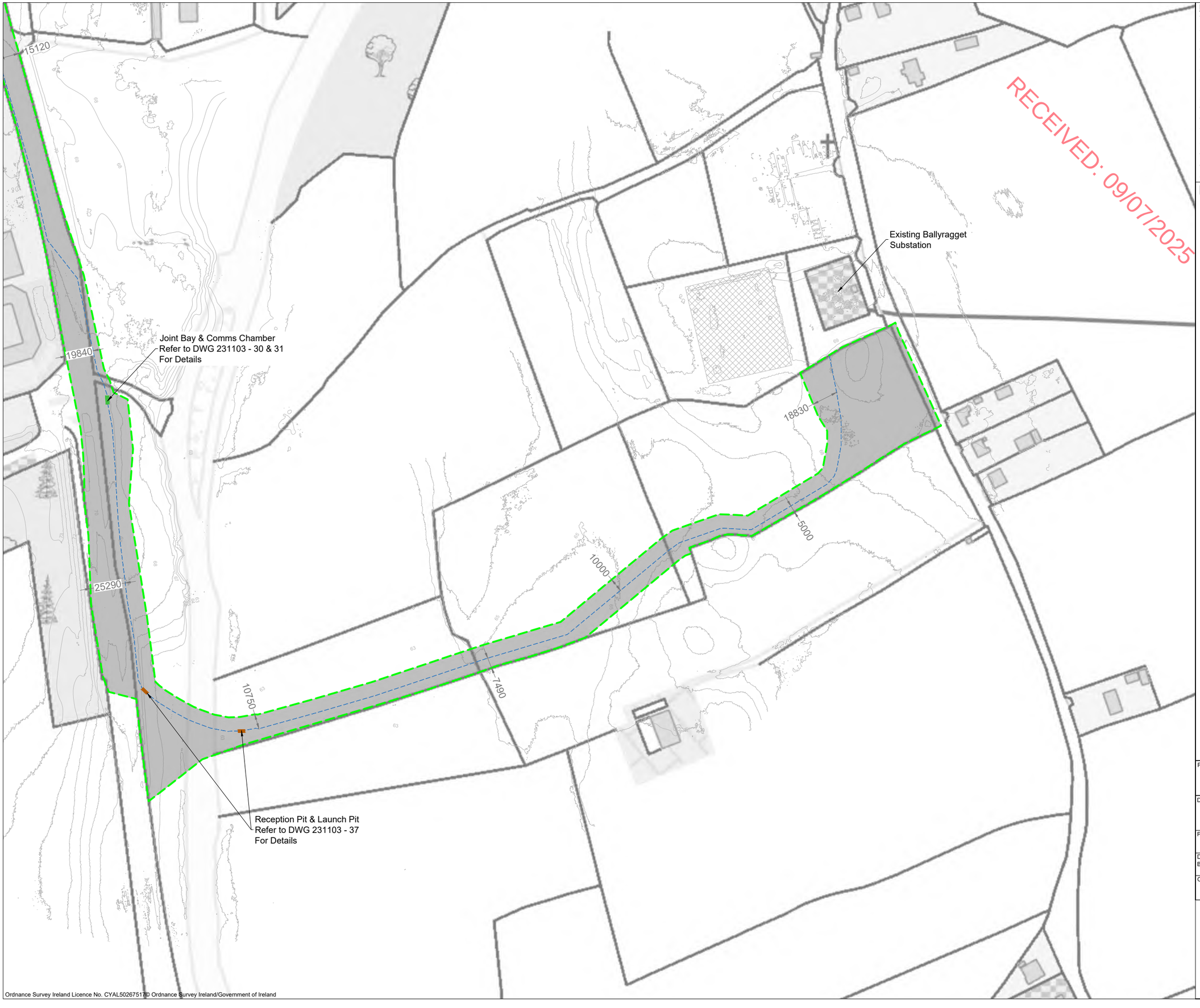




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8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Kilkenny
- Proposed Underground Grid Connection Cabling Route
- Joint Bay & Comms Chamber

Note:
This drawing is provided for information purposes only & is subject to a separate Application to Kilkenny County Council

N

PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Site Layout Plan Sheet 11 of 11**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 03K | 1:2,500 @ A3 |

| DRAWN BY: | CHECKED BY: | DATE: | REVISION.: |
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| JOB | AC | 01.07.2025 | P01 |

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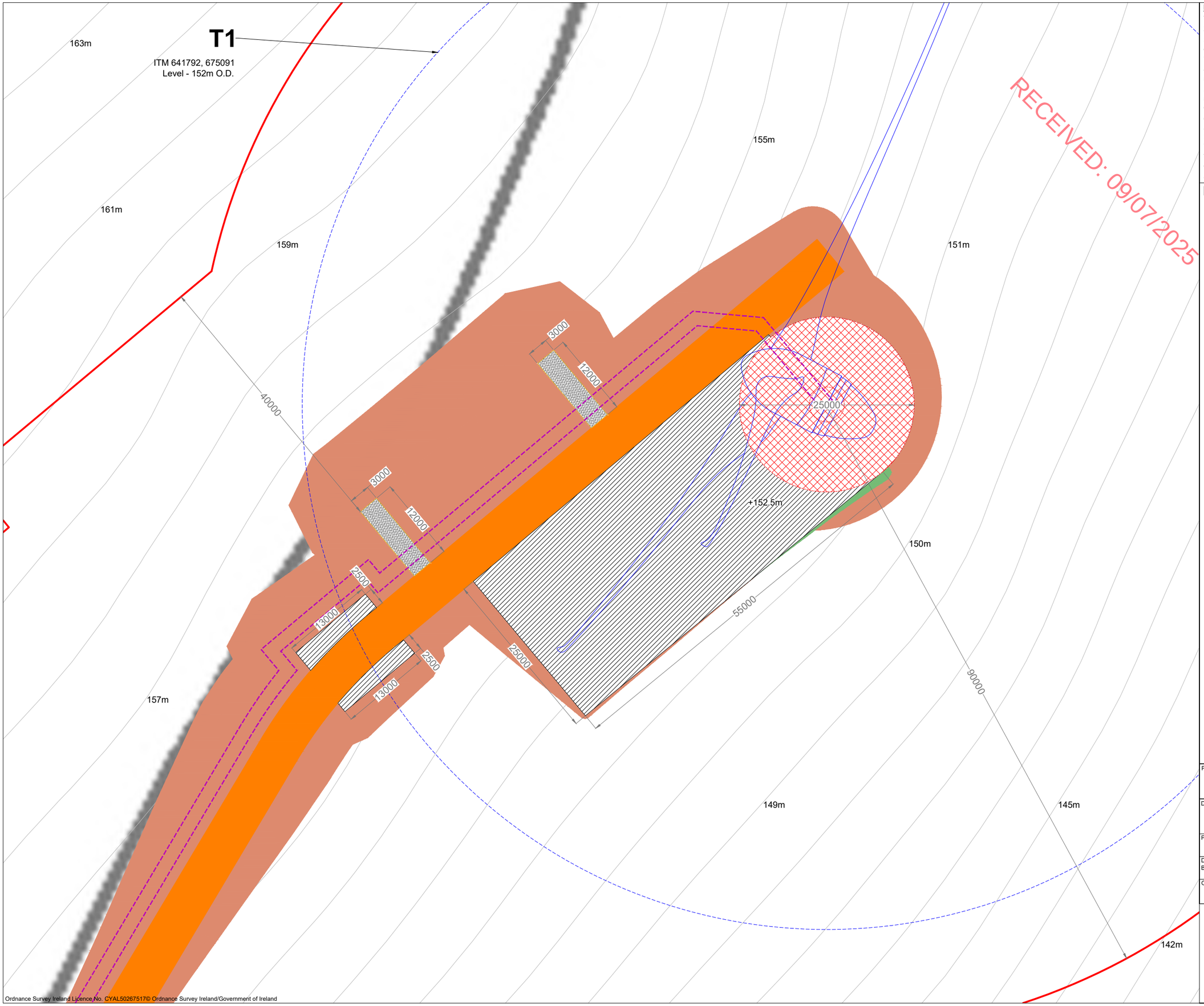




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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Laois
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Cut
- Fill

N

PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Turbine 1 Layout**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 04 | 1:500 @ A3 |

| DRAWN BY: | CHECKED BY: | DATE: | REVISION.: |
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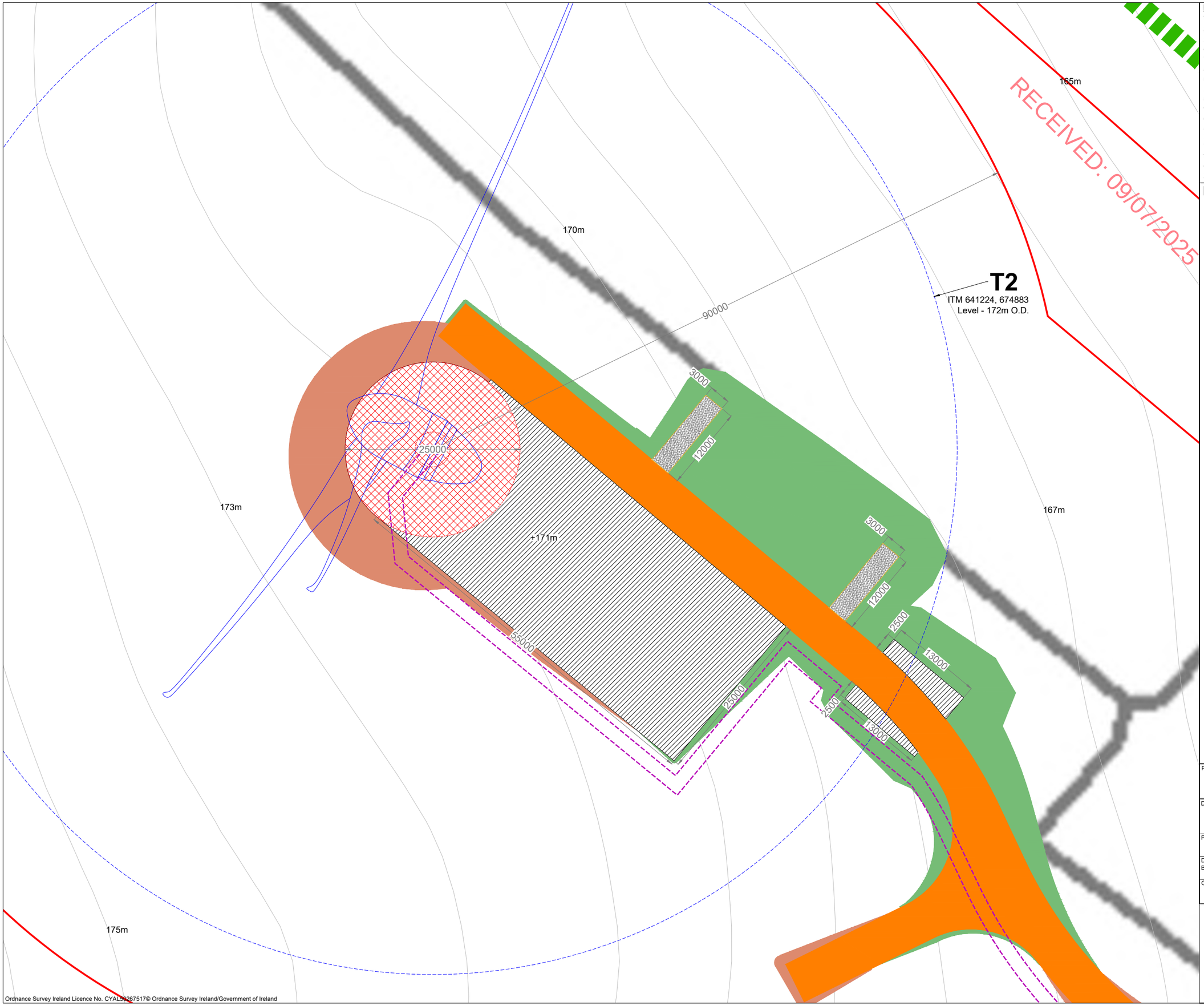


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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Laois
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Cut
- Fill
- Proposed New Hedgerow/Hedgerow Translocation

N

PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Turbine 2 Layout**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 05 | 1:500 @ A3 |

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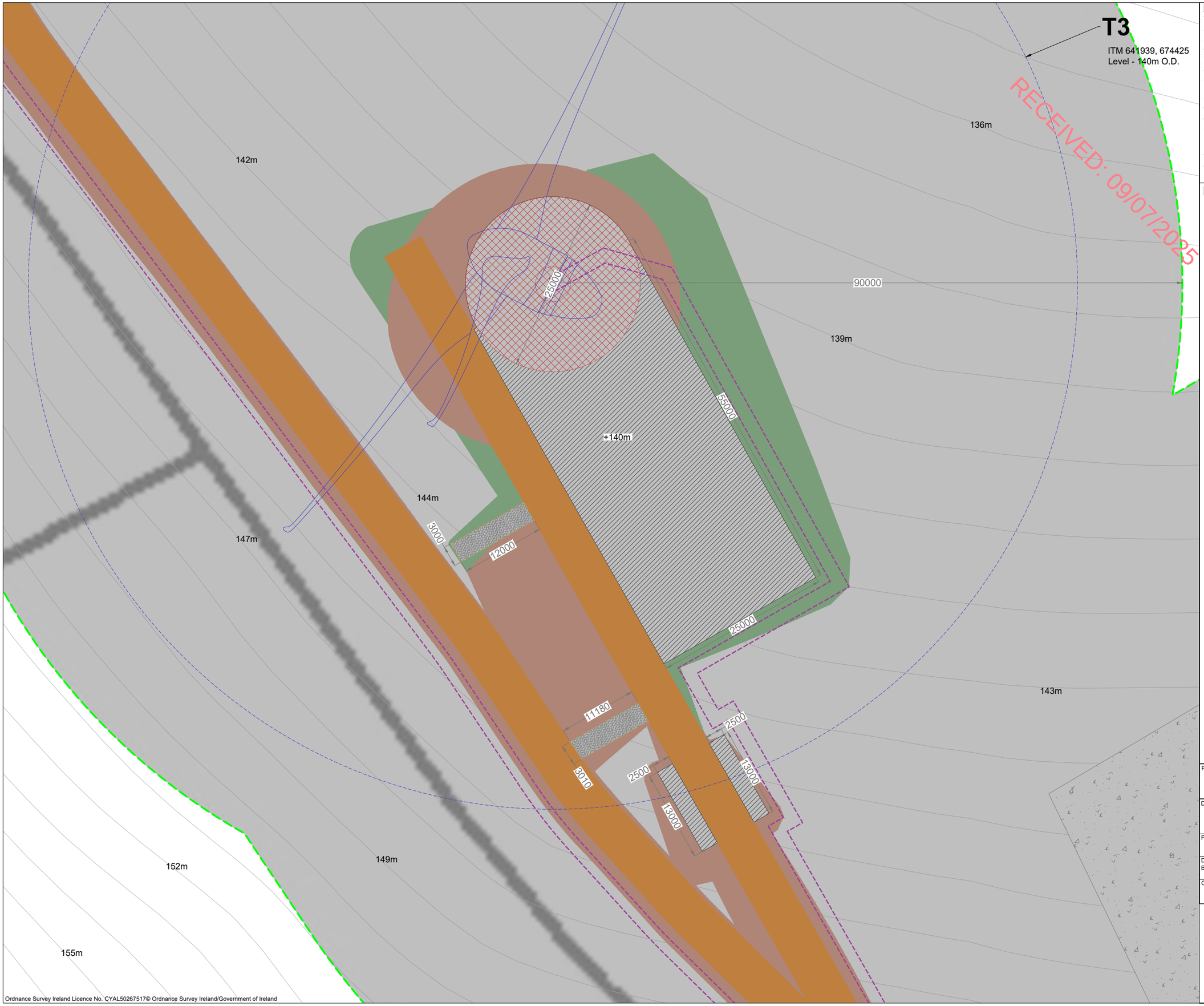


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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Kilkenny
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Borrow Pit
- Cut
- Fill

Note:
This drawing is provided for information purposes only & is subject to a separate Application to Kilkenny County Council

N

PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Turbine 3 Layout**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 06 | 1:500 @ A3 |

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| JOB | AC | 01.07.2025 | P01 |

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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Kilkenny
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Cut
- Fill
- County Boundary

Note:
This drawing is provided for information purposes only & is subject to a separate Application to Kilkenny County Council

N

PROJECT TITLE:
**Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE:
**Turbine 4 Layout**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 07 | 1:500 @ A3 |

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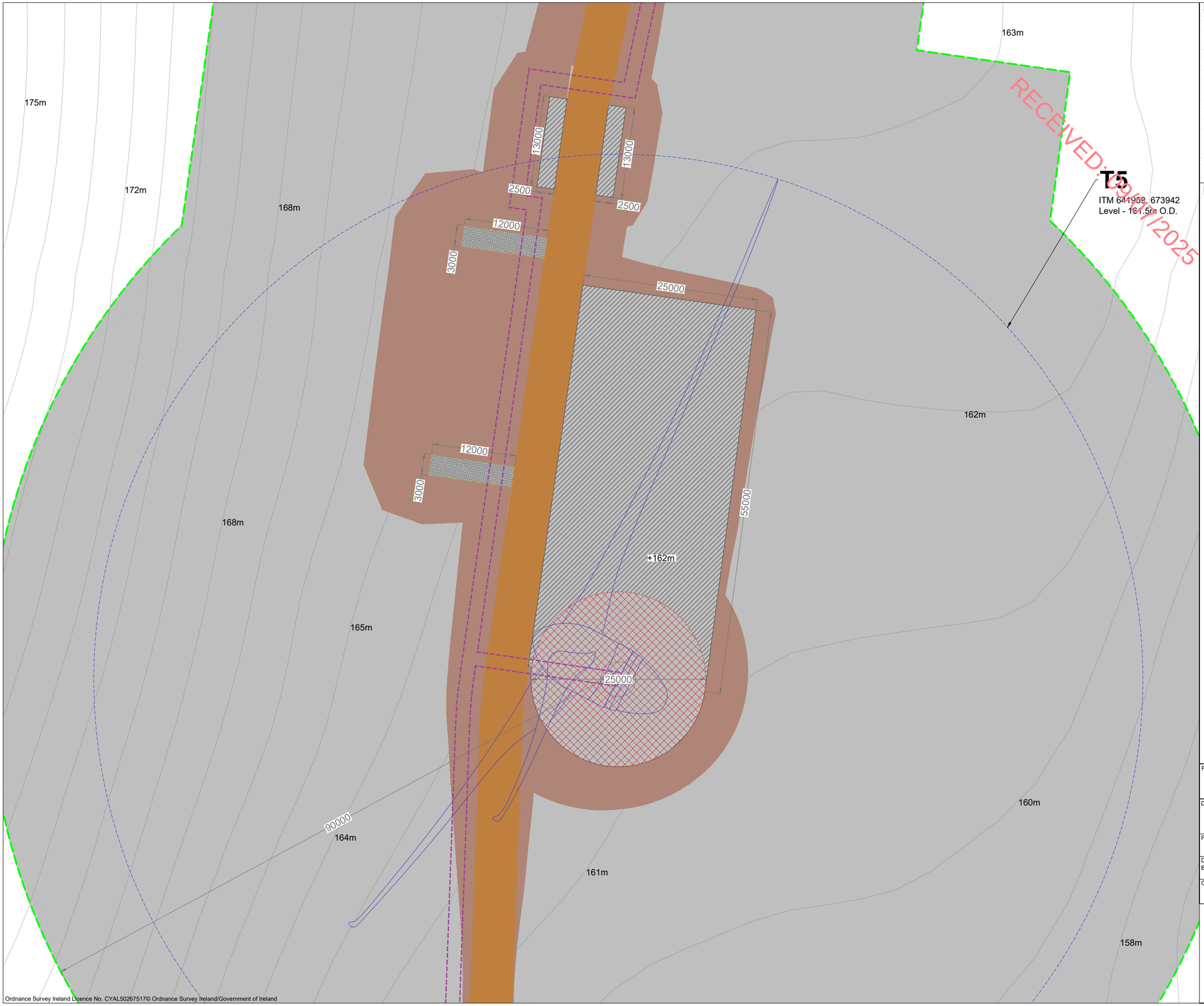




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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Kilkenny
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Cut
- Fill

Note:
This drawing is provided for information purposes only & is subject to a separate Application to Kilkenny County Council

N

PROJECT TITLE:
**Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE:
**Turbine 5 Layout**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 08 | 1:500 @ A3 |

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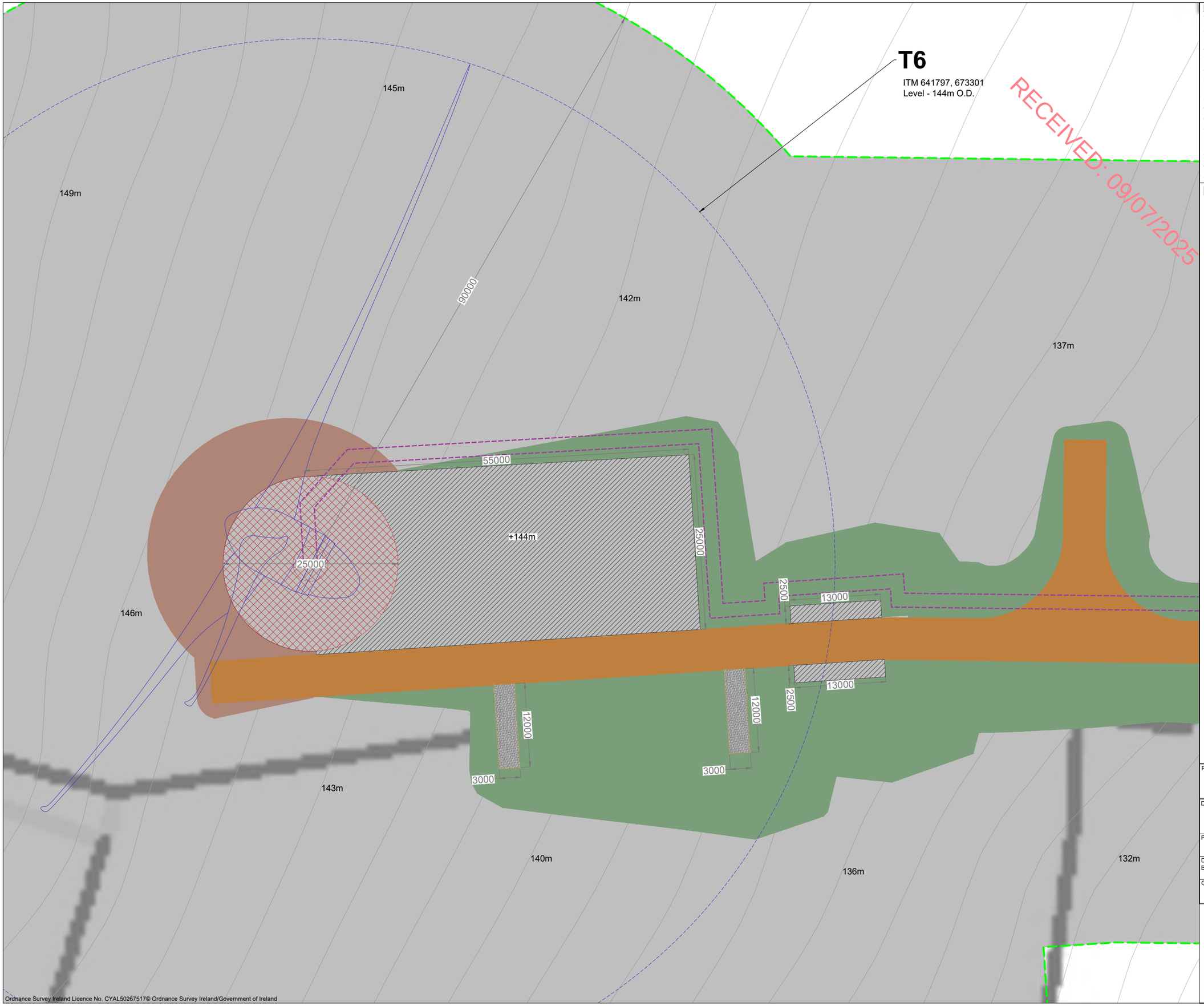




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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Kilkenny
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Cut
- Fill

Note:
This drawing is provided for information purposes only & is subject to a separate Application to Kilkenny County Council

N

PROJECT TITLE:
**Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE:
**Turbine 6 Layout**

| PROJECT No.: | DRAWING No.: | SCALE: |
|---|---|---|
| 231103 | 231103 - 09 | 1:500 @ A3 |

| DRAWN BY: | CHECKED BY: | DATE: | REVISION.: |
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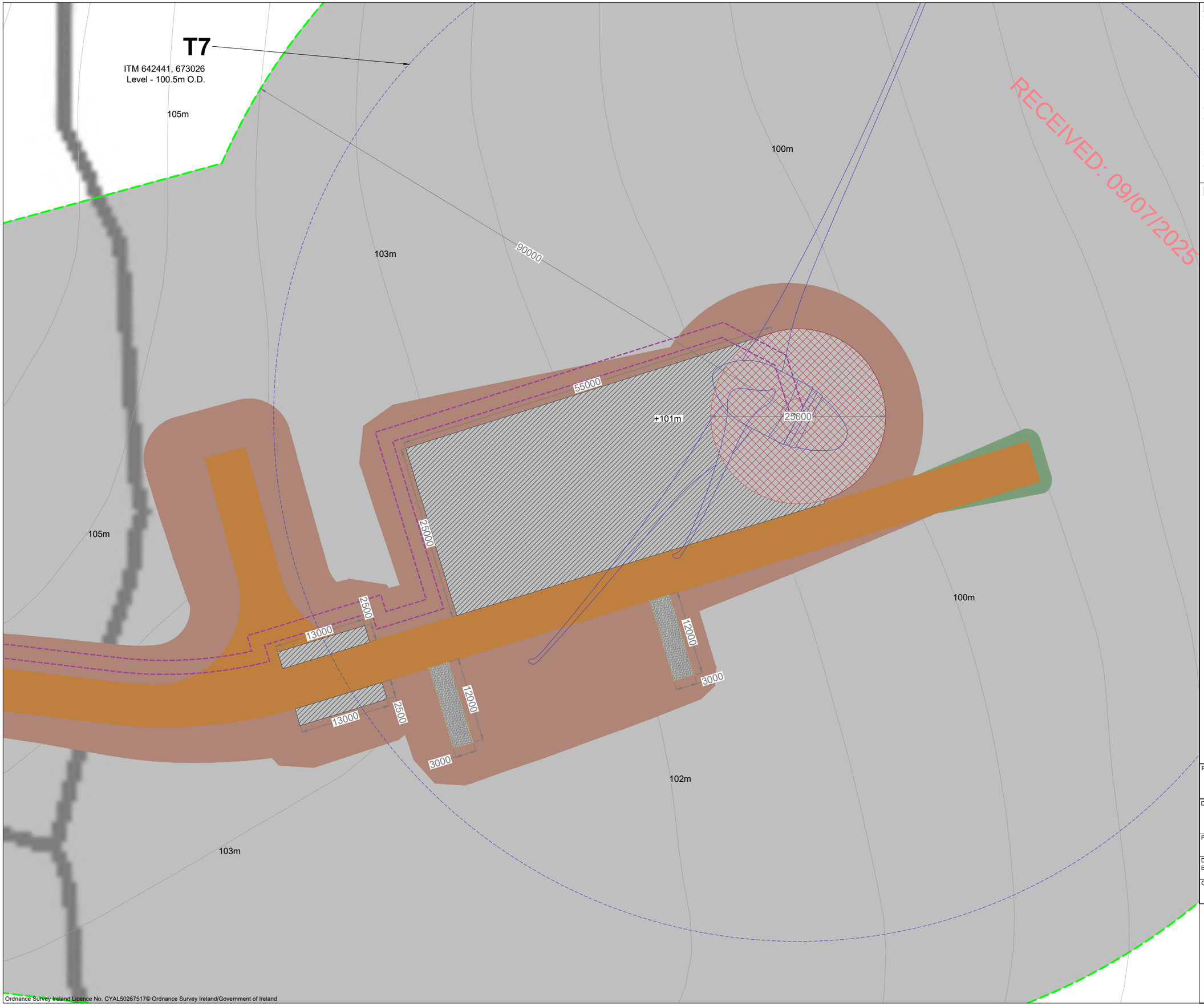




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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Kilkenny
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Cut
- Fill

Note:
This drawing is provided for information purposes only & is subject to a separate Application to Kilkenny County Council

N

PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Turbine 7 Layout**

| PROJECT No.: | DRAWING No.: | SCALE: |
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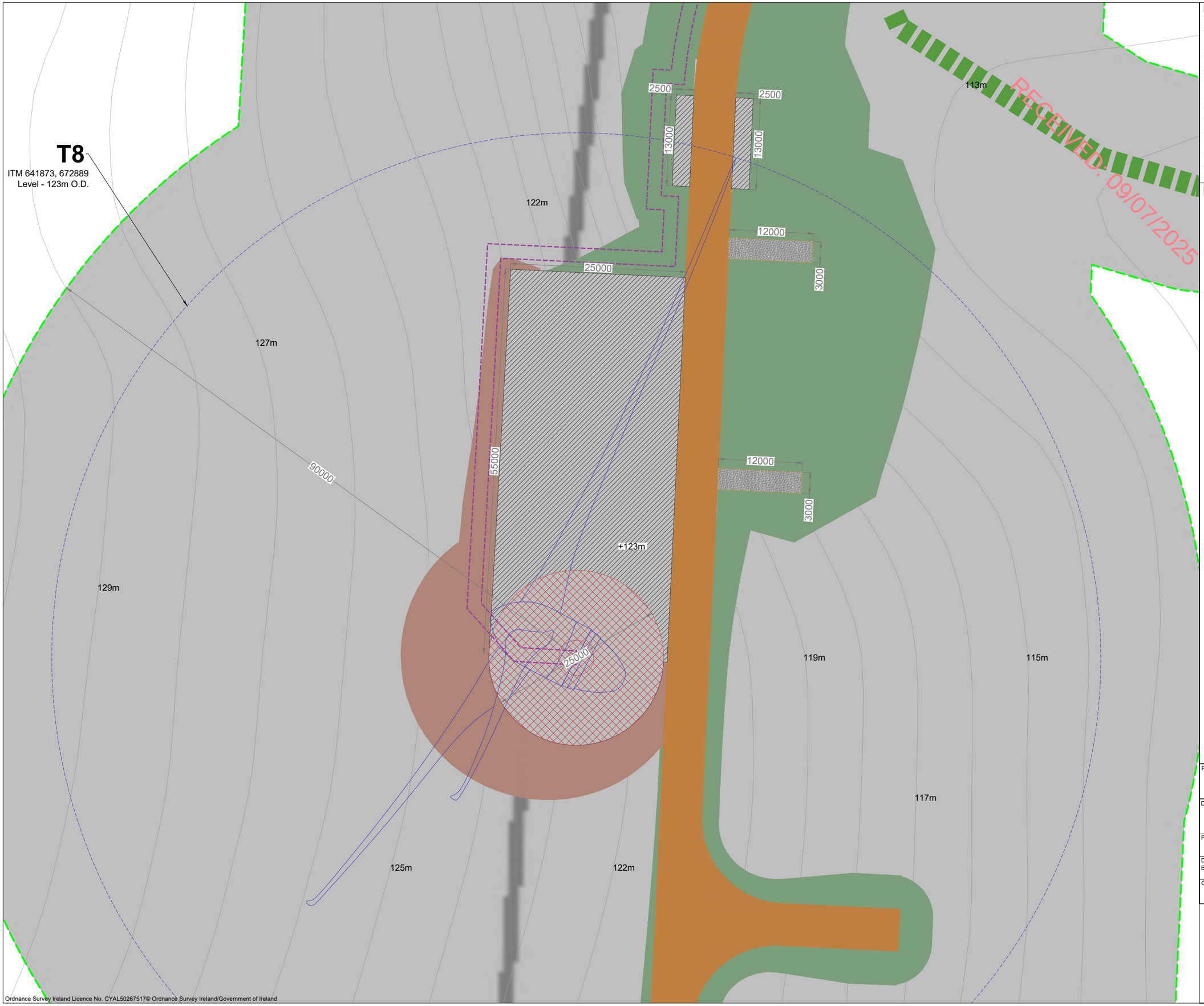


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7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

## Drawing Legend

- Planning Application Boundary Kilkenny
- Proposed New Road
- Internal Underground Electrical Cabling Trench
- Soft Levelled Area
- Hardstand
- Turbine Foundation
- Turbine Sweep Area
- Cut
- Fill
- Proposed New Hedgerow/Hedgerow Translocation

Note:
This drawing is provided for information purposes only & is subject to a separate Application to Kilkenny County Council

N

PROJECT TITLE: **Seskin Renewables Wind Farm, Co. Kilkenny/Laois**

DRAWING TITLE: **Turbine 8 Layout**

| PROJECT No.: | DRAWING No.: | SCALE: |
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# APPENDIX 4-2

## *CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN*

Planning and Environmental Consultants



# Construction and Environmental Management Plan

## Seskin Renewables Wind Farm

Appendix 4-2

# DOCUMENT DETAILS

| | |
|---|---|
| Client: | **Seskin Renewable Energy Ltd** |
| Project Title: | **Seskin Renewables Wind Farm** |
| Project Number: | **231103** |
| Document Title: | **Construction and Environmental Management Plan** |
| Document File Name: | **CEMP F - 2025.06.27 - 231103** |
| Prepared By: | **MKO**<br>**Tuam Road**<br>**Galway**<br>**Ireland**<br>**H91 VW84** |

Planning and Environmental Consultants

| Rev | Status | Date | Author(s) | Approved By |
|---|---|---|---|---|
| 01 | Final | 27/06/2025 | ER | EM |
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# Table of Contents

# 1. INTRODUCTION

This Construction and Environmental Management Plan (CEMP) has been developed by MKO on behalf of Seskin Renewable Energy Ltd. who intend to apply to Laois and Kilkenny County Councils for planning permission to construct a renewable energy development which will comprise of 8 no. wind turbines and associated infrastructure in the townland of Seskin, and adjacent townlands, in Co. Laois and Co. Kilkenny, including a 38kV on-site substation, underground 38kV cabling to connect to the national grid at Ballyragget 110kV substation, in the townland of Moatpark, Co. Kilkenny, and all associated works.

The CEMP has been prepared in conjunction with the Environmental Impact Assessment Report (EIAR) and the Natura Impact Statement (NIS) which will accompany the planning application for the Proposed Development to be submitted to the competent authority. Should the Proposed Development secure planning permission, the CEMP will be updated, in line with all conditions and obligations which apply to any grant of permission. The CEMP should be read in conjunction with the EIAR, NIS and planning drawings. The CEMP will also require updating by the selected contractor in order to identify, assess and satisfy the contract performance criteria as set out by the various stakeholders. The CEMP due to its structure and nature will also require constant updating and revision throughout the construction period as set out below. Therefore, this is a working document and will be developed further prior to and during the construction phase of the Proposed Development.

Triggers for amendments to the CEMP will include:

- Response to any specific requirements arising from conditions attached to a grant of planning permission.
- When there is a perceived need to improve performance in an area of environmental impact;
- As a result of changes in environmental legislation applicable and relevant to the Proposed Development;
- Where the outcomes from auditing establish a need for change;
- Where Work Method Statements identify changes to a construction methodology to address high environmental risk; and
- As a result of an incident or complaint occurring that necessitates an amendment.

This CEMP identifies the key planning and environmental considerations that must be adhered to and delivered during site construction and operation. The Contractor, as appointed by the Project Developer, will be required to implement all of the requirements set out in this CEMP. The CEMP may be updated and revised throughout the construction phase of the Proposed Development, but all future iterations must meet or exceed the standards and requirements set out in this document and the Project Developer must be satisfied that all requirements set out in this document can and will be implemented in full by the appointed contractor.

The CEMP to be prepared by the appointed contractor will be a single, amalgamated document that can be used during the construction phase of the Proposed Development, as a single consolidated point of reference relating to all construction, environmental and drainage requirements for the Planning Authority, developer and contractors alike. The CEMP may evolve over further iterations as the construction works progress, but at all times must meet or exceed the standards and requirements set out in this document. It will be the contractor's current version of the CEMP, which at any point in time, will guide the construction activities on site and the implementation of which will be audited by an Environmental Clerk of Works (ECoW).

## 1.1 Scope of the Construction and Environmental Management Plan

This CEMP is presented as a guidance document for the construction of the proposed Seskin Renewables Wind Farm which will comprise 8 no. wind turbines, and associated infrastructure in the townland of Seskin, and adjacent townlands, in Co. Laois and Co. Kilkenny, including a 38kV on-site substation, underground 38kV electrical cabling to connect to the national grid at Ballyragget 110kV substation, in the townland of Moatpark, Co. Kilkenny, and all associated works.

For the purposes of this CEMP, the various project components are described and assessed using the following references: 'Proposed Development, 'the Site', 'Proposed Wind Farm' and 'Proposed Grid Connection'.

- Where the 'Proposed Development' is referred to this encompasses the entirety of the project for the purposes of this EIA in accordance with the EIA Directive.
- Where the 'Proposed Wind Farm' is referred to, this refers to the wind turbines and associated foundations and hard-standing areas, meteorological mast, access roads, temporary construction compounds, underground cabling, borrow pit, spoil management, site drainage, biodiversity enhancement, turbine delivery accommodation areas and all ancillary works and apparatus.
- Where the 'Proposed Grid Connection' is referred to, this refers to the 38kV onsite substation, associated temporary construction compound and 38kV underground cabling connecting to the existing Ballyragget 110kV substation, and all ancillary works and apparatus.
- Where the 'Site' is referred to, this relates to the primary study area for the EIAR, as delineated by the EIAR Site Boundary in green as shown on Figure 1-1 of the EIAR and encompasses an area of approximately 302 hectares.

A detailed description of the Proposed Development is provided in Chapter 4 of the EIAR.

The CEMP is divided into ten sections, as outlined below.

- **Section 1** provides a brief introduction as to the scope of the report.
- **Section 2** outlines the Site and Proposed Development details, detailing the targets and objectives of this plan along with providing an overview of construction methodologies that will be adopted throughout the Proposed Development.
- **Section 3** sets out details of the environmental controls to be implemented on site. Site drainage principles, traffic management, dust control, invasive species management and a waste management plan are also included in this section.
- **Section 4** sets out a fully detailed implementation plan for the environmental management of the Proposed Development outlining the roles and responsibilities of the project team.
- **Section 5** outlines the general Health and Safety measures that will be implemented on site during the construction phase of the Proposed Development.
- **Section 6** outlines the Emergency Response Procedure to be adopted in the event of an emergency in terms of site health and safety and environmental protection.
- **Section 7** consists of a summary table of all mitigation proposals to be adhered to during the Proposed Development, categorised into three separate headings, 1) pre-commencement measures; 2) construction-phase measures and 3) operational-phase measures.
- **Section 8** consists of a summary table of all monitoring requirements and proposals to be adhered to during the Proposed Development, categorised into three separate headings, 1) pre-commencement measures; 2) construction-phase measures and 3) operational-phase measures.

- **Section 9** sets out a programme for the timing of the works.
- **Section 10** outlines the proposals for reviewing compliance with the provisions of this report.



## 1.2 Targets and Objectives

The following key targets and objectives will inform the final detailed design should the Proposed Development secure planning permission and proceed to the construction phase. This includes consideration of the buildability of the designs that emerge:

- Ensure construction works and activities are completed in accordance with mitigation and best practice approach presented in the EIAR, NIS and associated planning documentation;
- Ensure construction works and activities have minimal impact/disturbance to local landowners and the local community;
- Ensure construction works and activities have minimal impact on the natural environment;
- Adopt a sustainable approach to construction and, ensure sustainable sources for materials supply where possible; and,
- Provide adequate environmental training and awareness for all project personnel.

The key site objectives are as follows:

- Using recycled materials if possible, e.g. excavated stone and overburden;
- Ensure sustainable sources for materials supply where possible;
- Avoidance of any pollution incident or near miss as a result of working around or close to existing watercourses and having emergency measures in place;
- Avoidance of vandalism;
- Keeping all watercourses free from obstruction and debris;
- Correct implementation of the sustainable drainage system (SuDS) drainage design principles;
- Keep impact of construction to a minimum on the local environment, watercourses, and wildlife;
- Correct fuel storage and refuelling procedures to be followed;
- Good waste management and house-keeping to be implemented;
- Air and noise pollution prevention to be implemented;
- Monitoring of the works and any adverse effects that it may have on the environment. Construction Methods and designs will be altered where it is found there is an adverse effect on the environment;
- Comply with all relevant water quality legislation listed throughout this document; and,
- Ensure a properly designed, constructed and maintained drainage system appropriate to the requirements of the site is kept in place at all times.

# 2. SITE AND PROPOSED DEVELOPMENT DETAILS

## 2.1 Site Location

The core of the Proposed Wind Farm is located approximately 2.5 kilometres south of the town of Durrow, Co. Laois, 3.2 kilometres northwest of the town of Ballyragget, Co Kilkenny and 5.9 kilometres east of the village of Cullahill, Co. Laois. The N77 National Secondary Road runs in a northsouth orientation, east of the Site. It is proposed to access the Proposed Development via an existing agricultural access off the L58333 local road, which in turn is accessed off the N77, on the eastern side of the Site. This existing access will be upgraded as part of the Proposed Development. The Site is served by a number of existing public and agricultural roads and tracks. A site location context map is included as Figure 1-1. A site location map is included as Figure 1-2. The core of the EIAR Site Boundary is shown overlain on aerial imagery in Figure 1-3. For clarity, the red line planning application boundary is shown on Figure 1-4.

The Proposed Grid Connection includes for underground 38kV electrical cabling from the proposed onsite 38kV substation, in the townland of Ballynaslee, Co. Kilkenny, to the existing Ballyragget 110kV substation in the townland of Moatpark, Co. Kilkenny. The total length of the Proposed Grid Connection underground cable route, measures approximately 3.4km in length with approximately 2.2km located within the public road corridor and approximately 1.2km located in agricultural lands.

Temporary accommodation works will be required at two locations to facilitate the delivery of turbine components and other abnormal loads to the Proposed Wind Farm during the construction phase. The accommodation works will be located within the town of Durrow, Co. Laois, at the Chapel Street/Mary Street (N77) junction and at the junction between the N77/L58333 in the townland of Ballynaslee, Co. Kilkenny. The locations of the accommodation works are shown on Figure 1-2 and these works are fully assessed as part of this EIAR.

Current land-use within the Proposed Wind Farm site comprises agricultural pastural land. Current land-use along the Proposed Grid Connection route comprises of transport and agricultural pastural land. Land-use in the wider vicinity of the Site comprises a mix of agriculture, low density residential, renewable energy and industrial and commercial.

A full and detailed description of the Proposed Development (i.e. the Proposed Wind Farm and the Proposed Grid Connection) for the purposes of the planning application and the additional elements that form part of the overall project, assessed in the EIAR, is contained in Chapter 4 of the EIAR. The townlands in which the Proposed Development is located are listed in Table 2-1.

*Table 2-1 Townlands within which the Proposed Development is located.*

| Project Component | Townlands within the EIAR Site Boundary | |
|---|---|---|
| Proposed Wind Farm | **Co. Kilkenny** | **Co. Laois** |
| | Ballynaslee, Ballyconra, Seskin | Archerstown, Tinwear |
| Proposed Grid Connection | Ballynaslee, Ballyconra, Moatpark | N/A |

## 2.2 Description of the Proposed Development

This section of the CEMP describes the Proposed Development and all its component parts. Two separate planning applications, relating to the Proposed Development, will be made to Kilkenny County Council and to Laois County Council.

The Overall Proposed Development will consist of the provision of the following:

i. *The construction of 8 no. wind turbines with an overall turbine tip height of 175 metres; a rotor blade diameter of 150 metres; and hub height of 100 metres, and associated foundations and hard standing areas;*

ii. *A permanent 38kV substation compound (control building with welfare facilities, all associated electrical plant and apparatus, security fencing including vegetative screening, underground cabling, wastewater holding tank, site drainage and all ancillary works);*

iii. *Permanent underground electrical (38kV) and communications cabling to the existing Ballyragget 110kV substation in the townland of Moatpark (including joint bays, communication and earth sheath link chambers and all ancillary works along the route);*

iv. *Underground electrical and communications cabling connecting the wind turbines and meteorological mast to the on-site substation;*

v. *A meteorological mast with a height of 100m above ground and associated foundation and hard-standing area;*

vi. *Upgrade of existing tracks and roads and the provision of new site access roads;*

vii. *All works associated with the upgrade of the existing agricultural access off the L58333 local road (including the installation of fencing and steel gates);*

viii. *2 no. temporary construction compounds (including temporary site offices and staff facilities);*

ix. *Accommodation works along the N77 National secondary road, in the townlands of Durrow Townparks, Co. Laois and Ballynaslee, Co. Kilkenny, to facilitate the delivery of turbine components and other abnormal sized loads;*

x. *A borrow pit;*

xi. *Spoil Management;*

xii. *Hedgerow removal;*

xiii. *Biodiversity Management and Enhancement Plan measures (including establishment of new hedgerow, translocation of existing hedgerow and enhancement of existing hedgerow);*

xiv. *Site Drainage;*

xv. *Operational stage site signage; and,*

xvi. *All associated site development works, ancillary works and apparatus.*

The development descriptions for the current planning applications as they appear in the public notices for Kilkenny County Council and Laois County Council are included in Chapter 1, Section 1.4, of this EIAR.

Both applications are seeking a ten-year planning permission and a 35-year operational life from the date of commissioning of the entire wind farm.

The Proposed Wind Farm makes use of the existing road network insofar as possible. It is proposed to upgrade approximately 1.5 km of existing site roads and tracks, and to construct approximately 4.9 km of new access road on the Proposed Development site.

As part of the Proposed Development, Hedgerow removal will be required within and around development footprint. It is anticipated approximately 1,794m of hedgerow habitat will be removed to accommodate the Proposed Development, including turbines and associated bat buffers, wind farm roads and other key infrastructure to ensure appropriate setbacks for bat foraging. It is proposed to plant some native tree species within the hedgerow habitat to further increase the biodiversity value within the Site. New native hedgerow habitat will be created within the Proposed Wind Farm site, approximately. 2,097m. In addition, approximately 2,375m of heavily managed hedgerow will be enhanced through additional planting with native species. The enhancement of existing hedgerows and hedgerow creation will improve the ecological value and provide benefits for local biodiversity. Please see Chapter 6 and Appendix 6-4 Biodiversity Management and Enhancement Plan for further details.

Figure 2-1 includes the layout of the Proposed Development, the subject of the planning applications to both Kilkenny County Council and Laois County Council.

Detailed site layout drawings of the Proposed Development are included in Appendix 4-1 to the EIAR.

Durrow

County Laois

County Kilkenny

T1

T2

T3

T4

T5

T6

T7

T8

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## Map Legend

- Proposed Turbine Locations
- Proposed Met Mast
- Proposed Hardstands
- Existing Roads to be Upgraded
- Proposed New Roads
- Proposed Borrow Pit
- Proposed Temporary Construction Compounds
- Proposed Hedgerow Planting and Enhancement Measures
- Proposed 38kV Substation
- Proposed 38kV Underground Gird Connection Cabling
- Proposed Horizontal Directional Drilling
- Existing Ballyragget 110kV Substation
- EIAR Site Boundary
- Kilkenny/Laois County Border



Drawing Title: Proposed Development

Project Title: Seskin Renewables Wind Farm

| Drawn By | Checked By |
|---|---|
| ER | EM |
| Project No. | Drawing No. |
| 231103 | Figure 2-1 |
| Scale | Date |
| 1:20,000 | 2025-06-26 |

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# 2.3 Construction Methodologies Overview

## 2.3.1 Introduction

An experienced main contractor will be appointed for the civil works for the construction phase of the Proposed Development. The appointed contractor for the works will be required to comply with this CEMP and any revisions made to this document in the preparation of method statements for the various elements of the construction phase of the Proposed Development. An overview of the proposed Construction Methodologies is provided below.

## 2.3.2 Overview of Proposed Construction Methodology

The EIAR includes construction methodologies for various elements of work to be undertaken as part of the Proposed Development. These construction methodologies are reproduced in the following sub-sections but will be superseded by an appointed contractor's construction method statements, which will form part of the CEMP. The contractor's construction method statements will be prepared to take account of the detailed engineering, geotechnical and detailed drainage design which will be prepared prior to commencement of construction and all requirements of this CEMP.

### Proposed Wind Farm:

- Site Drainage System;
- Site Entrance Management;
- Access Roads (New and Upgrade to existing tracks);
- Proposed Wind Farm Underground Electrical (33kV) and Communication Cabling;
- Watercourse/Culvert Crossings;
- Borrow Pit;
- Spoil Management;
- Temporary Construction Compounds;
- Hedgerow Removal and Replanting;
- Biodiversity Management and Enhancement Measures
- Meteorological Mast Foundations;
- Turbine Hardstanding Areas;
- Turbine Foundations

### Proposed Grid Connection

- Onsite Electricity Substation and Control Buildings;
- Temporary Construction Compound;
- Underground Electrical (38kV) and Communication Cabling;
- Existing Underground Services;
- Joint Bays;
- Watercourse/Service Crossings on the Proposed Grid Connection Underground Cabling Route;

## 2.3.3 Proposed Wind Farm

### 2.3.3.1 Site Drainage System

The early establishment of the drainage system will manage the risk of impacts on watercourses on and adjacent to the Site during construction. In addition, construction operations will adopt best working practices and the development of the Site will be phased accordingly.

Chapter 4, Section 4.6 of the EIAR and Appendix 4-3 Surface Water Management Plan (and appended drawings) includes a drainage design required for the purposes of assessing the potential effects of the Proposed Development. The drainage design will be developed further with a level of construction detail necessary to implement the measures onsite. The detailed (construction phase) drainage design will form part of the updated Main Contractor's CEMP and the effective implementation of the detailed drainage design will be audited by the ECoW. Surface water management and drainage design principles are outlined in Appendix 4-3 of the EIAR.

### 2.3.3.2 Site Entrance Management

#### Main Construction and Operational Site Entrance

An existing agricultural access, on the L-58333 at the east of the Site, will be upgraded and widened for use as the general construction entrance on the L-58333 at the east of the Site. This entrance will be used as the main entrance for construction traffic throughout the construction phase. Appropriate sightlines will be established at the proposed Site entrance for the safe egress of traffic during the construction phase. On completion of the construction phase, this Site entrance will be reduced in size and gated for security and will be used as an operational Site entrance.

### 2.3.3.3 Access Roads

To facilitate travel within the Site and to connect the various project components together, existing onsite tracks will need to be upgraded, and new access roads will need to be constructed. The Site makes use of the existing track network insofar as possible. It is proposed to upgrade approximately 1.5km of existing site roads and tracks and to construct approximately 4.9 kilometres of new internal access roads. The proposed access roads will be constructed using the methodology summarised below:

#### Construction of New Roads

The construction methodology for the proposed new access roads and turbine hardstands is outlined as follows:

- Establish alignment of the new road from the construction drawings and mark out the centrelines with ranging rods or timber posts;
- All drainage measures prescribed in the detailed drainage design for the Proposed Development will be implemented around the works area;
- The road layout has been designed to avoid crossings of natural watercourses where possible;
- Where existing culverts are to be upgraded or extended, the works will be carried out to follow a method statement to be prepared in consultation with Inland Fisheries Ireland;
- The access tracks will be of single-track design with a width of 5m with localised widening at bends and changes in direction. (depending on the location within the Site)
- All spoil excavated will be managed on-site. It will be placed within the proposed borrow pit or in linear berms alongside access roads and hardstands within the Site. Some topsoil may be temporarily stockpiled locally for reuse for landscaping purposes.
- The subsoil will be excavated down to a suitable formation layer of competent stratum;
- The road will be constructed using well-graded granular fill (imported or site-won), spread and compacted in layers typically of 200mm and a suitable capping layer to provide a homogeneous running surface. The thickness of layers and amount of compaction required will be subject to detailed design by Project Engineer in

consultation with the Construction Manager based on the characteristics of the material and the compaction plant to be used;
- The new access roads will be constructed with a camber to aid drainage of surface water;
- Excavations side slopes shall not generally be greater than 1(V): 2 (H). Design slopes will be informed by the Geotechnical Engineer;
- At bends or steep inclines from the road, reflective snow poles will be erected to warn traffic on dark mornings and evenings that there is a turn in the road or a sharp incline beyond the road
- Where underground services are to be traversed during the construction of new roads throughout the Proposed Wind Farm site, they will be traversed as per the methodology as outlined above.

## Upgrade of Existing Access Roads or Tracks

Approximately 1.5km of the existing roads will require upgrading which will comprise widening of the roadway to a total running width of approximately five metres, with wider sections at corners and the laying of a new surface dressing on the existing section of roadway where necessary. The road widening will be undertaken as follows:

- If it is considered that the current road formation level is adequate to support required bearing, then no upgrade or widening works will be completed.
- Otherwise, where required, the subsoil in the existing road verge will be excavated down to a suitable formation layer.
- All spoil excavated will be managed on-site. It will be placed within the proposed borrow pit or in linear berms alongside access roads and hardstands within the Site (which will be located outside identified watercourse 50m buffers). Some topsoil may be temporarily stockpiled locally for reuse for landscaping purposes.
- All drainage measures prescribed in the detailed drainage design for the Proposed Development will be implemented around the works area.
- Well-graded granular fill (imported or site-won) will be spread and compacted in layers up to 200mm to provide a homogeneous running surface. The thickness of layers and amount of compaction required will be decided by the Construction Manager based on the characteristics of the material and the compaction plant to be used.
- These layers of granular fill will be brought to the same level as the top of the existing road surface.
- Where required, a layer of geogrid will be installed directly onto the top of the granular fill layer and the existing road surface.
- A layer of finer well graded stone for the running surface will be laid on the geogrid and compacted.
- Upon completion the upgraded roads will be a single-track design with a width of 5m with localised widening at bends and changes in direction (depending on the location within the Site).

Prior to any works commencing on the upgrade of existing roads, the requirement for additional roadside drainage will be considered by the Project Hydrologist in line with the proposals outlined in Appendix 4-3 of the EIAR.

### 2.3.3.4 Proposed Wind Farm Underground Electrical (33kV) and Communication Cabling

The transformers in each turbine and the met mast are connected to the on-site substation through a network of underground electrical and communication cabling. The ground is trenched using a mechanical excavator. The top layer of soil (or road surface) is removed and saved so that it is replaced on completion. The cables will be bedded with suitable material. The cables will be laid at a depth of approximately 1.2m below ground level; a suitable marking tape is installed between the cabling and the surface (see Plate 2-1 below illustrating an example of a single cable trench). On completion, the ground will be reinstated. The route of the underground electrical and communication cabling will follow the access tracks as illustrated on the Proposed Wind Farm layout drawings included as Appendix 4-1 of the EIAR. The cabling may be placed on either side of the road footprint, on both sides of the road and/or within the road. The exact configuration of the underground cabling will be set by the requirements of the electrical designers at detailed design stage.

*Plate 2-1 Typical Cable Trench View*

### 2.3.3.5 Culvert Crossings

All new proposed culverts and proposed culvert upgrades will be suitably sized for the expected peak flows in the watercourse.

Some culverts may be installed to manage drainage waters from works areas of the Proposed Development, particularly where the waters have to be taken from one side of an existing roadway to the other for discharge. The size of culverts will be influenced by the depth of the track or road sub-base. In all cases, culverts will be oversized to allow mammals to pass through the culvert.

Culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. This will help dissipate its energy and help prevent problems of erosion. Smaller water crossings will simply consist of an appropriately sized pipe buried in the sub-base of the road at the necessary invert level to ensure ponding or pooling does not occur above or below the culvert and water can continue to flow as necessary.

All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.

### 2.3.3.6 Borrow Pit

The estimated volume to be extracted from the borrow pit for the construction of the Proposed Wind Farm is up to 81,075m$^3$. This figure presented is the anticipated maximum volumes; however, the actual volumes to be removed from the borrow pit will be confirmed at the time of construction and following detailed pre-construction site investigation works.

The borrow pit will be excavated and backfilled as follows:

- The area to be used for the borrow pit will be marked out at the corners using ranging rods or timber posts. Drainage runs, and associated settlement ponds will be installed around the perimeter;
- The initial borrow pit excavation will involve removal of soil to the top of bedrock. These materials will be stored temporarily in linear berms alongside access roads;
- All drainage measures prescribed in the detailed drainage design for the Proposed Development will be implemented around the works area;
- The bedrock material will be extracted by breaking and blasting (section 2.3.3.6.1 and 2.3.3.6.2 below) from the borrow pit and stockpiled or used as required;
- The use of material won from the borrow pit will be sequential with new road construction or turbine foundation formations;
- Temporary stockpiling of aggregates will be required to accommodate the cut and fill operations within the borrow pit, and the progression of access roads and turbine excavations;
- As the borrow pit excavation progress and become deeper, surface water and groundwater ingress will be removed via pumping to settlement ponds, and re-distribution locally across natural vegetated areas. Where required, additional specialist water treatment measures will be employed to ensure no deterioration in downstream water quality occurs;
- When extraction ceases within the borrow pit, the borrow pit will be backfilled with excavated spoil and its associated drainage measures will be removed.
- The extraction area of the borrow pit will have to be permanently secured and a stock-proof fence will be erected around the borrow pit to prevent access to these areas as well as the installation of appropriate health and safety signage.

Two extraction methods have been assessed for breaking out the useful rock below: rock breaking and blasting.

#### 2.3.3.6.1 *Rock Breaking*

Weathered or brittle rock can be extracted by means of a hydraulic excavator and a ripper attachment. This is a common extraction methodology where fragmented rock is encountered as it can be carefully excavated in layers. In areas where stronger rock is encountered and cannot be removed by means of excavating then a rock breaking methodology may be used. Rock breaking equipment comprises a large hydraulic 360-degree excavator with a rock breaker attachment. Given the power required to break out tight and compact stone at depth, the machines are generally large and in the 40-60 tonne size range. Even where rock might appear weathered or brittle at the surface, the extent of weathering can quickly diminish with depth resulting in strong rock requiring significant force to extract it at depths of only a few metres.

A large rock breaking excavator progressively breaks out the solid rock from the ground in the borrow pit area. A smaller rock breaker, in the 30-40 tonne size range, then breaks the rocks down to a size that can then be fed into a crusher.

The extracted, broken rock is loaded into a mobile crusher using a wheeled loading shovel and crushed down to the necessary size of graded stone required for the on-site civil works. The same wheeled loader takes the stone from the crusher conveyor stockpile and stockpiles it elsewhere within the borrow pit, away from the immediate area of the crusher, until it is required elsewhere within the Site.

#### 2.3.3.6.2 *Rock Blasting*

Where blasting is used as an extraction method, a mobile drilling rig is used to drill vertical boreholes into the area of rock that is to be blasted. A drilling rig will drill the necessary number of boreholes required for a single blast in approximately 3 to 4 days. The locations, depth and number of boreholes are determined by the blast engineer. This is a specialist role fulfilled by the blasting contractor.

The blast engineer will arrange for the necessary quantity of explosive to be brought to site to undertake a single blast. The management of explosives on-site and the actual blasting operation will be agreed in advance with and supervised by An Gardaí Siochána. The blast engineer sets the explosives in place in the boreholes, sets the charges, and fires the blast.

A properly designed blast should generate rock of a size that can be loaded directly into a mobile crusher, using the same wheeled loader outlined above. The same method is used for processing the rock generated from a blast, as would be used to process rock generated by rock breaking. Generally, the drilling rig will recommence drilling blast holes for the next blast as soon as one blast is finished. The potential impacts and control measures associated with noise and vibration from this extraction method are assessed in Chapter 12: Noise and Vibration. Any blasting will be carried out in accordance with the Guidance on the Safe Use of Explosives in Quarries (Safety and Health Commission for the Mining and Other Extractive Industries, 2002) and the British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise.

### 2.3.3.7 Spoil Management Plan

It is proposed to manage overburden generated through construction activities for the Proposed Development locally within the Site, through backfilling of the proposed borrow pit void in the first instance, and following that within linear berms will be placed along access roads and turbine hardstand areas, where appropriate.

The total estimated volume of spoil to be managed following excavations during the construction phase of the Proposed Development is approximately 100,350m$^3$. Some material arising from the construction of the Proposed Grid Connection underground cabling route will be sent to an appropriate licenced facility. The majority of soil and subsoil excavated during the works will be used to backfill the proposed borrow pit. Any additional soil and subsoil will be used for site landscaping or will be placed alongside site access roads and turbine hardstands (avoiding environmentally constrained areas). There is more than enough capacity to manage the total volume of spoil requiring management for both the Proposed Wind Farm and the Proposed Grid Connection as detailed in Table 4-2 in Chapter 4 of the EIAR.

### 2.3.3.8 Temporary Construction Compounds

Two temporary construction compounds will be located within the Proposed Development site. The primary construction compound will be located at the 240m southeast of T03, measuring approximately 2,925 square metres (m$^2$) in area. The secondary construction compound will be located adjacent to the proposed substation, measuring approximately 1,554m$^2$ in area. The compounds will be constructed in the same manner, as follows:

- The area to be used as the compound will be marked out at the corners using ranging rods or timber posts. Drainage runs and associated settlement ponds will be installed around the perimeter;
- The compound platform will be established using a similar technique as the construction of the substation platform as discussed below in Section 2.3.4.2;
- A layer of geo-grid will be installed where deemed necessary by the designer and compacted layers of well graded granular material will be spread and lightly compacted to provide a hard area for Site offices and storage containers;
- A limited amount of fuel will have to be stored in appropriately bunded containers and a designated area for oil storage will be constructed within the compound.
- Areas within the compound will be constructed as site roads and used as vehicle hardstandings during deliveries and for parking;
- A bunded containment area will be provided within the compound for the storage of lubricants, oils and site generators etc;
- A waste storage area will be provided within the compound;
- The compound will be fenced and secured with locked gates if necessary; and,
- Upon completion of the Proposed Development, the temporary construction compounds will be decommissioned and allowed to vegetate naturally.

## 2.3.3.9 Biodiversity Management and Enhancement Measures

### 2.3.3.9.1 *Hedgerow Removal*

The vast majority of field boundaries within the Proposed Wind Farm site are delineated by (managed and unmanaged) hedgerow and treeline habitats. It is anticipated approximately 1,794m of hedgerow habitat will be removed to accommodate the Proposed Development, including turbines and associated bat buffers, wind farm roads and other key infrastructure. The majority of the existing hedgerows in the Proposed Wind Farm site are heavily managed and support high levels of biodiversity or provide adequate commuting and foraging corridors for local wildlife. The locations of hedgerow loss are shown in Figure 2-1 and Figure 2-2 of Appendix 6-4 of the EIAR, the Biodiversity Management and Enhancement Plan (BMEP).

### 2.3.3.9.2 *Hedgerow Enhancement*

Approximately 2,375m of heavily managed hedgerow will be enhanced through best practice management measures (discussed further below) and additional planting with native hedgerow species. It is proposed to plant some native tree species within the hedgerow habitat to further increase the biodiversity value of linear features within the Proposed Development site. The following species should be planted:

- Hawthorn (Crataegus monogyna)
  - Proportion of hedgerow mix: 75%
  - Age class to be planted: combination of whips and advanced nursery stock (10cm – 12 cm girth trees) to increase structure diversity.
- Hazel (Corylus avellana)
- Blackthorn (Prunus spinosa)
- Guelder rose (Viburnum opulus)
- Holly (Ilex aquifolium)
- Elder (Sambucus nigra)
- Spindle (Euonymus europaeus)
- Wild cherry (Prunus avium)
- Downey birch (Betula pubescens)
- Oak (Quercus robur)
- Goat Willow (Salix caprea)
  - Proportion of hedgerow mix: 25%

- Age class to be planted: Whips predominantly



Hedgerows should be managed as follows (DAERA, 2022):

- Hedgerows should not be cut every year, as flower buds often form on second-year growth. Hedges should be trimmed on a two- three-year rotation, targeting different sections each year, which will make sure there are always flowers for pollinators in spring and berries for birds in autumn.
- Hedgerows should be trimmed to an 'A' Shape, which is thicker at the base and gets narrower at the top
- A two-meter buffer should be provided next to the hedgerow.
- Where possible, allow trees to develop at roughly 20 metre intervals.

The enhancement of existing hedgerows, translocation of existing (species rich) hedgerow and hedgerow creation will off-set the loss of hedgerows within the Proposed Development site and in the long term will provide a net gain in linear features across the Proposed Development site, increasing the ecological value of the site for local biodiversity. Existing hedgerows identified for enhancement are shown in yellow on Figure 2-3 and Figure 2-4 of Appendix 6-4 of this EIAR while areas identified as suitable for new hedgerow planting and/or translocation are shown in blue on Figure 2-3 and Figure 2-4. The location of hedgerow planting and enhancement was identified to ensure connectivity with the wider landscape in particular for commuting bats.

#### 2.3.3.9.3 *Hedgerow Creation*

Approximately 2,097m of additional hedgerow will be established within the Proposed Development site, this will be achieved through new hedgerow planting and translocation of existing hedgerows within the site.

Species selected will be indigenous to the local area and will maximise flowering times throughout the year as well as berry availability later in the year as detailed below. For example, species such as guelder rose would be beneficial as this species flowers later in summer. The ideal native hedge is made up of approx. 75% hawthorn and 25% of at least four other species.

A combination of whips and advanced nursery stock (10cm – 12 cm girth trees) will be used for both tree and hedgerow planting across the Proposed Wind Farm site to increase structure diversity and to ensure connectivity gains are immediate.

New hedgerows should be planted between November – March when the woody hedge plants are dormant. When planting new hedgerow, plants will be closely spaced (a maximum of 50cm apart) and planted in a staggered row. The new hedgerow will need to be protected from poaching by livestock, through the erection of new stockproof fencing where required, which will be at least 1m away from the hedge, and installed on each side if required.

- Willow
- Blackthorn
- Whitethorn/Hawthorn
- Spindle
- Elder
- Guelder Rose

#### 2.3.3.9.4 *Hedgerow Translocation*

A number of hedgerows within the site had a rich and diverse floristic composition. They consisted of a high number of woody species including hawthorn (Crataegus monogyna), blackthorn (Prunus spinosa), elder (Sambuccus nigra) hazel (Corylus avellana), holly (Hedera helix), and spindle (Euonymus europaeus). Mature and semi-mature trees, such as beech (Fagus sylvatica), ash (Fraxinus excelsior), pedunculate oak (Quercus robur), goat willow (Salix caprea), alder (Alnus glutinosa), and aspen (Populus tremuloides) were growing as individual trees within these hedgerows. Some of these hedgerows had well developed understories and a diverse ground flora associated with them with species such as lords and ladies (Arum maculatum), cow parsley (Anthriscus sylvestris), bluebells (Hyacinthoides non-scripta), greater stitchwort (Stellaria holostea), primrose (Primula vulgaris), golden saxifrage (Chrysosplenium oppositifolium), common dog violet (Viola riviniana), wood avens (Geum urbanum), and lesser celandine (Ficaria verna) recorded (See Plate 2-3 and 2-4, of Appendix 6-4, for examples of hedgerows with high biodiversity value that will be lost to the footprint of the Proposed Development).

The identification of hedgerows suitable for translocation should be agreed with an Ecologist. Those species rich hedgerows and those that follow old townland boundaries (see data on specific hedgerows in Appendix 6-1) should be prioritised for translocation including those with a range of ground flora. Hedgerow translocation is practiced widely in the UK (Rooney and Hill 2004, cited in Foulkes, N. 2007) and has been attempted in Ireland on multiple occasions (Foulkes, N. 2007). The benefits of translocation include the following (Devon Hedges Group, 2015):

- Where works are carried out well, the integrity and visual character of the original hedge can be maintained, together with much of its cultural, environmental and landscape value.
- A translocated hedge will establish and grow in its new position more quickly than a new hedge.
- Translocation retains the genetic stock and seed bank of the original woody and herbaceous plants.
- The retention of the original and nutrient poor soils can help to reduce weed infestation problems.
- It can be cheaper than establishing a new hedge.
- The hedge is likely to be more in keeping with the surrounding landscape than a new boundary feature such as a fence or unbanked hedge.

The methodology used to carry out hedgerow translocation is included in Section 2.3.2 of Appendix 6-4 of the EIAR.

### 2.3.3.10 Meteorological Mast Foundation

One meteorological (met) mast is proposed as part of the Proposed Wind Farm. The met mast will be equipped with wind monitoring equipment at various heights. The proposed met mast will be located at E641539, N673634 (ITM) as shown on the Proposed Wind Farm site layout drawing in Figure 2-1 and the detailed site layout drawings included as Appendix 4-1 of the EIAR. The met mast will be a free-standing slender lattice structure 100 metres in height. It will be constructed on a hard-standing area sufficiently large to accommodate the equipment that will be used to erect the mast. A standard detail of a meteorological mast is shown in Chapter 4, Figure 4-9, of the EIAR.

The met mast foundation will be formed at a suitable level directed by the Geotechnical Engineer/Designer. The foundation area will be prepared as follows:

1. *The extent of the excavation will be marked out and will include an allowance for trimming the sides of the excavation to provide a safe working area and slope batter;*

2. *Where practical, the soil will be stripped over the area of the excavation and stored locally for reuse, the subsoil will be excavated and stored to one side for reuse during the landscaping around the finished met mast;*
3. *No material will be removed from site with excavated spoil being transported and stored in the borrow pit void or within linear berms that will be placed along access roads and turbine hardstand areas, where appropriate within the Site.*
4. *All groundwater and surface water arising from met mase base excavation will be pumped to the dirty water system prior to discharge from the works area;*
5. *Soil excavation shall be observed by a qualified archaeologist in accordance with a scheme of archaeological monitoring to identify any significant remains as they come to light;*
6. *The foundations excavation will be raised to formation level by compacted layers of well graded granular material will be spread and compacted to provide a hard area for the met mast foundation.*

The met mast foundation will then be installed using the standard excavated reinforced concrete bases methodology as detailed below in Section 2.3.3.12.

### 2.3.3.11 Turbine Hardstanding Areas

Hard standing areas consisting of levelled and compacted hardcore are required around each turbine base to facilitate access, turbine assembly and turbine erection. The hard-standing areas are used to accommodate cranes used in the assembly and erection of the turbine, offloading and storage of turbine components, and provide a safe, level working area around each turbine position. The hard-standing areas are extended to cover the turbine foundations once the turbine foundation is in place. All crane hardstand areas will be designed taking account of the loadings provided by the turbine manufacturer and will consist of a compacted stone structure. The crane hardstands will be constructed in a similar manner to the excavated site roads detailed in Section 2.3.3.3 above.

The sizes, arrangement and positioning of hard standing areas are dictated by turbine suppliers. The proposed hard standing areas are illustrated in the detailed drawings included in Appendix 4-1 of the EIAR. The extent of the required areas at each turbine location may be optimised on-site depending on topography, position of the Site access road, the proposed turbine position and the turbine supplier's exact requirements.

### 2.3.3.12 Turbine Foundations

Each wind turbine is secured to a reinforced concrete foundation that is installed below the finished ground level. The size of the foundation will be dictated by the turbine manufacturer, and the final turbine selection will be the subject of a competitive tender process. Different turbine manufacturers use different shaped turbines foundations, ranging from circular to hexagonal and square, depending on the requirements of the final turbine supplier. The turbine foundation transmits any load on the wind turbine into the ground. The proposed horizontal and vertical extent of the turbine foundations will be 25m and 4m respectively, which has been assessed in the EIAR.

After the foundation level of each turbine has been formed using piling methods or on competent strata (i.e. bedrock or subsoil of sufficient load bearing capacity), the "Anchor Cage" is levelled, and reinforcing steel is then built up around and through the anchor cage. The outside of the foundation is shuttered with demountable formwork to allow the pouring of concrete and is backfilled accordingly with appropriate granular fill to finished surface level following completion of the foundation.

It is anticipated that the formation level of the turbine foundations will be on the lower mineral subsoil or bedrock. They will be formed at a suitable level directed by the Geotechnical Engineer/Designer. The foundations will be constructed as follows:

1. *The extent of the excavation will be marked out and will include an allowance for trimming the sides of the excavation to provide a safe working area and slope batter;*
2. *Where practical, the soil will be stripped over the area of the excavation and stored locally for reuse, the subsoil will be excavated and stored to one side for reuse during the landscaping around the finished turbine;*
3. *No material will be removed from site with excavated spoil being transported to the borrow pit void or within linear berms that will be placed along access roads and turbine hardstand areas, where appropriate within the Site.*
4. *All groundwater and surface water arising from turbine base excavation will be pumped to the dirty water system prior to discharge from the works area;*
5. *Soil excavation shall be observed by a qualified archaeologist in accordance with a scheme of archaeological monitoring to identify any significant remains as they come to light;*
6. *The foundations excavation will be raised to formation level by compacted layers of well graded granular material will be spread and compacted to provide a hard area for the turbine foundation.*

Standard excavated reinforced concrete bases will be completed as follows:

1. *A layer of lean-mix blinding will be laid approximately 75mm 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 should be prevented from entering surface water drainage directly;*
2. *High tensile steel reinforcement will be fixed around the anchor cage in accordance with the designer's drawings & schedules. The foundation anchorage system will be installed, levelled and secured to the blinding using steel box section stools;*
3. *Ductwork will be installed as required, and formwork erected around the steel cage and propped from the backside as required;*
4. *The foundation anchorage system will be checked both for level and line prior to the concrete being installed in the base. These checks will be passed to turbine manufacturer for their approval;*
5. *Concrete will be placed using a concrete pump and compacted when in the forms using vibrating pokers 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;*
6. *Steel shutters will be used to pour the circular chimney section;*
7. *Earth wires will be placed around the base;*
8. *The foundation will be backfilled with a cohesive material, where possible using the material arising during the excavation or imported material and landscaped using the soil set aside during the excavation; and.*
9. *Any excess overburden excavated during construction shall be managed in line with the recommendations/ best practice guidelines outlined in Section 2.3.3.7 above.*

Reinforced concrete piled foundations will be completed as follows:

1. *The extent of the excavation will be marked out and will include an allowance for trimming the sides of the excavation to provide a safe working area and slope batter;*
2. *No excavated material will be removed from site with excavated spoil being transported and stored in the borrow pit void or within linear berms that will be placed along access roads and turbine hardstand areas, where appropriate within the Site.*
3. *No material will be removed from site and placement areas will be stripped of vegetation prior to stockpiling in line with best working practices;*
4. *A piling platform for the piling rig will be constructed by excavating to a suitable intermediate mineral subsoil and backfilling to formation level by compacted layers of*

*well graded granular material spread and compacted to provide a hard area for the piling rig;*

5. *The piling rig, fitted with an auger, will then bore through the soft material with a sleeve fitted around the auger to prevent the sidewalls of the soil and overburden from collapsing. The borehole is then extended to a suitable depth into the subsoil/bedrock.*
6. *When the auger and the sleeve are removed high tensile steel cages will be lowered into the boreholes. These steel cages will extrude above the level of the top of the concrete pile.*
7. *As the auger is removed concrete is pumped into the borehole.*
8. *Reinforcing steel on the top of the pile will tie to the foundation base steel.*
9. *The procedure for standard excavated reinforced concrete bases as outlined above can be applied form here.*

## 2.3.4 Proposed Grid Connection

### 2.3.4.1 Onsite Electricity Substation and Control Buildings

A detailed drawing of the proposed onsite 38kV substation is shown in Figure 4-13 of Chapter 4 of the EIAR. The proposed onsite 38kV substation will be constructed by constructed by the following methodology:

- The area of the on-site substation will be marked out using ranging rods or wooden posts and the soil and overburden stripped and temporarily stockpiled for later use in landscaping. Any excess material will be sent to the borrow pit void or within linear berms that will be placed along access roads and turbine hardstand areas, where appropriate within the Site
- 1 no. control building will be built within the on-site substation compound.
- The foundations will be excavated down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it. An anti-bleeding admixture will be included in the concrete mix.
- The block work walls will be built up from the footings to DPC level and the floor slab constructed, having first located any ducts or trenches required by the follow on mechanical and electrical contractors.
- The block work will then be raised to wall plate level and the gables & internal partition walls formed. Scaffold will be erected around the outside of the building for this operation.
- The roof slabs will be lifted into position using an adequately sized mobile crane.
- The timber roof trusses will then be lifted into position using a telescopic load all or mobile crane depending on-site conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather.
- The transformer, electrical equipment and storage container plinths will be excavated down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it. An anti-bleeding admixture will be included in the concrete mix.
- Lightning poles will be erected at appropriate locations adjacent to the substation. All lightning poles will be appropriately earthed.
- The electrical equipment will be installed and commissioned.
- Perimeter fencing will be erected.
- The construction and components of the substation will be built to ESBN specifications.

### 2.3.4.2 Substation Temporary Construction Compound

The temporary construction compound adjacent to the proposed onsite 38kV substation (the secondary construction compound) will be constructed as outlined above in Section 2.3.3.8.

### 2.3.4.3 Underground Electrical (38kV) and Communication Cabling for Proposed Grid Connection

The underground cabling works will consist of the installation of ducts in an excavated trench to accommodate power cables, and a fibre communications cables to allow communications between the proposed 38kV onsite substation and the existing 110kV Ballyragget substation.

The proposed grid connection works will require a road opening licence under Section 254 of the Planning and Development Act 2000, as amended, from Kilkenny County Council. A Traffic Management Plan (TMP) (Appendix 15-2 of this EIAR) will be agreed with the local authority prior to the commencement of the development where required. The TMP will outline the location of traffic management signage, together with the location of any necessary road closures and the routing of appropriate diversions. Where diversions are required, these will be agreed with the local authority in advance of the works commencing.

The UGC will be a single circuit connection consisting of 3 no. 110mm diameter HDPE power cable ducts and 1 no. 110mm diameter HDPE communications duct to be installed in an excavated trench, typically 600mm wide by 1,200mm deep. For trench designs there will be variations on the design to adapt to service crossings and watercourse crossings.

The underground electrical cabling will be laid beneath the surface of the Proposed Development site and the public road using the following methodology:

- Before works commence, updated surveying will take place along the proposed cable route, with all existing culverts identified. All relevant bodies i.e. ESB, Kilkenny County Council etc. will be contacted and all up to date drawings for all existing services sought.
- When the cable is located on public roads, a traffic management plan will be prepared prior to any works commencing. A road opening licence will be obtained where required and all plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator will then proceed to dig out the proposed trench, typically to a depth of 1200mm, within which the ducts will be laid.
- The cable ducts will be concrete surrounded where they pass under the public road and under drains or culverts.
- Trench supports will be installed, or the trench sides will be benched or battered back where appropriate and any ingress of ground water will be removed from the trench using submersible pumps, fitted with appropriate silt filtration systems, to prevent contamination of any watercourse.
- Once the trench has been excavated, a base-layer will be laid and compacted, comprising Clause 804, or 15 Newton CBM4 concrete as required.
- The ducting will be installed as per specification, with couplers fitted and capped to prevent any dirt etc. entering the duct. In poor ground conditions, the ends of the ducts will be shimmed up off of the bed of the trench, to prevent any possible ingress of water dirt. The shims will be removed again once the next length has been connected. Extreme care will be taken to ensure that all duct collars (both ends) are clean and in good condition prior to ducts being joined.
- As the works progress, the as-built location of the ducting will be recorded using a total station or GPS.
- As per the associated base-layer (Clause 804 material or 15 Newton CBM4 concrete) will be installed and compacted as per approved detail, with care not to displace the ducting.
- Spacers will be used to ensure that the correct cover is achieved at both sides of the ducting.

- The remainder of the trench will be backfilled in two compacted layers with approved engineer's specified material.
- Yellow marker warning tape will be installed across the width of the trench, at 300mm depth,
- The finished surface is to be reinstated, as per original specification. Off-road cabling may be finished with granular fill to facilitate access to the trench for any potential maintenance that is required during the operational phase of the Proposed Development.
- Marker posts will then be placed at regular intervals (generally at joint bays and any change in direction) to denote the location of the underground power cables.

#### 2.3.4.4 Existing Underground Services

The location and avoidance of existing underground services (e.g. watermains, other underground electricity cables, fibre broadband etc.) was a key consideration in determining the position and alignment of the Proposed Grid Connection underground electricity cabling route. However, notwithstanding this consideration, in order to facilitate the installation of an underground grid connection, it may be necessary to relocate existing underground services such as water mains or existing cables. In advance of any construction activity, the contractor will undertake additional surveys of the proposed route to confirm the presence or otherwise of any services. If found to be present, the relevant service provider will be consulted with in order to determine the requirement for specific excavation or relocation methods and to schedule a suitable time to carry out works.

If existing low voltage underground cables are found be present, a trench will be excavated, and new ducting and cabling will be installed along the new alignment and connected to the network on either end. The trench will be backfilled with suitable material to the required specification. Warning strip and marking tape will be laid at various depths over the cables as required. Marker posts and plates will be installed at surface level to identify the new alignment of the underground cable, the underground cables will then be re-energised.

In the event that water mains are encountered the water supply will be turned off by the utility so work can commence on diverting the service. The section of existing pipe will be removed and will be replaced with a new pipe along the new alignment of the service. The works will be carried out in accordance with the utility standards.

#### 2.3.4.5 Joint Bays

Joint bays are typically pre-cast concrete chambers where lengths of cable will be joined to form one continuous cable. They will be located at various points along the ducting route generally between 700 to 1100 metres intervals or as otherwise required by ESB/Eirgrid and electrical requirements. Joint Bays are typically 2.5m x 6m x 1.75m pre-cast concrete structures installed below finished ground level.

Where possible, joint bays will be located in areas where there is a natural widening/wide grass margin on the road in order to accommodate easier construction, cable installation and create less traffic congestion. Joint Bays will be located in the non-wheel bearing strip of roadways, however given the narrow profile of local roads this may not always be possible. During construction the joint bay locations will be completely fenced off once they have been constructed, they will be backfilled until cables are being installed. Once the cabling is installed the joint bays will be permanently backfilled with the existing surface re-instated and there will be no discernible evidence of the joint bay on the ground.

In association with Joint Bays, Communication Chambers are required at every joint bay location to facilitate communication links between the onsite 38kV substation and the existing 110kV Ballyragget substation. Earth Sheath Link Chambers are also required approximately every second joint bay along the cable route. Earth Sheath Links are used for earthing and bonding cable sheaths of underground

power cables, installed in a flat formation, so that the circulating currents and induced voltages are eliminated or reduced. Earth Sheath Link Chambers and Communication Chambers are located in close proximity to Joint Bays. Earth Sheath Link Chambers and Communication Chambers will be pre-cast concrete structures with an access cover at finished surface level. The locations of the joint bays and chambers are shown on the site layout drawings included in Appendix 4-1 of this EIAR. Standard joint bay and comms chamber details are shown in Chapter 4, Figures 4-28 and 4-29, of the EIAR.



The precise siting of all Joint Bays, Earth Sheath Link Chambers and Communication Chambers within the curtilage of the public road is subject to approval by ESBN and Eirgrid.

#### 2.3.4.6 Watercourse Crossings on the Proposed Grid Connection Underground Cable Route

There is one identified EPA/OSI mapped watercourse, the River Nore, along the Proposed Grid Connection underground electrical cabling route. This location is shown in Figure 4-1, of Chapter 4 of this EIAR.

The directional drilling construction methodology for this crossing has been designed to eliminate the requirement for in-stream works or the construction of any clearspan crossing structure at this location.

##### 2.3.4.6.1 *Horizontal Directional Drilling*

The horizontal directional drilling (HDD) method of duct installation is carried out using Vermeer D36 x 50 Directional Drill (approximately 22 tonnes), or similar plant. The launch and reception pits will be approximately 2.5mm wide, 2.5m long and 2.0m deep. The pits will be excavated with a suitably sized excavator. The drilling rig will be securely anchored to the ground by means of anchor pins which will be attached to the front of the machine. The drill head will then be secured to the first drill rod and the operator will commence to drill into the launch pit to a suitable angle which will enable him to obtain the depths and pitch required to the line and level of the required profile. Drilling of the pilot bore will continue with the addition of 3.0m long drill rods, mechanically loaded and connected into position.

During the drilling process, a mixture of a natural, inert and fully biodegradable drilling fluid such as Clear Bore™ and water is pumped through the centre of the drill rods to the reamer head and is forced in to void and enables the annulus which has been created to support the surrounding subsoil and thus prevent collapse of the reamed length. Depending on the prevalent ground conditions, it may be necessary to repeat the drilling process by incrementally increasing the size of the reamers. When the reamer enters the launch pit, it is removed from the drill rods which are then passed back up the bore to the reception pit and the next size reamer is attached to the drill rods and the process is repeated until the required bore with the allowable tolerance is achieved.

The use of a natural, inert and biodegradable drilling fluid such as Clear Bore™ is intended to negate any adverse impacts arising from the use of other, traditional polymer-based drilling fluids and will be used sparingly as part of the drilling operations. It will be appropriately stored prior to use and deployed in the required amounts to avoid surplus. Should any excess drilling fluid accumulate in the reception or drilling pits, it will be contained and removed from the site in the same manner as other subsoil materials associated with the drilling process to a licensed recovery facility.

Backfilling of launch & reception pits will be conducted in accordance with the normal specification for backfilling excavated trenches. Sufficient controls and monitoring, as listed below, will be put in place during drilling to prevent frack-out, such as the installation of casing at entry points where reduced cover and bearing pressure exits.

- The area around the Clear Bore™ batching, pumping and recycling plants shall be bunded using terram and sandbags in order to contain any spillages;

- One or more lines of silt fences shall be placed between the works area and adjacent rivers and streams on both banks;
- Accidental spillage of fluids shall be cleaned up immediately and transported off site for disposal at a licensed facility; and,
- Adequately sized skips will be used for temporary storage of drilling arisings during directional drilling works. This will ensure containment of drilling arisings and drilling flush.

#### 2.3.4.6.2 *Underground Culvert/Service Crossings*

No drainage culverts have been identified along the Proposed Grid Connection underground cabling route. It is likely that underground services exist along this section of the of the N77 National Secondary Road serving the properties along the same. A general description of the various construction methods employed at culvert/ drain/service crossings are described in the following sections below.

In the event that an unidentified existing culvert/service crossing is located during the construction phase, the most appropriate proposed crossing methodology, as outlined below, will be used to traverse the culvert/service depending on culvert/service type, depth, size and local ground conditions.

Should an alternative methodology option be required for individual crossings during the construction process this will be agreed with the relevant authorities including Kilkenny County Council prior to works commencing.

Where culverts require upgrading, the Applicant will commission a survey of culverts, the results of which will inform the exact details of the upgrade works which will be forwarded to the relevant Local Authority. Having regard to the duration of the consent requested (10 years) it is considered best practice that any such surveys be carried out prior to construction to facilitate accuracy and timely reporting of the surveys.

Inland Fisheries Ireland have published guidelines relating to construction works along water bodies entitled "*Requirements for the Protection of Fisheries Habitats during Construction and Development Works at River Sites*", and these guidelines will be adhered to during the construction of the Proposed Development.

In the event that none of the above methods are appropriate, directional drilling, as described in Section 2.3.4.6.1 above, will be utilised.

##### Crossing Using Standard Trefoil Formation Over – Option A

Where adequate cover exists above a culvert/service or where a new bottomless box culvert or clear-span structure has been installed at a sufficient depth, the standard ESB approved trefoil arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert. The cable trench will pass over the culvert in a standard trench, as shown in Figure 4-31.

##### Flatbed Formation Under– Option B

Where cable ducts are to be installed under an existing watercourse or service crossing where sufficient cover cannot be achieved by installing the ducts in a trefoil arrangement, the ducts will be laid in a much shallower trench, the depth of which will be determined by the location of the top of the obstacle or the depth of excavatable material under it. The ducts will be laid in this trench in a flatbed formation under the existing culvert/ service and will be encased in 6mm thick steel galvanized plate with a 35N concrete surround as per ESB Networks specification as shown in Figure 4-32.

### Flatbed Formation over– Option C

Where cable ducts are to be installed over a culvert or service crossing where sufficient cover cannot be achieved by installing the ducts in a trefoil arrangement, the ducts will be laid in a much shallower trench the depth of which will be determined by the location of the top of the obstacle or the depth of excavatable material over it. The ducts will be laid in this trench in a flatbed formation over the existing culvert and will be encased in 6mm thick steel galvanized plate with a 35N concrete surround as per ESB Networks specification as shown in Figure 4-33.

Where a culvert or service has insufficient cover depth to fully accommodate the required trench, the ducts can be laid in a flatbed formation partially within the existing road surface as shown in Figure 4-34. Where this option is to be employed, the ducts will also be encased in steel with a concrete surround as per ESB Networks specifications. In order to achieve cover over these ducts and restore the carriageway of the road, it may be necessary to raise the pavement level locally to fully cover the ducts. The increased road level will be achieved by overlaying the existing pavement with a new wearing course as required. Any addition of a new pavement will be tied back into the existing road pavement at grade. After the crossing over the culvert has been achieved, the ducts will resume to the trefoil arrangement within a standard trench.

# 3. ENVIRONMENTAL MANAGEMENT

## 3.1 Introduction

This CEMP includes all best practice measures required to construct the Proposed Development. The drainage proposals will be developed further prior to the commencement of construction however, any such improvements will be in line with the principles set out here and will also be in full compliance with the planning consent and mitigation measures as presented in the EIAR, Natura Impact Statement (NIS) and all other relevant planning documents. The following sections give an overview of the drainage design principles, dust and noise control measures and a waste management plan for the Site.

While the drainage design measures are presented in Chapter 4 of the EIAR and the drainage management measures and water quality and monitoring measures are included in this CEMP, the Surface Water Management Plan (SWMP) compiles all of these into a single document. The SWMP is an accompanying document for this CEMP and is included as Appendix 4-3 of the EIAR.

## 3.2 Protecting Water Quality

### 3.2.1 Good Environmental Management During Construction

Timing of works can strongly influence the potential for damaging the freshwater environment. Operations during wetter periods of the year pose a significantly greater risk of causing erosion and siltation, which can be particularly severe following major rainfall or snowmelt events. Traditionally, wind farm construction undertaken during the drier summer months would result in significantly less erosion and siltation. Construction activities in the hydrological buffer zones shall be avoided during or after prolonged rainfall or an intense rainfall event and work will cease entirely near watercourses when it is evident that water quality is being impacted.

### 3.2.2 Site Drainage Principles

The site drainage features have been outlined in Section 4.6 of the EIAR (and Section 3 of the SWMP) for the Proposed Development in addition to the drainage design and management for the Proposed Development. The protection of the watercourses within and surrounding the Site, and downstream catchments that they feed is of utmost importance in considering the most appropriate drainage proposals for the Site of the Proposed Development. No routes of any natural drainage features will be altered as part of the Proposed Development. Turbine locations and associated new roadways were originally selected to avoid natural watercourses, and existing roads are to be used wherever possible. The Proposed Development has where possible, been kept a minimum of 50 metres from natural watercourses. There will be no direct discharges to natural watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an appropriate distance from natural watercourse and lakes. Buffer zones around the existing natural drainage features have informed the layout of the Proposed Development and are indicated on the drainage design drawings.

A detailed drainage design for the Proposed Development will be prepared prior to the commencement of construction to by the Project Hydrologist to incorporate these site drainage principles and carry forward into the construction phase of the Proposed Development.

Existing artificial drains in the vicinity of existing site roads will be maintained in their present location where possible. If it is expected that these artificial drains will receive drainage water from works areas,

check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. If road widening or improvement works are necessary along the existing roads, where possible, the works will take place on the opposite side of the road to the drain.



### 3.2.3 Legislation and Best Practice Guidance

The drainage design presented in the EIAR and planning application documents has been prepared based on experience of the project team of other renewable energy sites in similar environments, and the number of best practice guidance documents.

There is no one guidance document that deals with drainage management and water quality controls for wind farm and other renewable energy developments. However, a selection of good practice approaches have been adopted in preparation of this CEMP, and these are taken from the various best practice guidance documents listed below. These relate to infrastructure and operational works on sites, road design, water quality controls for linear projects, road drainage and management of geotechnical risks. To achieve best practice in terms of water protection through construction management, the detailed drainage design and all drainage management proposals shall be prepared in accordance with guidance contained in the following:

- Institute of Geologists Ireland (2013): Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements;
- National Roads Authority (2008): Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes;
- Department of Environment, Heritage and Local Government (2006): Wind Energy Development Guidelines for Planning Authorities;
- Institute of Geologists Ireland (2013): Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements;
- Forestry Commission (2011): Forests and Water UK Forestry Standard Guidelines, Fifth Edition. Publ. Forestry Commission, Edinburgh;
- Coillte (2009): Forest Operations & Water Protection Guidelines;
- Forest Service (Draft): Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures;
- Forest Service (2000): Forestry and Water Quality Guidelines. Forest Service, DAF, Johnstown Castle Estate, Co. Wexford;
- Forest Service, (2000): Code of Best Forest Practice – Ireland. Forest Service, DAF, Johnstown Castle Estate, Co. Wexford;
- COFORD (2004): Forest Road Manual – Guidelines for the design, construction and management of forest roads;
- MacCulloch (2006): Guidelines for risk management of peat slips on the construction of low volume low cost roads over peat (Frank MacCulloch Forestry Civil Engineering Forestry Commission, Scotland);
- National Roads Authority (2005): Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes;
- Eastern Regional Fisheries Board: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries During Construction Works Adjacent to Waters;
- Scottish Natural Heritage, 2010: Good Practice During Wind Farm Construction;
- PPG1 - General Guide to Prevention of Pollution (UK Guidance Note);
- PPG5 – Works or Maintenance in or Near Water Courses (UK Guidance Note);
- CIRIA Report No. C648 (2006): CIRIA (Construction Industry Research and Information Association) guidance on 'Control of Water Pollution from Linear Construction Projects';
- CIRIA Report Number C532 (2001): Control of water pollution from construction sites - Guidance for consultants and contractors.; and,

### 3.2.4 Site Drainage Design and Management

The proposed site drainage features for this Site are outlined in Section 4.6 of the EIAR and in Section 3 of the SWMP. The following sections give an outline of drainage management arrangements in terms of pre-construction, construction, operational and decommissioning phases of the Proposed Development.

#### 3.2.4.1 Pre-Construction Drainage

Prior to commencement of works in sub-catchments across the Site, main drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis as the construction works develop across the Site, as works in all areas will not commence simultaneously.

Drainage and associated pollution control measures will be implemented onsite before the main construction works commence. Where possible drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off.

The routes of any natural drainage features will not be altered as part of the Proposed Development. Turbine locations have been selected to avoid natural watercourses. It is proposed that one new clear span watercourse crossing is required within the Proposed Wind Farm site.

There will be no direct discharges to natural watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an appropriate distance from natural watercourse and lakes. Buffer zones around the existing natural drainage features have informed the layout of the Proposed Development and are indicated on the drainage design drawings.

Where artificial drains are currently in place in the vicinity of proposed works areas, these drains may have to be diverted around the proposed works areas to minimise the amount of water in the vicinity of works areas. Where it may not be possible to divert artificial drains around proposed work areas, the drains will be blocked to ensure sediment laden water from the works areas has no direct route to other watercourses. Where drains have to be blocked, the blocking will only take place after an alternative drainage system to handle the same water has been put in place.

Existing artificial drains in the vicinity of existing Site roads will be maintained in their present location where possible. If it is expected that these artificial drains will receive drainage water from works areas, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. If road widening or improvement works are necessary along the existing roads, where possible, the works will take place on the opposite side of the road to the drain.

#### 3.2.4.2 Construction Phase Drainage

The key principles of drainage design that will be implemented and adhered to as part of the Proposed Development are as follows:

- Keep clean water clean by intercepting it where possible, upgradient of works areas, and divert it around the works areas for discharge as diffuse overland flow or for rewetting of land.
- Collect potentially silt-laden runoff from works areas via downgradient collector drains and manage via series of avoidance, source, in-line, treatment and outfall controls prior to controlled diffuse release as overland flow or for rewetting of land.
- No direct hydraulic connectivity from construction areas to watercourses or drains connecting to watercourses.
- Where possible, maintain 50-metre watercourse buffer zones for the wind turbines.

- No alteration of natural watercourses.
- Maintain the existing hydrology of the Site.
- Blocking of existing manmade drainage as appropriate.
- Daily inspection and recording of surface water management system by onsite Environmental Clerk of Works and immediate remedial measures to be carried out as required and works temporarily ceased if a retained stormwater/sediment load is identified to have the potential to migrate from the Site.
- Use of siltbuster or equivalent system if required.

Runoff control and drainage management are key elements in terms of mitigation against effects on surface water bodies. Two distinct methods will be employed to manage drainage water within Site. The first method involves 'keeping clean water clean' by avoiding disturbance to natural drainage features, minimising any works in or around artificial drainage features, and diverting clean surface water flow around excavations, construction areas and temporary storage areas. The second method involves collecting any drainage waters from works areas within the Site that might carry silt or sediment, and nutrients, to route them towards settlement ponds (or stilling ponds) prior to controlled diffuse release over vegetated surfaces. There will be no direct discharges to surface waters. During the construction phase all runoff from works areas (i.e. dirty water) will be attenuated and treated to a high quality prior to being released. The Proposed Drainage Design is included as Appendix 4-3 of the EIAR.

The Project Hydrologist will complete a detailed drainage design and maintenance plan before construction commences and will attend the Site to set out and assist with micro-siting of proposed drainage controls as outlined in Section 4.6 of the EIAR. The drainage system will be excavated and constructed in conjunction with the road and hard standing construction. Drains will be excavated, and settlement ponds constructed to eliminate any suspended solids within surface water running off the site.

Drainage infrastructure within the Proposed Wind Farm site will include:

- Source controls:
  - Interceptor drains, vee-drains, diversion drains, flume pipes, erosion and velocity control measures such as use of sand bags, oyster bags filled with gravel, filter fabrics, and other similar/equivalent or appropriate systems.
  - Small working areas, covering or sealing stockpiles, weathering off stockpiles, cessation of works in certain areas.
- In-Line controls:
  - Interceptor drains, vee-drains, oversized swales, erosion and velocity control measures such as check dams, sand bags, oyster bags, flow limiters, weirs, baffles, silt bags, silt fences, sedimats, filter fabrics, and collection sumps, temporary sumps, sediment traps, pumping systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems.
- Treatment systems:
  - Temporary sumps and ponds, temporary storage lagoons, sediment traps, and settlement ponds, and proprietary settlement systems such as Siltbuster, and/or other similar/equivalent or appropriate systems.

It should be noted that for the Proposed Wind Farm site, an extensive network of agricultural drains already exist, and these will be integrated and enhanced as required and used within the Proposed Wind Farm drainage system. The integration of the existing drainage network and the Proposed Wind Farm network is relatively simple. The key elements being the upgrading and improvements to existing water treatment elements, such as in line controls and treatment systems, including silt traps, settlement ponds and buffered outfalls.

The main elements of interaction with existing drains will be as follows:

- Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the Proposed Wind Farm site drainage into the existing site drainage network. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion;
- Silt traps will be placed in the existing drains upstream of any streams where construction works are taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area;
- Runoff from individual turbine hardstanding areas will be not discharged into the existing drain network but discharged locally at each turbine location through settlement ponds and buffered outfalls onto vegetated surfaces;
- Buffered outfalls which will be numerous over the Site will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the Proposed Wind Farm site; and,
- Drains running parallel to the existing roads requiring widening will be upgraded, widening will be targeted to the opposite side of the road. Velocity and silt control measures such as check dams, sand bags, oyster bags, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters.

Setbacks from sensitive hydrological features means that adequate room is maintained for the proposed drainage mitigation measures to be properly installed and operate effectively. The proposed buffer zone will:

- Avoid physical damage to watercourses, and associated release of sediment;
- Avoid excavations within close proximity to surface watercourses;
- Avoid the entry of suspended sediment from earthworks into watercourses; and,
- Avoid the entry of suspended sediment from the construction phase drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation of the buffer zone;

All of the Proposed Development works will be supervised by the Environmental Clerk of Works (ECoW) supported by the Project Hydrologist.

Best practice and practical experience on other similar projects suggests that in addition to the drainage plans that are included in the EIAR, there are additional site-based decisions and plans that can only be made in the field through interaction between the Site Construction Manager, the Project Hydrologist and the Project Geotechnical Engineers. The mechanisms for interaction between these roles is outlined within Section 4.1 of this CEMP.

In relation to decisions that are made on site it is important to stress that these will be implemented in line with the associated drainage controls and mitigation measures outlined in Section 7 of this CEMP, and to ensure protection of all watercourses.

The Project Hydrologist/Design Engineer will complete a site drainage and maintenance plan before construction commences and will attend the Site to set out and assist with micro-siting of proposed drainage controls as outlined in Chapter 4, Section 4.6 of the EIAR and Section 3 of the SWMP. The drainage system will be excavated and constructed in conjunction with the road and hard standing construction. Drains will be excavated, and stilling ponds constructed to eliminate any suspended solids within surface water running off the Site.

### 3.2.4.3 Operational Phase Drainage

The Project Hydrologist will inspect and review the drainage system after construction has been completed to provide guidance on the requirements of an operational phase drainage system. This operational phase drainage system will have been installed during the construction phase in conjunction with the road and hardstanding construction work as described above and in Section 4.6 of the EIAR.

The drainage system will be monitored in the operational phase until such a time that all areas that have been reinstated become re-vegetated and the natural drainage regime has been restored.

The drainage system will not be altered upon decommissioning. Measures which will be implemented to ensure no impacts upon the drainage system during decommissioning will be outlined within the Decommissioning Plan (Appendix 4-4) and fully agreed with the local authority prior to any decommissioning works.

### 3.2.4.4 Preparative Site Drainage Management

The detailed drainage design will specify all materials and equipment necessary to implement the drainage measures effectively, which will be brought on site in advance of any works commencing.

An adequate quantity of straw bales, clean stone, terram, stakes, etc. will be kept on site at all times to implement the detailed drainage design measures as necessary. The detailed drainage measures will be installed prior to, or at the same time as the works they are intended to drain.

### 3.2.4.5 Pre-emptive Site Drainage Management

The works programme for the groundworks part of the construction phase of the Proposed Development will also take account of weather forecasts and predicted rainfall in particular. The site Construction Manager is responsible for making the decision to postpone or abandon works. Large excavations and movements of overburden or large-scale overburden or soil stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.

### 3.2.4.6 Reactive Site Drainage Management

In line with the requirements of the EIAR, the final drainage design prepared for the Proposed Development prior to commencement of construction will provide for reactive management of drainage measures. The effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treat silt-laden water from the works areas, will be monitored continuously by the ECoW or supervising hydrologist on-site. The contractor is solely responsible for the implementation of the detailed drainage design on site. The ECoW is responsible for monitoring the effectiveness of the drainage design as it is implemented on-site. The ECoW or supervising hydrologist will respond to changing weather, ground or drainage conditions on the ground as the Proposed Development proceeds, to ensure the effectiveness of the drainage design is maintained in so far as is possible. This may require the installation of additional check dams, interceptor drains or swales as deemed necessary on-site. The drainage design may have to be modified on the ground as necessary, and the modifications will draw on the various features outlined above in whatever combinations are deemed to be most appropriate to situation on the ground as a particular time.

In the event that works are giving rise to siltation of watercourses, the ECoW or supervising hydrologist will stop all works in the immediate area around where the siltation is evident. The source of the siltation will be identified and additional drainage measures such as those outlined above will be installed in advance of works recommencing.

### 3.2.4.7 Cable Trench Drainage

Cable trenches are typically constructed in short, controlled sections, thereby minimising the amount of ground disturbed at any one time and minimising the potential for drainage runoff to pick up silt or suspended solids. Each short section of trench is excavated, ducting installed and bedded, and backfilled with the appropriate materials, before work on the next section commences.

To efficiently control drainage runoff from cable trench works areas, excavated material is stored on the up-gradient side of the trench. Should any rainfall cause runoff from the excavated material, the material is therefore collected and contained in the downgradient cable trench. Excess subsoil is removed from the cable trench works area immediately upon excavation, and in the case of the Proposed Development, will be transported to the borrow pit void, placed within linear berms along access roads and turbine hardstand areas or used for landscaping or reinstatement of other areas elsewhere within the site, where appropriate. Along sections of the Proposed Grid Connection underground cabling route that are further removed from the Proposed Wind Farm site it may be more practical to transport excess excavated material to a nearby licenced facility.

On steeper slopes, silt fences will be installed temporarily downgradient of the cable trench works area, or on the downhill slope below where excavated material is being temporarily stored to control run-off.

### 3.2.4.8 Rainfall Forecasting and Monitoring

Accurate forecasting and monitoring of rainfall is critical to the successful pre-emptive and reactive site drainage management as outlined in the subsections above.

Rainfall forecasts will be obtained for the nearest forecast reference point available via the www.yr.no weather forecasting website. The reference location will be that of the town of Durrow, Co. Laois.

https://www.yr.no/en/forecast/daily-table/2-2964468/Ireland/Leinster/County%20Laois/Durrow

Construction personnel will be required to check the forecasted rainfall for the days ahead and plan for or suspend planned works accordingly. The forecasted rainfall should be recorded for reference and comparison with the rainfall levels to be recorded on-site.

Actual rainfall will be monitored on site, ideally via an automated rain gauge with regular recording intervals recommended by the Project Hydrologist and a means of alerting the construction personnel of rainfall trigger levels. Any recorded rainfall data should be available on site at all times for review by the ECoW, Project Hydrologist or any regulatory authorities. The appointed contractor will be required to outline their proposed means of recording rainfall on site to the satisfaction of the ECoW and the Project Hydrologist prior to commencement of works.

## 3.2.5 Refuelling, Fuel and Hazardous Materials Storage

Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles. On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site. Heavy plant and machinery will be refuelled on-site by a fuel truck that will come to the Site as required on a scheduled and organised basis. All refuelling will be carried out outside designated watercourse buffer zones. Only designated trained and competent operatives will be authorised to refuel plant on-site. Mobile measures such as drip trays and fuel absorbent mats will used during refuelling operations as required. All plant and machinery will be equipped with fuel absorbent material and pads to deal with any event of accidental spillage.

The following mitigation measures are proposed to avoid release of hydrocarbons at the Site:

- All plant will be inspected and certified to ensure that they are leak free and in good working order prior to use at the Site.
- Fuels stored on site will be minimised.
- Onsite refuelling will be carried out by trained personnel only;
- All refuelling will be carried out outside of the designated hydrological buffer zones;
- Mobile measures such as dip trays and fuel absorbent mats will be used during refuelling operations as required;
- All plant and machinery will be equipped with fuel absorbent material and pads to deal with any accidental spillage;
- The electrical substation compound will be bunded appropriately to 110% of the volume of oils that will be stored, and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor;
- Spill kits will be available to deal with any accidental spillage in and outside the re-fuelling area.
- An emergency plan for the construction phase to deal with accidental spillages will be developed (refer to Section 6 of this CEMP);
- All hazardous wastes will be stored in bunded containers/areas before being collected by an authorised waste contractor and brought to an EPA licensed waste facility;
- Hazardous wastes will be kept separate from non-hazardous wastes so that contamination does not occur.

### 3.2.6 Cement Based Products Control Measures

Concrete and other cement-based products are highly alkaline and corrosive and can have significant negative impacts on water quality. They generate very fine, highly alkaline silt (pH 11.5) that can physically damage fish by burning their skin and blocking their gills.

The following mitigation measures are proposed to avoid release of cement leachate from the site:

- No batching of wet-concrete products will occur on the Site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place;
- Where possible pre-cast elements for culverts and concrete works will be used;
- Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined concrete washout ponds;
- Weather forecasting will be used to plan dry days for pouring concrete; and,
- The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event; and,
- At turbine foundations, lean-mix blinding is used to vertically contain the concrete. While the concrete is contained laterally by temporary/permanent shuttering.

The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment areas, or a Siltbuster-type concrete wash unit or equivalent. This type of Siltbuster unit catches the solid concrete and filters and holds wash liquid for pH adjustment and further solids separation. The residual liquids and solids will be removed off-site by an appropriately authorised waste collector for disposal at an authorised waste facility. Where temporary lined impermeable containment areas are used, such containment areas are typically built using straw bales and lined with an impermeable membrane. Two examples are shown below.



*Plate 3-1 Typical concrete wash out areas*

## 3.3 Archaeological Management

This section of the CEMP provides an outline of the Archaeological, Architectural and Cultural Heritage mitigation measures for the construction phase of the Proposed Development.

There are no UNESCO World Heritage Sites nor National Monuments located within or along the proposed footprint of the Proposed Development.

There are two recorded monuments within the Proposed Wind Farm site. A Ringfort-rath approximately 262m northwest of Turbine 7 and an Enclosure approximately 289m west of Turbine 8. There are no recorded monuments in the 100m corridor study area for the Proposed Grid Connection Route. There are no recorded monuments within 100m of the accommodation works proposed along the existing public road network which will facilitate turbine component delivery.

Mitigation measures will be implemented during construction works, however, in order to avoid any negative effects arising to recorded and/or unrecorded sub-surface archaeology during construction, as follows:

- Prior to the commencement of construction, a programme of archaeological test trenching will be carried out at the location of the proposed turbine hardstands, compound, borrow pit and along the access roads. This work will be carried out under licence to the National Monuments Service of the DHLGH. Dependent on the results of the testing assessment, further mitigation may be required, such as preservation by record or in-situ and/or archaeological monitoring. Any further mitigation will require agreement from the DHLGH.
- All inventions that are required along townland boundaries, as part of the construction of the proposed development, will be subject to archaeological monitoring, to include a full record of the sections of townland boundaries that are removed. This work will be carried out under licence to the National Monuments Service of the DHLGH.
- All topsoil stripping associated with the proposed development, including site investigation, will be subject to archaeological monitoring. This work will be carried out under licence to the National Monuments Service of the DHLGH. If archaeological remains are identified during the course of these works further mitigation may be required, such as preservation by record or in-situ. Any further mitigation will require agreement from the DHLGH.

# 3.4 Traffic Management

This section of the CEMP provides an outline of the traffic management proposals for the construction phase of the Proposed Development. In the event planning permission is granted the final Traffic Management Plan will address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned.

## 3.4.1 Turbine and Materials Transport Route

### 3.4.1.1 Proposed Wind Farm

From Shannon Foynes Port in Co. Limerick, the turbines component delivery vehicles will travel east via the N69 and N18 National Primary Roads as far as the western outskirts of Limerick City before merging onto the M7 Motorway. At Junction 17 (Portlaoise), the vehicles will exit the M7, travelling south on the N77 National Secondary Road for approximately 25km. The vehicle will travel through the town of Abbeyleix and the village of Durrow in Co. Laois. In the townland of Ballynaslee, Co. Kilkenny the turbine component delivery vehicles will reverse on to the L58333 local road from the existing junction on the N77 and continue north on this local road for approximately 700m to the Proposed Wind Farm entrance. All deliveries of turbine components to the Site will follow this route.

General construction deliveries and staff will access the site via the proposed new general construction entrance on the L-58333 at the east of the Site, as described in Section 4.4 of the EIAR. As set out in Chapter 15, Section 15.1.2.1 and shown in Figure 15-1a of this EIAR. It is proposed that temporary traffic management measures will be introduced at this location during the construction phase, including signs and the presence of a Flagman on days with high volumes of construction material deliveries.

### 3.4.1.2 Proposed Grid Connection

It is proposed to connect the onsite 38 kV substation to the existing 110 kV Ballyragget substation in Moatpark, Co Kilkenny via 38 kV underground electrical cabling. The underground electrical cabling route is illustrated in Figure 4-1, of Chapter 4 of this EIAR, is approximately 3.4km in length and located primarily within the public road corridor, with a short section (approximately 335m) located within a agricultural land east of the proposed on-site substation and another short section (approximately 560m) passing through a number of agricultural fields south of the Ballyragget 110kV substation.

The underground electrical cabling route will originate at the proposed onsite 38kV substation and run east for approximately 335m through agricultural pastoral land. The underground cabling route then follows the N77 national secondary road south for 2.2km before turning east into agricultural pastoral land in the townland of Ballyconra, Co. Kilkenny. The underground cabling will then cross beneath the River Nore via horizontal direction drilling (refer to Section 4.8.2.6.1, of Chapter 4 of this EIAR) and continue east through agricultural land, for approximately 560m before reaching the Ballyragget 110kV substation in the townland of Moatpark, Co. Kilkenny.

The methodology for construction of the Proposed Grid Connection underground electrical cabling is presented in Section 2.3.2 above.

Deliveries of materials for the construction of the Proposed Grid Connection infrastructure and underground cabling route will be via the public road network along the identified route. The proposed works will be rolling in nature; approximately 100-200m will be constructed along the road network at any one time.

With respect to the traffic volumes that will be generated during the construction of the underground cabling, it is estimated that there will be approximately 30 daily return trips made by a truck transporting materials and construction staff to and from the Site.

The construction methodology of providing a Proposed Grid Connection underground cabling route under and along local road networks is well established and accepted nationwide. There are in excess of 300 wind farms currently operational in the Republic of Ireland and the majority of these are connected to the national grid via underground cable connections predominantly along the public road networks.

Before works commence, updated surveying will take place along the proposed cabling route, with all existing culverts and services identified, as detailed in Section 4.8.2 of the EIAR. All relevant bodies i.e., ESBN, Kilkenny County Council etc. will be contacted and all up to date information for all existing services sought. The HDD launch and reception pit along the Proposed Grid Connection underground cabling route will be determined following site investigations.

When the Proposed Grid Connection underground cabling route is located on public roads, a traffic management plan will be prepared prior to any works commencing. A road opening licence will be obtained where required and all plant operators and general operatives will be inducted and informed as to the location of any services.

### 3.4.2 Traffic Mitigation Measures During the Construction Stage

The successful completion of the Proposed Development will require significant coordination and planning and a comprehensive set of mitigation measures will be put in place before and during the construction stage of the Proposed Development in order to minimise the effects of the additional traffic generated by the Proposed Development. The range of measures will include the following which are also set out in Chapter 15 of the EIAR.

A detailed Traffic Management Plan (TMP), incorporating all the mitigation measures set out within this CEMP along with Chapter 15 of the EIAR, will be finalised and detailed provisions in respect of traffic management agreed with the roads authority and An Garda Síochána prior to construction works commencing on Site. The detailed TMP will include the following:

**Traffic Management Coordinator** – a competent Traffic Management Co-ordinator will be appointed for the duration of the construction of the Proposed Development and this person will be the main point of contact for all matters relating to traffic management.

**Delivery Programme** – a programme of deliveries will be submitted to Kilkenny County Council and other relevant authorities in advance of deliveries of turbine components to the Proposed Wind Farm site. For general construction traffic, routes to and from the site avoiding the settlement of Durrow in County Laois and Ballyragget in County Kilkenny will be agreed with both Laois and Kilkenny County Councils and strictly adhered to by all suppliers.

**Information to locals** – Locals in the area will be informed of any upcoming traffic related matters e.g. delivery of turbine components at night, via letter drops and posters in public places. Information will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided.

**A Pre and Post Construction Condition Survey** – A pre-condition survey of roads associated with the Proposed Development will be carried out prior to construction commencement to record the condition of the road. A post construction survey will be carried out after works are completed. Where required the timing of these surveys will be agreed with the local authority.

**Liaison with the relevant local authorities** – Liaison with the relevant local authorities including the roads sections of local authorities that the delivery routes traverse, and An Garda Síochána, during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required.

**Identification of delivery routes** – These routes will be agreed and adhered to by all contractors.

**Travel plan for construction workers to Site** – A travel plan for construction staff, which will include the identification of a routes to / from the Site and identification of parking areas will be implemented by the main contractor.

**Temporary traffic signs** – As part of the traffic management measures temporary traffic signs will be put in place at all key junctions, including the proposed access junctions on the L-58333. All measures will be in accordance with the *"Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works"* (DoT now DoTT&S) and "Guidance for the Control and Management of Traffic at Roadworks" (DoTT&S). Construction staff (flagman) will be present at key junctions during peak delivery times.

**Delivery times of large turbine components** – The management plan will include the delivery of large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage.

**Diversion routes during the construction of the Proposed Grid Connection Underground Cabling Route –** As set out in Section 15.1.7 of the EIAR

**Additional measures** – Various additional measures will be put in place in order to minimise the effects of the project traffic on the surrounding road network including sweeping / cleaning of local roads as required.

**Re-instatement works** – All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.

## 3.5 Dust Control

Construction dust can be generated from many on-site activities such as excavation and backfilling. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, i.e., soil, sand, peat, etc. and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Construction traffic movements also have the potential to generate dust as they travel along the haul route.

In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. If necessary, water will be taken from stilling/settlement ponds in the Wind Farm Site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads and temporary construction compounds to prevent the generation of dust. Silty or oily water will not be used for dust suppression, because this would transfer the pollutants to the haul roads and generate polluted runoff or more dust. Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff.

- Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff.
- All plant and materials vehicles shall be stored in dedicated areas within the Site.
- Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction.

- Turbines and construction vehicles will be transported to the site on specified haul routes only.
- Proposed Grid Connection infrastructure will be transported to the site on specified haul routes only.
- Construction materials for the Proposed Grid Connection and a small volume for the Proposed Wind Farm will be sourced locally from licenced quarries.
- The agreed haul route roads adjacent to the site will be regularly inspected for cleanliness and cleaned as necessary.
- The roads adjacent to the site entrance will be checked weekly or damage/potholes and repaired as necessary.
- The transport of construction materials around the Site from the nearby quarry facilities will be covered by tarpaulin where necessary.
- Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the Site to reduce the amount of emissions associated with vehicle movements.

When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper. It is not anticipated that vehicle or wheel washing facilities will be required as part of the construction phase of the Proposed Development because site roads will be formed before road-going trucks begin to make regular or frequent deliveries to the site (e.g. with steel or concrete). The site roads will be well finished with compacted hardcore, and so the public road-going vehicles will not be travelling over soft or muddy ground where they might pick up mud or dirt. A road sweeper will be available if any section of the public roads requires cleaning due to construction traffic associated with the Proposed Development.

## 3.6 Noise Control

The operation of plant and machinery, including construction vehicles, is a source of potential impact that will require mitigation at all locations within the Site.

The following proposed measures to control noise will be implemented in full include:

- limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;
- establishing channels of communication between the contractor/developer, Local Authority and residents;
- appointing a site representative responsible for matters relating to noise and vibration;
- monitoring typical levels of noise and vibration during critical periods and at sensitive locations;
- keeping site access roads even to mitigate the potential for vibration from lorries.

Section 8 of BS5228-1:2009+A1:2014, as outlined in Chapter 12 of the EIAR: Noise and Vibration, further recommends a number of simple control measures as summarised below that will be employed onsite:

- Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance;
- Select inherently quiet plant where appropriate - all major compressors will be ‘sound reduced’ models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use;

- All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers;
- Machines will be shut down between work periods (or when not in use) or throttled down to a minimum.
- Regularly maintain all equipment used on site, including maintenance related to noise emissions;
- Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and
- All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided.

Where the BS5228 threshold levels are anticipated to be exceeded due to the directional drilling activity along the underground electrical cabling route, the following are examples of measures that will be considered, where necessary, to mitigate noise emissions from this activity are as follows:

- Temporary boarding alongside the drilling rig or use of 'acoustic blanket panels' to hang from heras fencing or similar. Installation will be as close to the drilling rig as is practicable and fitted so as to interrupt any direct line of site between the drilling rig and the closest residential receptors.
- Examples of appropriate products include Echo Noise Defender and Soundex DeciBloc. It is anticipated that this will be required where directional drilling is used for the water crossing along the proposed underground grid connection cable route.

Where rock breaking is employed in relation to the Proposed Development, the following are examples of measures that will be employed, where necessary, to mitigate noise emissions from these activities:

- Fit suitably designed muffler or sound reduction equipment to the rock breaking tool to reduce noise without impairing machine efficiency;
- Ensure all leaks in air lines are sealed;
- Erect acoustic screen between compressor or generator and noise sensitive area;
- When possible, line of sight between top of machine and reception point needs to be obscured;
- Enclose breaker or rock drill in portable or fixed acoustic enclosure with suitable ventilation;

## 3.7 Invasive Species Management

A baseline invasive species survey was carried out at the site to identify the presence and location of any invasive species (listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) by a suitably qualified ecologist. As outlined in Chapter 6 of the EIAR, no Third Schedule Alien Invasive species were recorded within the footprint of the Proposed Wind Farm or Proposed Grid Connection during the survey conducted.

In the event that the presence of such species is found at or adjacent to the Proposed Development footprint during pre-commencement surveys, particularly in areas where its excavation may be required, an Invasive Species Management Plan will be prepared for the site to prevent the introduction or spread of any invasive species within the footprint of the works. An Invasive Species Management Plan, if required, will set out best practice control methods as summarised in the following sections. The Invasive Species Management Plan would be updated during construction.

### 3.7.1 Site Management

Careful preparation of the site and planning of the works is crucial to successful treatment of invasive species. The following list of guidelines, which is not exhaustive, shall be followed by all on-site

personnel. Only those who have been inducted into biosecurity measures on-site may enter the contaminated zones within the works areas. Should any risk of contaminated material escaping be observed by the site supervisor, the management plan for the site must be amended by an appropriately qualified person to mitigate against the risk.

### 3.7.2 Establish Good Site Hygiene

The following measures are proposed to establish good site hygiene to ensure the control of any potential spread of invasive species during construction works:

- A risk assessment and method statement will be provided by the Contractor prior to commencing works.
- Fences will be erected around areas of infestation, as confirmed by test pits, and warning signs shall be erected.
- A designated wash-down area will be created, where power-washed material from machinery can be contained, collected and disposed of with other contaminated material. This area will contain a washable membrane or hard surface.
- Stockpile areas will be chosen to minimise movement of contaminated soil.
- Stockpiles will be marked and isolated.
- Contaminated areas which will not be excavated will be protected by a root barrier membrane if they are likely to be disturbed by machinery. Root barrier membranes will be protected by a layer of sand above and below and topped with a layer of hardcore.
- The use of vehicles with caterpillar tracks within contaminated areas will be avoided to minimise the risk of spreading contaminated material.
- An ECoW/suitably qualified ecologist will be on site to monitor and oversee the implementation of invasive species management plans.

Plant and equipment which is operated within an area for the management of materials in contaminated areas will be decontaminated prior to relocating to a different works area. The decontamination procedures will take account of the following:

- Personnel may only clean down if they are familiar with the plant and rhizome material and can readily identify it.
- Decontamination will only occur within designated wash-down areas.
- Vehicles will be cleaned using stiff-haired brush and pressure washers, paying special attention to any areas that might retain rhizomes e.g. wheel treads and arches.
- All run-off will be isolated and treated as contaminated material. This will be disposed of in already contaminated areas.

## 3.8 Waste Management

This section of the CEMP provides a waste management plan (WMP) which outlines the best practice procedures during the excavation and construction phases of the project. The WMP will outline the methods of waste prevention and minimisation by recycling, recovery, and reuse at each stage of construction of the Proposed Development. Disposal of waste will be seen as a last resort.

### 3.8.1 Legislation

The Waste Management Act 1996 and its subsequent amendments provide for measures to improve performance in relation to waste management, recycling and recovery. The Act also provides a regulatory framework for meeting higher environmental standards set out by other national and EU legislation.

The Act requires that any waste related activity has to have all necessary licenses and authorisations. It will be the duty of the Waste Manager on the site of the development to ensure that all contractors hired to remove waste from the site have valid Waste Collection Permits. It will then be necessary to ensure that the waste is delivered to a licensed or permitted waste facility. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits and authorisations.

The Department of the Environment provides a document entitled, *'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects'* (2006). It is important to emphasise that no demolition will take place at this site, however, this document was referred to throughout the process of completing this WMP.

## 3.8.2 Waste Management Hierarchy

The waste management hierarchy sets out the most efficient way of managing in the following order:

### Prevention and Minimisation:

The primary aim of the WMP will be to prevent and thereby reduce the amount of waste generated at each stage of the project.

### Reuse of Waste:

Reusing as much of the waste generated on site as possible will reduce the quantities of waste that will have to be transported off site to recovery facilities or landfill.

### Recycling of Waste:

There are a number of established markets available for the beneficial use of Construction waste such as using waste concrete as fill for new roads.

At all times during the implementation of the WMP, disposal of waste to landfill will be considered only as a last resort.

## 3.8.3 Construction Phase Waste Management

### 3.8.3.1 Description of the Works

The construction of the Proposed Development will involve the construction of:

- Proposed Wind Farm: this refers to turbines and associated foundations and hard-standing areas, meteorological mast, access roads, temporary construction compound, underground cabling, borrow pit, spoil management, site drainage and all ancillary works and apparatus. The Proposed Wind Farm is described in detail in Chapter 4 of the EIAR.
- Proposed Grid Connection: this refers to the 38kV onsite substation, associated temporary construction compound and 38kV underground cabling connecting to the existing Ballyragget 110kV substation, and all ancillary works and apparatus. The Proposed Grid Connection is described in detail in Chapter 4 of the EIAR.

The turbines and meteorological mast will be manufactured off-site and delivered to the Site where on site erection will occur.

The turbine and meteorological mast foundations will consist of stone from the onsite borrow pit and a concrete base which will contain reinforcing steel. These concrete foundations will be shuttered with steel formwork specifically designed for the works and re-usable off site on similar projects.

The new site roads and existing roads for upgrade will be constructed with rock sourced predominantly from the onsite borrow pit, with some material sourced from local quarries.

The onsite electrical substation and control buildings will be constructed on a concrete foundation with the buildings constructed with concrete masonry blocks with a timber roof structure and roof tile or slate covering. The roof structure will be made up of prefabricated roof trusses manufactured off site to minimise timber cutting on site. The construction of the underground electrical cabling (Grid Connection & Wind Farm) will consist of excavating sections of a trench, laying the ducting and cabling and backfilling.

The waste types arising from the construction phase of the Proposed Development are outlined in Table 3-1 below.

*Table 3-1 Expected waste types arising during the Construction Phase*

| Material Type | Example | EWC Code |
|---|---|---|
| Cables | Electrical wiring | 17 04 11 |
| Cardboard | Boxes, cartons | 15 01 01 |
| Composite packaging | Containers | 15 01 05 |
| Metals | Copper, aluminium, lead, iron and steel | 17 04 07 |
| Inert materials | Sand, stones, plaster, rock, blocks | 17 01 07 |
| Mixed municipal waste | Daily canteen waste from construction workers, miscellaneous | 20 03 01 |
| Plastic | PVC frames, electrical fittings | 17 02 03 |
| Plastic packaging | Packaging with new materials | 15 01 02 |
| Tiles and ceramics | Slates and tiles | 17 01 03 |
| Wooden packaging | Boxes, pallets | 15 01 03 |
| Tarmac/Bitumen | Road surfacing along Grid Connection underground connection cabling route | 17 03 02 |

Hazardous wastes that may occur on site during the construction phase of the development may include oil, diesel fuel, chemicals, paints, preservatives etc. All hazardous wastes will be stored in bunded containers/areas before being collected by an authorised waste contractor and brought to an EPA licensed waste facility. As mentioned above, hazardous wastes will be kept separate from non-hazardous wastes so that contamination does not occur.

### 3.8.3.2 Waste Arising and Proposals for Minimisation, Refuse and Recycling of Construction Waste

Construction waste will arise on the project mainly from excavation and unavoidable construction waste including material surpluses and damaged materials and packaging waste.

Appropriate measures will be taken to ensure excess waste is not generated during construction, including:

- Ordering of materials will be on an 'as needed' basis to prevent over supply to site. Co-ordination is required with suppliers enabling them to take/buy back surplus stock;
- Purchase of materials pre-cut to length to avoid excess scrap waste generated on site;
- Request that suppliers use least amount of packaging possible on materials delivered to the site;
- Ensuring correct storage and handling of goods to avoid unnecessary damage that would result in their disposal;
- Ensuring correct sequencing of operations;
- Use reclaimed materials in the construction works.

Hazardous waste will be kept separate from all other construction waste to prevent contamination and removed appropriately.

#### 3.8.3.3 Waste Arising from Construction Activities

All waste generated on site will be contained in waste skips at a waste storage area on site. This waste storage area will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein.

The expected waste volumes generated on site are unlikely to be large enough to warrant source segregation at the wind farm site. Therefore, all wastes streams generated on site will be deposited into a single waste skip. This waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal.

The waste generated from the turbine erection will be limited to the associated protective covers which are generally reusable. Considering the specialist nature of this packaging material the majority will be taken back by suppliers for their own reuse. Any other packaging waste generated from the turbine supply will be deposited into the on-site skips and subsequently transferred to the MRF.

It is not envisaged that there will be any waste material arising from the materials used to construct the site roads as only the quantity of stone necessary will be sourced from the on-site borrow pit and local quarries and brought on site on an 'as needed' basis.

Site personnel will be instructed at induction that under no circumstances can waste be brought to site for disposal in the on-site waste skip. It will also be made clear that the burning of waste material on site is forbidden.

#### 3.8.3.4 Waste Arising from Decommissioning

The design life of the proposed renewable energy development is 30 years after which time a decision will be made to determine whether or not the turbines will be replaced by new turbines or if decommissioning will occur. The lengthy time frame between the completion of the construction phase and decommissioning will result in the only materials remaining on site at that time will be infrastructural material such as the turbine foundations, turbines and the granular material used to construct roads. When the site is decommissioned, cranes will disassemble each turbine tower and all equipment. The associated components will be removed from site for re-use, recycling or waste disposal. Any structural elements that are not suitable for recycling will be disposed of in an appropriate manner. All lubrication fluids will be drained down and put aside for appropriate collection, storage, transport and disposal. Any materials which cannot be re-used or recycled will be disposed of by an appropriately licenced contractor.

The waste types arising from the decommissioning of the development are outlined in Table 3-2 below.



*Table 3-2 Expected Waste types arising during the Decommissioning Phase*

| Material Type | Example | EWC Code |
|---|---|---|
| Cables | Electrical wiring | 17 04 11 |
| Metals | Copper, aluminium, lead, iron and rebar | 17 04 07 |
| Inert materials | Crushed stone, concrete | 17 01 07 |
| Lubricating Oils/Fluids | Oils used within wind turbines | 13 02 04 |
| Plastic | PVC frames, electrical fittings | 17 02 03 |

#### 3.8.3.5 Reuse

Many construction materials can be reused a number of times before they have to be disposed of:

- Concrete can be reused as aggregate for roads cable trench backfilling material.
- Plastic packaging etc. can be used to cover materials on site or reused for the delivery of other materials.

#### 3.8.3.6 Recycling

If a certain type of construction material cannot be reused onsite, then recycling is the most suitable option. The opportunity for recycling on site will be restricted to the associated packaging from the wind turbines.

All waste that is produced during the construction phase including dry recyclables will be deposited in the on-site skip initially and sent for subsequent segregation at a remote facility. The anticipated volume of all waste material to be generated at the development is low which provides the justification for adopting this method of waste management.

#### 3.8.3.7 Implementation

##### 3.8.3.7.1 *Roles and Responsibilities for Waste Management*

Prior to the commencement of the development a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will be in charge of the implementation of the objectives of the plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the development adheres to the management plan.

##### 3.8.3.7.2 *Training*

It is important for the Construction Waste Manager to communicate effectively with colleagues in relation to the aims and objectives of the waste management plan. All employees working on site during the construction phase of the project will be trained in materials management and thereby, should be able to:

- Distinguish reusable materials from those suitable for recycling;
- Ensure maximum segregation at source;

- Co-operate with site manager on the best locations for stockpiling reusable materials;
- Separate materials for recovery; and
- Identify and liaise with waste contractors and waste facility operators.



#### 3.8.3.7.3 *Record Keeping*

The WMP will provide systems that will enable all arisings, movements and treatments of construction waste to be recorded. This system will enable the contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The WMP can then be adapted with changes that are seen through record keeping.

The fully licensed waste contractor employed to remove waste from the site will be required to provide documented records for all waste dispatches leaving the site. Each record will contain the following:

- Consignment Reference Number Material Type(s) and EWC Code(s)
- Company Name and Address of Site of Origin
- Trade Name and Collection Permit Ref. of Waste Carrier
- Trade Name and Licence Ref. of Destination Facility
- Date and Time of Waste Dispatch
- Registration no. of Waste Carrier vehicle
- Weight of Material
- Signature of Confirmation of Dispatch detail
- Date and Time of Waste Arrival at Destination
- Site Address of Destination Facility

### 3.8.3.8 Waste Management Plan Conclusion

The WMP will be properly adhered to by all staff involved in the Proposed Development which will be outlined within the induction process for all site personnel. The waste hierarchy will always be employed when designing the plan to ensure that the least possible amount of waste is produced during the construction phase. Reuse of certain types of construction wastes will cut down on the cost and requirement of raw materials therefore further minimising waste levels.

This preliminary WMP has been prepared to outline the main objectives that are to be adhered to for the preparation of a more detailed WMP to be completed after the planning phase of the Proposed Development.

# 4. ENVIRONMENTAL MANAGEMENT IMPLEMENTATION

## 4.1 Roles and Responsibilities

The Project Developer will appoint a design team to prepare the detailed design for the Proposed Development prior to the commencement of construction and ensure all planning and environmental obligations are met. The developer will appoint a Project Contractor who will be responsible for the construction of the Proposed Development in accordance with this CEMP which will be updated by the contractor as required during the construction phase of the Proposed Development. Any updated CEMP must meet or exceed the standards and requirements set out in this document.

The Environmental Clerk of Works (ECoW) will be nominated by the Project Developer to oversee the Project Contractor's effective implementation of the Proposed Development's environmental requirements and obligations, as captured in the CEMP. The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer. For the sake of expediency, the ECoW will report their ongoing audit findings, monitoring results and site observations to both the Project Developer and the Project Contractor, having been nominated by the developer to fulfil the role.

The ECoW will have the power to halt the works, should the need arise and will be supported by the developer to ensure the contractor adheres to such an instruction.

The ECoW will also have to call upon the Project Ecologist, Project Hydrologist, or other members of the Project Developer's design team, as required, to oversee the contractor's works on-site.

An organogram structure for the construction stage roles is as outlined below.

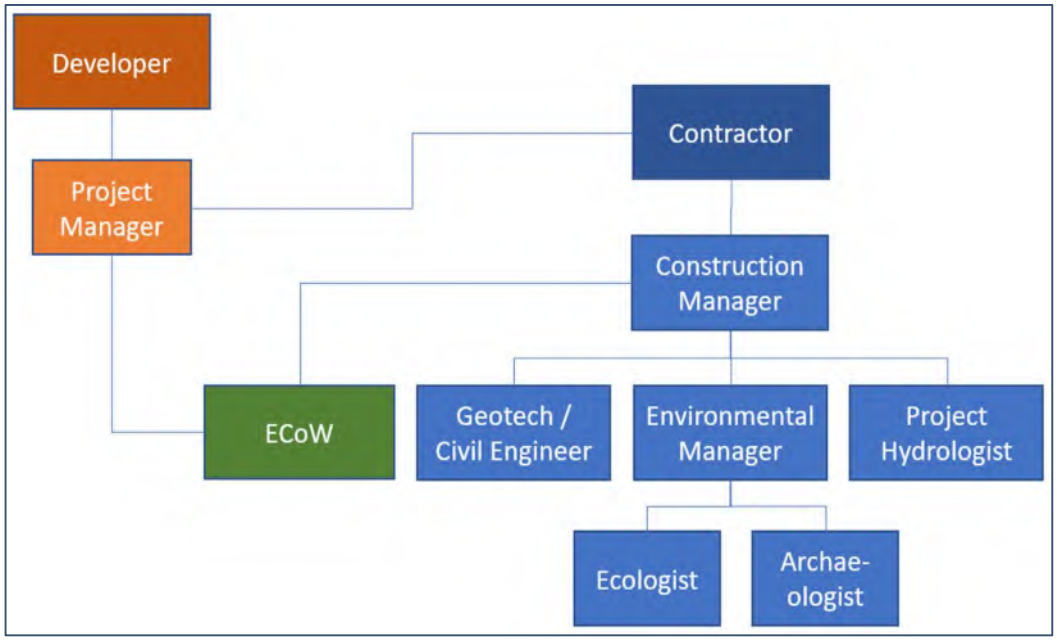


*Figure 4-1 Proposed Development Organogram*

Any requirement of the granted permission, for the works to be supervised by an engineer with professional indemnity insurance, who upon completion of the works, shall certify the said works, will

be adhered to. Such an engineer will be appointed to oversee and supervise the construction phase of the Proposed Development.



### 4.1.1 Construction Manager

The Project Contractor will be required to nominate a Construction Manager who will have responsibility for the organisation and execution of environmental requirements outlined in this CEMP or any further versions thereof. The Construction Manager will have an assigned deputy who will fulfil the role of Environmental Manager. To implement the CEMP, the Construction Manager with the assistance of the Environmental Manager will be required to:

- Implement all Proposed Development design requirements to minimise environmental risk;
- Implement all CEMP requirements and measures to minimise environmental risk;
- Ensure any site personnel responsible for directing works on site are familiar with all requirements of the CEMP;
- Propose revisions to the Proposed Development's CEMP for approval of the Project Developer, project design team and ECoW, only where any such revisions meet or exceed the standards and requirements set out in this document;
- Ensure that all environmental standards are achieved during the construction phase of the Proposed Development;
- Promptly implement any remedial action required to rectify and close-out any non-compliant items identified by the ECoW;
- Ensure immediate notification of environmental incidents are issued to the ECoW, the Project Developer and the relevant authorities, initially by phone and as soon as is practicable by e-mail;
- Identify environmental training requirements and arrange relevant training for all levels of site-based staff/workers.
- Ensure that all construction activities are planned and performed such that minimal risk to the environment is introduced.

### 4.1.2 Site Environmental Clerk of Works

The Project Developer will be required to engage a qualified Environmental Engineer, Environmental Scientist, or equivalent, with experience in wind farm construction to fulfil the role of Environmental Clerk of Works (ECoW) to oversee the construction works and audit the implementation of the CEMP. The ECoW will report to the Project Developer and Project Contractor but will liaise closely with the Construction Manager in relation to the Project Contractor's day-to-day implementation of the CEMP on site. The responsibilities and duties of the ECoW will include the following:

- Review/approval of the CEMP and supporting environmental documentation and review/approval of contractor method statements;
- Undertake environmental monitoring, inspections and reviews to ensure the works are carried out in compliance with the CEMP by the Project Contractor;
- Manage the water quality monitoring programme and turbidity monitors;
- Maintain a live Actions List and accompanying map outlining any corrective actions across the site requiring attention or action by the contractor;
- Confirm for the Project Contractor that pre-commencement requirements have been met to allow construction activities to commence;
- Highlight for the contractor, any abandonment triggers that are occurring and inform the contractor that works are to cease;
- Generate environmental reports as required to show environmental data trends and ensure environmental records are maintained throughout the construction period;
- Advise site management/contractor/sub-contractors on:

- Prevention of environmental pollution and improvement to existing working methods;
- Changes in legislation and legal requirements affecting the environment;
- Suitability and use of plant, equipment and materials to prevent pollution;
- Environmentally sound methods of working and systems to identify environmental hazards;

- Assist the contractor in coordinating the required inputs and site visits from the Project Ecologist or Project Hydrologist to support the ECoW role;
- Ensure immediate notification of any environmental incidents are issued to the Construction Manager and Project Developer;
- Support the investigation of incidents of significant, potential or actual environmental damage and ensure corrective actions are carried out, recommend means to prevent recurrence and communicate incident findings to relevant parties.
- Liaise with the Project Design Team and attend meetings to report on audit findings
- Support the contractor who will be responsible for providing toolbox talks and site induction content to ensure the requirements of the CEMP are delivered on site.
- The geotechnical design requirements of the Proposed Development are not within the remit of the ECoW.

The level, detail and frequency of reporting expected from the ECoW for the Construction Manager, Developer's Project Manager, and any Authorities or other Agencies, will be agreed by all parties prior to commencement of construction, and may be further adjusted as required during the course of the Proposed Development.

### 4.1.3 Project Ecologies/Ornithologist

The Project Ecologist will be available to support the ECoW on matters relating to the protection of sensitive habitats and species encountered prior to or during the construction phase of the Proposed Development. The Project Ecologist will not be full time on site but will undertake pre-commencement surveys and visit the site as required. The responsibilities and duties of the Project Ecologist/Ornithologist will include the following:

- Undertake a pre-construction transect/walkover bird survey to ensure that significant effects on breeding birds will be avoided.
- Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Site.
- Oversee management of ornithological and ecological issues during the construction period and advise on ornithological issues as they arise.
- Provide guidance to contractors to ensure legal compliance with respect to protected species onsite.
- Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress.

### 4.1.4 Project Hydrologist

The Project Hydrologist is part of the design team that will prepare the detailed drainage design for the construction phase of the Proposed Development, but will also support the ECoW in monitoring, overseeing and auditing the effective implementation of the detailed drainage design by the Project Contractor. The Project Hydrologist will not be full time on site but will be required to visit as necessary to oversee the implementation of their drainage design.

The responsibilities and duties of the Project Hydrologist will include the following:

- Preparation of detailed drainage design before construction commences;
- Input to the CEMP in respect of drainage design and water quality management;

- Attend site to support ECoW and oversee and audit the effective implementation of the detailed drainage design;
- Complete ongoing inspection and monitoring of the development, particularly in areas of drainage control in support of the ECoW in monitoring the effectiveness of the drainage design as it is implemented on-site.

### 4.1.5 Project Archaeologist

The Project Archaeologist will report to the Environmental Manager/ECoW and is responsible for archaeological monitoring of the site during the construction phase. This will include monitoring of site investigations and excavation works as well as the monitoring and metal detection of spoil during construction.

If new archaeological material is detected during the pre-construction re-inspection, testing or monitoring, the project archaeologist will be responsible for ensuring they are preserved by record (archaeologically excavated) and therefore permanently removed with a full record made.

### 4.1.6 Project Geotechnical Engineer/Civil Engineer

The Geotechnical Engineer will report to the Construction Manager and is responsible for inspection and review of geotechnical aspects associated with construction of the Proposed Development. The Geotechnical Engineer will not be full time on site but will visit site at least once a month during the construction phase civil works and on a weekly basis during site preparation/groundworks.

The responsibilities and duties of the Geotechnical Engineer will include the following:

- Visit site regularly, or at least once a month during the construction phase, to complete geotechnical audits and reviews and report any issues to the Construction Manager;
- Ensuring that identified hazards are listed in the Geotechnical Risk Register and that these are subject to ongoing monitoring; and,
- Ongoing inspection and monitoring of the Proposed Development, particularly in temporary stockpile areas, through all phases of construction (including pre, during and post construction) and ensure construction is carried out as specified in the EIAR, NIS and in relevant planning conditions.

## 4.2 Water Quality and Monitoring

The methodology for water quality monitoring before, during and after the construction phase of the Proposed Development is outlined in detail in Section 4 of the Surface Water Management Plan (SWMP) which is included as Appendix 4-3 of the EIAR.

This document includes details in relation to baseline monitoring, daily visual inspections, continuous monitoring, monthly laboratory analysis, field monitoring and reporting.

## 4.3 Environmental Awareness and Training

### 4.3.1 Environmental Induction

The Environmental Induction will be integrated into the general site induction on a case-by-case basis for each member of staff employed on-site depending on their assigned roles and responsibilities on site.

Where necessary, the Environmental Induction will as a minimum include:

- A copy of the Environmental Management Site Plans and discussion of the key environmental risks and constraints;
- An outline of the CEMP structure;
- A discussion of the applicable Works Method Statement;
- The roles and responsibilities of staff, including contractors, in relation to environmental management; and,
- An outline of the environmental Incident Management Procedure.

### 4.3.2 Toolbox Talks

Toolbox talks would be held by the ECoW or Construction Manager at the commencement of each day, or at the commencement of new activities. The aims of the toolbox talks are to identify the specific work activities that are scheduled for that day or phase of work. In addition, the necessary work method statements and sub plans would be identified and discussed prior to the commencement of the day's activities. The toolbox talks will include training and awareness on topics including:

- On-site Ecological Sensitivities;
- Buffers to be upheld – watercourses, archaeology, ecology;
- Sediment and Erosion Control;
- Good site practice;
- On-site Traffic Routes and Rules;
- Keeping to tracks – vehicle rules;
- Strictly adhering to the development footprint;
- Fuel Storage;
- Materials and waste procedures

Site meetings would be held on a regular basis involving all site personnel. The objectives of site meetings is to discuss the coming weeks activities and identify the relevant work method statements and sub plans that will be relevant to that week's activities. Additionally, any non-compliance identified during the previous week would also be discussed with the aim to reduce the potential of the same noncompliance reoccurring.

During construction of the Proposed Development, all staff will be made aware of and adhere to the Health & Safety Authority's *'Guidelines on the Procurement, Design and Management requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013'*. This will encompass the use of all necessary Personal Protective Equipment and adherence to the site Health and Safety Plan.

# 5. HEALTH AND SAFETY



Construction of the Proposed Development will necessitate the presence of a construction site and travel on the local public road network to and from the Site. Construction sites and the machinery used on them pose a potential health and safety hazard to construction workers if site rules are not properly implemented. The Proposed Development will be constructed in accordance with all relevant Health and Safety Legislation, including:

- Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005);
- Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016);
- S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021 and
- Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006).

The following measures below are also detailed in Chapter 18 Schedule of Monitoring and Mitigation Measures.

- A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed further at construction stage.
- All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. Safepass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. The developer is required to ensure a competent contractor is appointed to carry out the construction works. The contractor will be responsible for the implementation of procedures outlined in the Safety and Health Plan. Public safety will be addressed by restricting Site access during construction. Fencing will be erected in areas of the Site where uncontrolled access is not permitted.
- Goal posts will be established, where necessary, under overhead electricity lines for the entirety of the construction phase of the Proposed Wind Farm.
- The suitability of machinery and equipment for use near power lines will be risk assessed.
- All staff will be trained on operating voltages of overhead electricity lines running the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Sites are made aware of the location of lines before they come on to Site.
- Barriers will run parallel to the overhead line at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire.
- When activities must be carried out beneath overhead lines, e.g., component delivery or substation construction, a Site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required.
- Information on safe clearances will be provided to all staff and visitors.
- Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on Site.

- The construction of the Proposed Grid Connection underground cabling will be in phases along the proposed grid route. Prior to commencing grid connection works in the agricultural fields in the townland of Moatpark, goal posts will be established under the 110kV and 38kV overhead lines and remain in place for the duration of the works in this area. The goal posts will not exceed a height of 4.2 metres, unless specifically agreed with ESB Networks
- All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan.

The scale and scope of the project necessitates that a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) are required to be appointed in accordance with the provisions of the Health & Safety Authority's *'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013'*. The PSDP appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):

- Identify hazards arising from the design or from the technical, organisational, planning or time related aspects of the project;
- Where possible, eliminate the hazards or reduce the risks;
- Communicate necessary control measures, design assumptions or remaining risks to the PSCS so they can be dealt with in the Safety and Health Plan;
- Ensure that the work of designers is coordinated to ensure safety;
- Organise co-operation between designers;
- Prepare a written Safety and Health Plan;
- Prepare a safety file for the completed structure and give it to the client; and
- Notify the Authority and the client of non-compliance with any written directions issued.

The PSCS appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):

- Development of the Safety and Health Plan for the construction stage with updating where required as work progresses;
- Compile and develop safety file information.
- Reporting of accidents / incidents;
- Weekly Site meeting with PSCS;
- Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out:
- Induction of all Site staff including any new staff enlisted for the project from time to time;
- Toolbox talks as necessary;
- Maintenance of a file which lists personnel on Site, their name, nationality, current Safe Pass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date;
- Report on Site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance;
- Monitor the compliance of contractors and others and take corrective action where necessary; and
- Notify the Authority and the client of non-compliance with any written directions issued.

# 6. EMERGENCY RESPONSE PLAN

## 6.1 Overview

The Emergency Response Plan (ERP) is presented in this section of the CEMP. It provides details of procedures to be adopted in the event of an emergency. The site ERP includes details on the response required and the responsibilities of all personnel in the event of an emergency. The ERP will require updating and submissions from the contractor/PSCS and suppliers as the project progresses. Where sub-contractors that are contracted on site are governed by their own emergency response procedure a bridging arrangement will be adopted to allow for inclusion of the sub-contractor's ERP within this within this document.

This is a working document that requires updating throughout the various stages of the project.

### 6.1.1 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Supervisor/Construction Manager will lead the emergency response which makes him responsible for activating and coordinating the emergency response procedure. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 6-1. In a situation where the Site Supervisor/ Construction Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command outlined in Figure 6-1. This will be updated throughout the various stages of the Proposed Development.

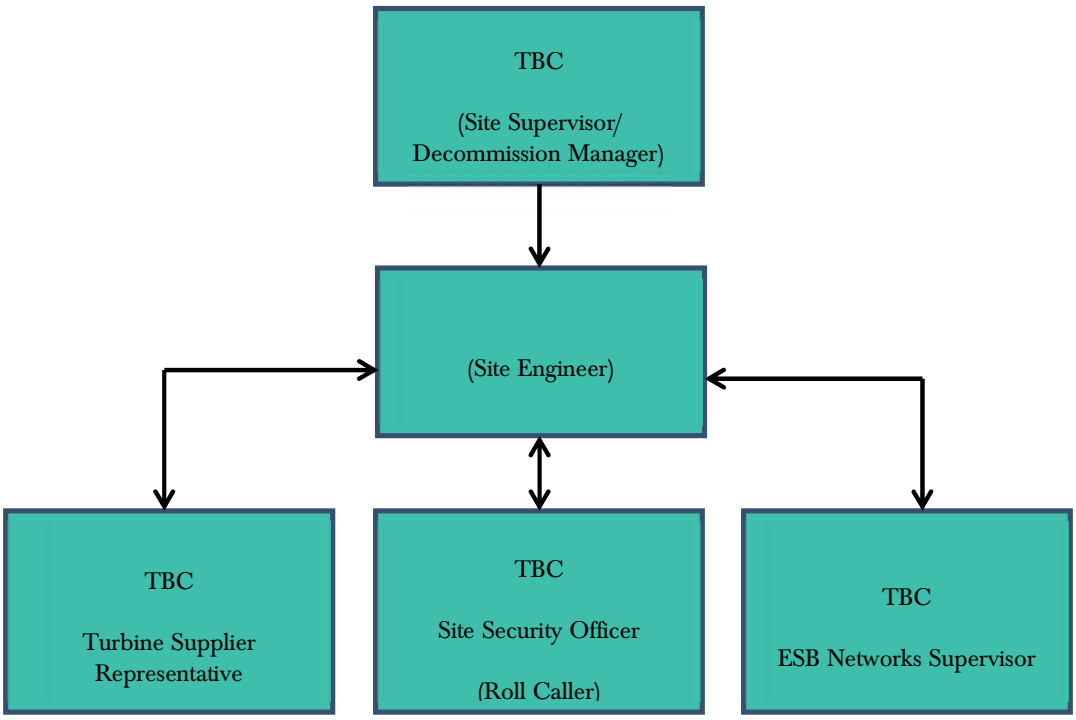


*Figure 6-1 Emergency Response Procedure Chain of Command*

### 6.1.2 Hazard Identification

In order to establish the type and scale of potential emergencies that may occur, the following hazards have been identified as being potential situations that may require an emergency response in the event of an occurrence.

*Table 6-1 Hazards associated with potential emergency situations*

| Hazard | Emergency Situation |
|---|---|
| Construction Vehicles: Dump trucks, tractors, excavators, cranes etc. | Collision or overturn which has resulted in operator or third-party injury. |
| Abrasive wheels/Portable Tools | Entanglement, amputation or electrical shock associated with portable tools. |
| Contact with services | Electrical shock or gas leak associated with an accidental breach of underground services. |
| Fire | Injury to operative through exposure to fire. |
| Falls from heights including falls from scaffold towers, scissor lifts, ladders, roofs and turbines. | Injury to operative after a fall from a height. |
| Sickness | Illness unrelated to site activities of an operative e.g., heart attack, loss of consciousness, seizure. |
| Turbine Specific Incident | This will be included when the upon agreement and section of the final turbine type. |
| Siltation of watercourses, Fuel Management and Spill Control | Run-off to watercourses casing pollution. |

In the event of an emergency situation associated with, but not restricted to, the hazards outlined in Table 6-1 the Site Supervisor/Construction Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, have been injured or are at risk of injury.
- Where necessary, sound the emergency siren/foghorn that activates an emergency evacuation on the site. The Site Supervisor/Construction Manager must proceed to the assembly point if the emergency poses any significant threat to their welfare and if there are no injured personnel at the scene that require assistance. The Site Supervisor/Construction Manager will be required to use their own discretion at that point. In the case of fire, the emergency evacuation of the site should proceed, without exception. The site evacuation procedure is outlined in Section 6.1.3.
- Make safe the area if possible and ensure that there is no identifiable risk exists with regard to dealing with the situation e.g., if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone. If delegating the task, ensure that the procedures for contacting the emergency services as set out in Section 6.3 is followed.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g., cordon off an area where an incident associated with electrical issues has occurred.
- Contact any regulatory body or service provider as required e.g., ESB Networks the numbers for which as provided in Section 6.3.

- Contact the next of kin of any injured personnel where appropriate.



### 6.1.3 Site Evacuation/Fire Drill

A site evacuation/fire drill procedure will provide basis for carrying out the immediate evacuation of all site personnel in the event of an emergency. The following steps will be taken:

- Notification of the emergency situation. Provision of a siren or foghorn to notify all personnel of an emergency situation.
- An assembly point will be designated in the construction compound area and will be marked with a sign. All site personnel will assemble at this point.
- A roll call will be carried out by the Site Security Officer to account for all personnel on site.
- The Site Security Officer will inform the Site Supervisor/Construction Manager when all personnel have been accounted for. The Site Supervisor/Construction Manager will decide the next course of action, which be determined by the situation that exists at that time and will advise all personnel accordingly.

All personnel will be made aware of the evacuation procedure during site induction. The Fire Services Acts of 1981 and 2003 require the holding of fire safety evacuation drills at specified intervals and the keeping of records of such drills.

### 6.1.4 Spill Control Measures

Every effort will be made to prevent an environmental incident during the construction and operational phase of the Proposed Development. Oil/fuel spillages are one of the main environmental risks that will exist on the site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. The following steps provide the procedure to be followed in the event of such an incident:

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident.
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the ECoW immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- The ECoW will inspect the site and will assist by providing any advice possible to ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The Construction Manager will notify the appropriate regulatory body such as Kilkenny County Council, Inland Fisheries Ireland (IFI), National Parks and Wildlife Service (NPWS), etc. if deemed necessary.

The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps.

- The ECoW must be immediately notified.
- If necessary, the Construction Manager will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident.
- If the incident has impacted on an ecologically sensitive receptor, such as a sensitive habitat, protected species or designated conservation site (pSPA or cSAC), the ECoW will liaise with the Project Ecologist.
- If the incident has impacted on a sensitive receptor such as an archaeological feature the ECoW will liaise with the Project Archaeologist.

A record of all environmental incidents will be kept on file by the ECoW and the Project Contractor. These records will be made available to the relevant authorities such as Laois and Kilkenny County Councils, IFI, NPWS, etc. if required. The ECoW will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the Main Contractor as appropriate.

## 6.2 Contacting the Emergency Services

### 6.2.1 Emergency Communications Procedure

In the event of requiring the assistance of the emergency services the following steps will be taken:

**Stay calm.** It is important to take a deep breath and not get excited. Any situation that requires 999/112 is, by definition, an emergency. The dispatcher or call-taker knows that and will try to move things along quickly, but under control.

**Know the location of the emergency and the number you are calling from.** This may be asked and answered a couple of times but do not get frustrated. Even though many emergency call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for some reason you are disconnected, at least emergency crews will know where to go and how to call you back.

**Wait for the call-taker to ask questions, then answer clearly and calmly.** If you are in danger of assault, the dispatcher or call-taker will still need you to answer quietly, mostly "yes" and "no" questions.

**If you reach a recording, listen to what it says.** If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.

**Let the call-taker guide the conversation.** He or she is typing the information into a computer and may seem to be taking forever. There is a good chance, however, that emergency services are already being sent while you are still on the line.

**Follow all directions.** In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly, and ask for clarification if you do not understand.

**Keep your eyes open.** You may be asked to describe victims, suspects, vehicles, or other parts of the scene.

**Do not hang up the call** until directed to do so by the call taker.

Due to the remoteness of the Site it may be necessary to liaise with the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This should form part of the site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable.

## 6.3 Contact Details

A list of emergency contacts is presented in Table 6-2. A copy of these contacts will be included in the Site Safety Manual and in the site offices and the various site welfare facilities.

*Table 6-2 Emergency Contacts*

| Contact | Telephone no. |
|---|---|
| Emergency Services – Ambulance, Fire, Gardaí | 999/112 |
| Doctor – Ballyragget Medical Centre County Kilkenny | 056 883 3105 |
| Hospital – St. Luke's General Hospital – Kilkenny City | 056 7785000 |
| ESB Emergency Services | 1850 372 999 |
| Gardaí – Abbeyleix Garda Station | 057 873 0580 |
| Health and Safety Co-ordinator - Health & Safety Services | TBC |
| Health and Safety Authority | 1890 289 389 |
| Inland Fisheries Ireland (IFI) | 1890 347 424 |
| Project Supervisor Construction Stage (PSCS): TBC | TBC |
| Project Supervisor Design Stage (PSDS): TBC | TBC |
| Client: Seskin Renewable Energy Ltd. | TBC |

## 6.4 Procedure for Personnel Tracking

All operatives on site without any exception will have to undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.

In the event of a site operative becoming in an emergency situation where serious injury has occurred and hospitalisation has taken place, it will be the responsibility of the Site Manager or next in command if unavailable to contact the next of kin to inform them of the situation that exists.

## 6.5 Induction Checklist

Table 6-3 provides a list of items highlighted in this ERP which must be included or obtained during the mandatory site induction of all personnel that will work on the site. This will be updated throughout the various stages of the Proposed Development.

*Table 6-3 Emergency Response Plan Items Applicable to the Site Induction Process*

| ERP Items to be included in Site Induction | Status |
|---|---|
| All personnel will be made aware of the evacuation procedure during site induction | |
| It may be necessary to liaise with and assist the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This should form part of the site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable. | |
| All operatives on site without any exception will have undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin. | |

# 7. MITIGATION PROPOSALS



All mitigation measures relating to the pre-commencement, construction and operational phases of the Proposed Development are set out in the various sections of the Environmental Impact Assessment Report (EIAR), NIS prepared as part of the planning application to Laois and Kilkenny County Councils.

This section of the CEMP groups together all of the mitigation measures presented in the above documents. The Mitigation Measures are presented in the following pages and are also outlined within Chapter 18: Schedule of Mitigation and Monitoring Measures. Decommissioning Phase mitigation measures are not included in the table below, however, can be viewed in Appendix 4-4 (Decommissioning Plan) of this EIAR.

By presenting the mitigation proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the future phases of the Proposed Development. The tabular format in which the below information is presented, can be further expanded upon during the course of future project phases to provide a reporting template for site compliance audits.

*Table 7-1 Proposed Mitigation Measures*

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| **EIAR Chapter 4 – Description of the Proposed Development** | | | | | |
| **Pre-Commencement Phase** | | | | | |
| MM1 | Environmental Management | EIAR Chapter 4, CEMP | › A CEMP has been prepared for the Proposed Development and is included in Appendix 4-2 of this EIAR. The CEMP includes details of drainage, spoil management, waste management etc, and describes how the above-mentioned audit will function and how the findings are presented.<br>› In the event planning permission is granted for the Proposed Development, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the Planning Authority for written approval.<br>› The on-site construction staff will be responsible for implementing the mitigation measures specified in the EIAR and compiled in Section 6 of the CEMP. Their implementation will be overseen by the ECoW or supervising hydrogeologists, environmental scientists, ecologists or geotechnical engineers, depending on who is best placed to advise on the implementation. The system of auditing referred to above ensures that the mitigation measures are maintained for the duration of the construction phase, and into the operational phase where necessary. | | |
| MM2 | Environmental Management | CEMP Section 4 | › The Project Developer will be required to engage a qualified Environmental Engineer, Environmental Scientist, or equivalent, with experience in wind farm construction to fulfil the role of Environmental Clerk of Works (ECoW) to oversee the construction works and audit the implementation of the CEMP. The ECoW will report to the Project Developer and Project Contractor but will liaise closely with the Construction Manager in relation to the Project Contractor's day-to-day implementation of the CEMP onsite. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › The ECoW will have the power to halt the works, should the need arise and will be supported by the developer to ensure the contractor adheres to such an instruction.<br>› The ECoW will also have to call upon the Project Ecologist, Project Hydrologist, or other members of the Project Developer's design team, as required, to oversee the contractor's works on-site. | | |
| MM3 | Concrete Deliveries | EIAR Chapter 4 | › Only ready-mixed concrete will be used during the construction phase, with all concrete being delivered from a local batching plant in sealed concrete delivery trucks. | | |
| MM4 | Site Drainage Plan | EIAR Chapter 4<br>SWMP Section 2<br>CEMP Section 3 | › The Project Hydrologist will complete a detailed drainage design and maintenance plan before construction commences and will attend the Site to set out and assist with micro-siting of proposed drainage controls as outlined in Section 4.6 of the EIAR and Section 2 of the SWMP.<br>› Prior to any works commencing on the upgrade of existing roads, the requirement for additional roadside drainage will be considered by the Project Hydrologist in line with the proposals outlined in Section 3 of the CEMP. | | |
| MM5 | Preparative Site Drainage Management | EIAR Chapter 4<br>CEMP Section 3<br>SWMP Section 3 | › The drainage system will be excavated and constructed in conjunction with the road and hard standing construction. Drains will be excavated, and settlement ponds constructed to eliminate any suspended solids within surface water running off the site.<br>› The detailed drainage design will specify all materials and equipment necessary to implement the drainage measures effectively, which will be brought on site in advance of any works commencing.<br>› An adequate quantity of straw bales, clean stone, terram, stakes, etc. will be kept on site at all times to implement the detailed drainage design measures as necessary. The detailed drainage measures will be installed prior to, or at the same time as the works they are intended to drain.<br>› The works programme for the groundworks part of the construction phase of the Proposed Development will also take account of weather | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | forecasts and predicted rainfall in particular. The site Construction Manager is responsible for making the decision to postpone or abandon works. Large excavations and movements of overburden or large-scale overburden or soil stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast. | | |
| MM6 | Drainage Inspection | EIAR Chapter 4<br><br>CEMP Section 3<br><br>SWMP Section 4 | › Prior to commencement of works in sub-catchments across the Site, drain inspections will be completed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis as the construction works develop across the Site, as works in all areas will not commence simultaneously. | | |
| MM7 | Culvert Construction and Inspection | EIAR Chapter 4<br><br>CEMP Section 2<br><br>SWMP Section 2 | › The size of culverts will be influenced by the depth of the track or road sub-base. In all cases, culverts will be oversized to allow mammals to pass through the culvert.<br>› Culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem.<br>› Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water<br>› Smaller water crossings will simply consist of an appropriately sized pipe buried in the sub-base of the road at the necessary invert level to ensure ponding or pooling does not occur above or below the culvert and water can continue to flow as necessary.<br>› All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance | | |
| MM8 | Drainage Maintenance | EIAR Chapter 4<br>EIAR Chapter 9 | › The Project Hydrologist will complete a detailed drainage design and maintenance plan before construction commences and will attend the | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | SWMP Section 3 | Site to set out and assist with micro-siting of proposed drainage controls as outlined in Section 4.6 of the EIAR.<br>› The inspection and maintenance plan for the on-site drainage system will be prepared in advance of the commencement of any works. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended.<br>› Any excess build-up of silt levels at dams, the settlement pond, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. | | |
| MM9 | Earthworks | CEMP Section 3 | › Drainage and associated pollution control measures will be implemented onsite before the main construction works commence. Where possible, drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off.<br>› Setbacks from sensitive hydrological features, where possible, means that adequate room is maintained for the proposed drainage mitigation measures to be properly installed and operate effectively. The proposed buffer zone will avoid the entry of suspended sediment from earthworks into watercourses | | |
| MM10 | Traffic Management | EIAR Chapter 4, 15<br><br>CEMP Section 3 | › A detailed Traffic Management Plan (TMP), incorporating all the mitigation measures set out within the CEMP along with Chapter 15 of the EIAR, will be finalised and detailed provisions in respect of traffic management agreed with the roads authority and An Garda Síochána prior to construction works commencing on site<br>› Prior to the Traffic Management Plan being finalised, a full dry run of the transport operation along the potential routes will be completed using vehicles with attachments to simulate the dimensions of the wind turbine transportation vehicles. This dry run will inform the Traffic Management Plan for agreement with the relevant Authorities. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › All turbine deliveries will be provided for in a Traffic Management Plan which will be finalised in advance of oversized load deliveries, when the exact transport arrangements are known, delivery dates confirmed and escort proposals in place.<br>› When the Proposed Grid Connection underground cabling route is located on public roads, a Traffic Management Plan will be prepared prior to any works commencing. A road opening licence will be obtained where required and all plant operators and general operatives will be inducted and informed as to the location of any services | | |
| MM11 | Spoil Management | EIAR Chapter 4<br><br>CEMP Section 2 | › All spoil excavated will be managed on-site. It will be placed within the proposed borrow pit or alongside site access roads, around hardstands. Some topsoil may be temporarily stockpiled locally for reuse for landscaping purposes | | |
| MM12 | Borrow Pit | EIAR Chapter 4<br><br>CEMP Section 2 | › The area to be used for the borrow pit will be marked out at the corners using ranging rods or timber posts. Drainage runs, and associated settlement ponds will be installed around the perimeter.<br>› As the borrow pit excavation progress and become deeper, surface water and groundwater ingress will be removed via pumping to settlement ponds, and re-distribution locally across natural vegetated areas. Where required, additional specialist water treatment measures will be employed to ensure no deterioration in downstream water quality occurs;<br>› When extraction ceases within the borrow pit, the borrow pit will be backfilled with excavated spoil and its associated drainage measures will be removed.<br>› The extraction area of the borrow pit will have to be permanently secured during the construction phase and a stock-proof fence will be erected around the borrow pit to prevent access to these areas as well as the installation of appropriate health and safety signage. | | |
| MM13 | Onsite Electricity Substation and Control Buildings | EIAR Chapter 4, | › The area of the on-site substation will be marked out using ranging rods or wooden posts | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | CEMP Section 2 | | | |
| MM14 | Grid Connection underground cabling route works | EIAR Chapter 4 | › Before works commence, updated surveying will take place along the proposed cable route, with all existing culverts and services identified. All relevant bodies i.e. ESBN, Kilkenny County Council etc. will be contacted and all up-to-date drawings for all existing services sought. | | |
| MM15 | Waste Management | EIAR Chapter 4<br><br>CEMP Section 3 | › Prior to the commencement of the development a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will be in charge of the implementation of the objectives of the plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the development adheres to the management plan. | | |
| **Construction Phase** | | | | | |
| MM16 | Refuelling | EIAR Chapter 4, 8, 9<br><br>CEMP Section 3<br><br>SWMP Section 3 | › Road-going vehicles will be refuelled off site wherever possible;<br>› On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site;<br>› Heavy plant and machinery will be refuelled on-site by a fuel truck that will come to the Site as required on a scheduled and organised basis;<br>› All plant will be inspected and certified to ensure that they are leak free and in good working order prior to use at the Site.<br>› Fuels stored on site will be minimised.<br>› Onsite refuelling will be carried out by trained personnel only;<br>› All refuelling will be carried out outside of the designated hydrological buffer zones;<br>› Mobile measures such as dip trays and fuel absorbent mats will be used during refuelling operations as required;<br>› All plant and machinery will be equipped with fuel absorbent material and pads to deal with any accidental spillage; | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › The electrical substation compound will be bunded appropriately to 110% of the volume of oils that will be stored, and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor;<br>› Spill kits will be available to deal with any accidental spillage in and outside the re-fuelling area.<br>› An emergency plan for the construction phase to deal with accidental spillages will be developed (refer to Section 6 of CEMP);<br>› All hazardous wastes will be stored in bunded containers/areas before being collected by an authorised waste contractor and brought to an EPA licensed waste facility;<br>› Hazardous wastes will be kept separate from non-hazardous wastes so that contamination does not occur | | |
| MM17 | Cement Based Products Deliveries and Management | EIAR Chapter 4, 9<br><br>CEMP Section 3<br><br>SWMP Section 3 | › No batching of wet-concrete products will occur on the Site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place;<br>› Where possible pre-cast elements for culverts and concrete works will be used;<br>› Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined concrete washout ponds;<br>› Weather forecasting will be used to plan dry days for pouring concrete; and,<br>› The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event; and,<br>› At turbine foundations, lean-mix blinding is used to vertically contain the concrete. While the concrete is contained laterally by temporary/permanent shuttering. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| MM18 | Concrete Pouring | EIAR Chapter 4, 9<br><br>SWMP Section 3 | › Using weather forecasting to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast.<br>› Restricting concrete pumps and machine buckets from slewing over watercourses while placing concrete.<br>› Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets.<br>› Ensuring that covers are available for freshly placed concrete to avoid the surface washing away in heavy rain.<br>› The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area, or a Siltbuster-type concrete wash unit (https://www.siltbuster.co.uk/sb_prod/siltbuster-roadside-concrete-washout-rcw/) or equivalent.<br>› Disposing of surplus concrete after completion of a pour in agreed suitable locations away from any watercourse or sensitive habitats | | |
| MM19 | Road Cleanliness | EIAR Chapter 4<br><br>CEMP Section 4 | › The site roads will be well finished with compacted hardcore, and so the public road-going vehicles will not be travelling over soft or muddy ground where they might pick up mud or dirt.<br>› A road sweeper will be available if any section of the public roads requires cleaning due to construction traffic associated with the Proposed Development.<br>› When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper. | | |
| MM20 | Watercourse Buffers | EIAR Chapter 4.<br><br>CEMP Section 3<br><br>SWMP Section 2 | › There will be no direct discharges to any natural watercourses or land drains, with all drainage waters being dispersed as overland flows. All discharges from the proposed works areas will be made over vegetation filters at an appropriate distance from natural watercourses and drains. Buffer zones of 50m around the existing natural drainage features have been used to inform the layout of the Proposed Development. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › Buffered outfalls, which will be numerous over the Proposed Wind Farm site, will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the Proposed Wind Farm site. | | |
| MM21 | Water Discharge | EIAR Chapter 4.<br><br>CEMP Section 3<br><br>SWMP Section 3 | › Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the Proposed Wind Farm site drainage into the existing site drainage network. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion;<br>› Silt traps will be placed in the existing drains upstream of any streams where construction works /linear vegetation removal is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area;<br>› Runoff from individual turbine hardstanding areas will be not discharged into the existing drain network but discharged locally at each turbine location through settlement ponds and buffered outfalls onto vegetated surfaces;<br>› Buffered outfalls which will be numerous over the Site will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the Proposed Wind Farm site; and,<br>› Drains running parallel to the existing roads requiring widening will be upgraded, widening will be targeted to the opposite side of the road. Velocity and silt control measures such as check dams, sand bags, oyster bags, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters | | |
| MM22 | Wastewater Management | EIAR Chapter 4 | › Temporary toilets, located within staff portacabins, will be used during the construction phase. Wastewater from staff toilets will be directed to | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | a sealed storage tank, with all wastewater being tankered off site by a permitted waste collector to wastewater treatment plants. There will also be a water supply on site for hygiene purposes, by way of a temporary storage tank. | | |
| MM23 | Drainage Swales | EIAR Chapter 4, 9<br><br>SWMP Section 2 | › Drainage swales will be installed downgradient of any works areas to collect surface flow runoff where it might have come into contact with exposed surfaces and picked up silt and sediment. Swales will intercept the potentially silt-laden water from the excavations and construction areas of the Site and prevent it reaching natural watercourses.<br>› Drainage swales will be installed in advance of any main construction works commencing. The material excavated to make the swale will be compacted on the downslope edge of the drain to form a diversion dike. | | |
| MM24 | Interceptor Drains | EIAR Chapter 4, 9<br><br>SWMP Section 2 | › Interceptor drains will be installed upgradient of any works areas to collect surface flow runoff and prevent it reaching excavations and construction areas of the Site where it might otherwise have come into contact with exposed surfaces and picked up silt and sediment.<br>› The drains will be used to divert upslope runoff around the works area to a location where it can be redistributed over the ground surface as sheet flow. This will minimise the volume of potentially silty runoff to be managed within the construction area.<br>› The interceptor drains will be installed in advance of any main construction works commencing. The material excavated to make the drain will be compacted on the downslope edge of the drain to form a diversion dike. | | |
| MM25 | Check Dams | EIAR Chapter 4, 9<br><br>SWMP Section 2 | › The velocity of flow in the interceptor drains and drainage swales, particularly on sloped sections of the channel, will be controlled by check dams, which will be installed at regular intervals along the drains to ensure flow in the swale is non-erosive.<br>› Check dams will not be used in any natural watercourses, only artificial drainage channels and interceptor drains. The check dams will be left | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | in place at the end of the construction phase to limit erosive linear flow in the drainage swales during extreme rainfall events. | | |
| MM26 | Level Spreaders | EIAR Chapter 4, 9<br><br>SWMP Section 2 | › A level spreader will be constructed at the end of each interceptor drain to convert concentrated flows in the drain into diffuse sheet flow on areas of vegetated ground. The levels spreaders will be located downgradient of any proposed works areas in locations where they are not likely to contribute further to water ingress to construction areas of the Site.<br>› The slope in the channel leading into the spreader will be less than or equal to 1%. | | |
| MM27 | Piped Slope Drains | EIAR Chapter 4, 9<br><br>SWMP Section 2 | › Piped slope drains will be used to convey surface runoff from diversion drains safely down slopes to flat areas without causing erosion. Once the runoff reaches the flat areas it will be reconverted to diffuse sheet flow. Level spreaders will only be established on slopes of less than 6% in grade. Piped slope drains will be used to transfer water away from areas where slopes are too steep to use level spreaders;<br>› Piped slope drains will only remain in place for the duration of the construction phase of the Proposed Development. on completion of the works, the pipes and rock aprons will be removed and all channels backfilled with the material that was originally excavated from them | | |
| MM28 | Vegetation Filters | EIAR Chapter 4, 9.<br><br>SWMP Section 2 | › Vegetation filters are the existing vegetated areas of land that will be used to accept surface water runoff from upgradient areas. The selection of suitable areas to use as vegetation filters will be determined by the size of the contributing catchment, slope and ground conditions;<br>› Vegetation filters will not be used in isolation for waters that are likely to have higher silt loadings. In such cases, silt-bearing water will already have passed through stilling ponds prior to diffuse discharge to the vegetation filters via a level spreader. | | |
| MM29 | Stilling/Settlement Ponds | EIAR Chapter 4, Chapter 9. | › Stilling or settlement ponds will be used to attenuate runoff from works areas of the site of the Proposed Development during the construction | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | SWMP Section 2 | phase and will remain in place to handle runoff from roads and hardstanding areas of the Proposed Development during the operational phase. The purpose of the stilling ponds is to intercept runoff potentially laden with sediment and to reduce the amount of sediment leaving the disturbed area by reducing runoff velocity. Reducing runoff velocity will allow larger particles to settle out in the stilling ponds, before the run-off water is redistributed as diffuse sheet flow in filter strips downgradient of any works areas.<br>› A water level indicator such as a staff gauge will be installed in each stilling pond with marks to identify when sediment is at 10% of the stilling pond capacity. Sediment will be cleaned out of the still pond when it exceeds 10% of pond capacity. Stilling ponds will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows. | | |
| MM30 | Dewatering Silt Bag | EIAR Chapter 4, Chapter 9<br><br>SWMP Section 2 | › Dewatering silt bags allow the flow of water through them while trapping any silt or sediment suspended in the water. The silt bags provide a passive non-mechanical method of removing any remaining silt contained in the potentially silt-laden water collected from works areas within the Site.<br>› Dewatering silt bags are an additional drainage measure that can be used downgradient of the stilling ponds at the end of the drainage swale channels and will be located, wherever it is deemed appropriate, throughout the Site. The water will flow, via a pipe, from the stilling ponds into the silt bag. The silt bag will allow the water to flow through the geotextile fabric and will trap any of the finer silt and sediment remaining in the water after it has gone through the previous drainage measures. The dewatering silt bags will ensure that there will be no loss of silt into the stream. | | |
| MM31 | Siltbuster | EIAR Chapter 4, 9 | › Siltbusters or similar equivalent pieces of equipment will be available to filter any water pumped out of excavation areas if necessary, prior to its discharge to stilling ponds or swales. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | SWMP Section 2 | › Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. They are specifically designed for use on construction sites.<br>› Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system;<br>› Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover; and,<br>› Use of biodegradable chemical agents can be used at very sensitive sites (i.e. adjacent to SACs). | | |
| MM32 | New Culverts/ Culvert Upgrades | EIAR Chapter 4, Chapter 9.<br><br>CEMP Section 2<br><br>SWMP Section 2 | › All new proposed culverts and proposed culvert upgrades will be suitably sized for the expected peak flows in the watercourse.<br>› Some culverts may be installed to manage drainage waters from works areas of the Proposed Development, particularly where the waters have to be taken from one side of an existing roadway to the other for discharge. The size of culverts will be influenced by the depth of the track or road sub-base. In some cases, two or more smaller diameter culverts may be used where this depth is limited, though this will be avoided as they will have a higher associated risk of blockage than a single, larger pipe. In all cases, culverts will be oversized to allow mammals to pass through the culvert.<br>› Culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stones may be used to interrupt the flow of water. This will help dissipate its energy and help prevent problems of erosion. Smaller water crossings will simply consist of an appropriately sized pipe buried in the sub-base of the road at the necessary invert level to ensure ponding or pooling does not occur above or below the culvert and water can continue to flow as necessary. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance. | | |
| MM33 | Proposed Grid Connection underground cabling route – existing services, joint bays and watercourse crossings | EIAR Chapter 4, Chapter 9<br><br>CEMP Section 2 | › The cable ducts will be concrete surrounded where they pass under the public road and under drains or culverts.<br>› Trench supports will be installed, or the trench sides will be benched or battered back where appropriate and any ingress of ground water will be removed from the trench using submersible pumps, fitted with appropriate silt filtration systems, to prevent contamination of any watercourse.<br>› The ducting will be installed as per specification, with couplers fitted and capped to prevent any dirt etc. entering the duct. In poor ground conditions, the ends of the ducts will be shimmed up off of the bed of the trench, to prevent any possible ingress of water dirt. The shims will be removed again once the next length has been connected. Extreme care will be taken to ensure that all duct collars (both ends) are clean and in good condition prior to ducts being joined.<br>› Spacers will be used to ensure that the correct cover is achieved at both sides of the ducting.<br>› The finished surface is to be reinstated, as per original specification. Off-road cabling may be finished with granular fill to facilitate access to the trench for any potential maintenance that is required during the operational phase of the Proposed Development.<br>› The use of a natural, inert and biodegradable drilling fluid such as Clear Bore™ is intended to negate any adverse impacts arising from the use of other, traditional polymer-based drilling fluids and will be used sparingly as part of the drilling operations. It will be appropriately stored prior to use and deployed in the required amounts to avoid surplus. Should any excess drilling fluid accumulate in the reception or drilling pits, it will be contained and removed from the work area in the same manner as other subsoil materials associated with the drilling process to a licensed recovery facility.<br>› Backfilling of launch & reception pits will be conducted in accordance with the normal specification for backfilling excavated trenches. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | Sufficient controls and monitoring will be put in place during drilling to prevent frack-out, such as the installation of casing at entry points where reduced cover and bearing pressure exits. | | |
| MM34 | Silt Fences | EIAR Chapter 4, 9<br><br>SWMP Section 2 | › Silt fences will be installed as an additional water protection measure around existing watercourses in certain locations, particularly where works are proposed within the 50-metre buffer zone of a stream. These areas include around existing culverts, around the headwaters of watercourses.<br>› Silt fences will be installed as single, double or a series of triple silt fences, depending on the space available and the anticipated sediment loading.<br>› All silt fencing will be formed using Terrastop Premium or equivalent silt fence product.<br>› Silt fences will be inspected regularly to ensure water is continuing to flow through the fabric, and the fence is not coming under strain from water backing up behind it. | | |
| MM35 | Sedimats | EIAR Chapter 4, 9<br><br>SWMP Section 2 | › Sediment entrapment mats, consisting of coir or jute matting, will be placed at the outlet of the silt bag to provide further treatment of the water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure. | | |
| MM36 | Oil Interceptors | EIAR Chapter 4, 9<br><br>SWMP Section 2 | › An oil interceptor is a trap used to filter out oils or other hydrocarbons from surface water runoff. A suitably sized oil interceptor will be installed wherever it is intended to store hydrocarbons and oils (i.e., construction compounds and substation compound) or where it is proposed to park vehicles during the construction and operational phases of the Proposed Development (i.e., construction compounds and substation compound). | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM37 | Turbine/Met Mast Foundation Excavations | EIAR Chapter 4<br><br>CEMP Section 2 | › Material excavated to create the working area will be stored locally for later reuse in backfilling and/or landscaping the working area around the turbine foundation. The excavated material will be sealed using the back of the excavator bucket and surrounded by silt fences to ensure sediment-laden run-off does not occur<br>› Drainage measures will be installed to protect the formation by forming an interceptor drain around the perimeter of the base which will be pumped out or outfall out at the lowest point level spreader or settlement pond.<br>› An embankment approximately 600 mm high will be constructed around the perimeter of each turbine foundation base and a fence will be erected to prevent construction traffic from driving into the excavated hole and to demarcate the working area<br>› All necessary health and safety signage will be erected to warn of deep excavation.<br>› The extent of the excavation will be marked out and will include an allowance for trimming the sides of the excavation to provide a safe working area and slope batter;<br>› Where practical, the soil will be stripped over the area of the excavation and stored locally for reuse, the subsoil will be excavated and stored to one side for reuse during the landscaping around the finished turbine;<br>› No material will be removed from site with excavated spoil being transported and stored in the borrow pit or placed alongside access roads within the Site.<br>› All groundwater and surface water arising from turbine base excavation will be pumped to the dirty water system prior to discharge from the works area;<br>› Soil excavation shall be observed by a qualified archaeologist in accordance with a scheme of archaeological monitoring to identify any significant remains as they come to light; | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM38 | Spoil Management | EIAR Chapter 4<br><br>CEMP Section 2 | › All spoil excavated will be managed on-site. It will be placed within proposed borrow pit or in linear berms alongside access roads and hardstands within the Site. Some topsoil may be temporarily stockpiled locally for reuse for landscaping purposes<br>› During the initial emplacement of spoil at the proposed borrow pit, straw bales and biodegradable matting will be used to control surface water runoff from the enclosure.<br>› Drainage from areas of spoil placement will be directed to settlement ponds as required or will overflow through controlled overflow pipes (not required for borrow pit as runoff will remain in pit).<br>› Discharge from areas of spoil placement will be intermittent and will depend on preceding rainfall amounts.<br>› Once the areas of spoil placement have been seeded and vegetation is established the risk to downstream surface water is significantly reduced | | |
| MM39 | Borrow Pit | EIAR Chapter 4, CEMP Section 2 | › As the borrow pit excavation progress and become deeper, surface water and groundwater ingress will be removed via pumping to settlement ponds, and re-distribution locally across natural vegetated areas. Where required, additional specialist water treatment measures will be employed to ensure no deterioration in downstream water quality occurs;<br>› When extraction ceases within the borrow pit, the borrow pit will be backfilled with excavated spoil and its associated drainage measures will be removed.<br>› The extraction area of the borrow pit will have to be permanently secured and a stock-proof fence will be erected around the borrow pit to prevent access to these areas as well as the installation of appropriate health and safety signage<br>› If blasting is undertaken, the blast engineer will arrange for the necessary quantity of explosive to be brought to site to undertake a single blast. The management of explosives on-site and the actual | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | blasting operation will be agreed in advance with and supervised by An Gardaí Siochána.<br>› Restriction of hours within which blasting can be conducted (e.g. 09:00 – 18:00hrs).<br>› Notification to nearby residents before blasting starts (e.g. 24-hour written notification).<br>› The firing of blasts at similar times to reduce the 'startle' effect.<br>› On-going circulars informing people of the progress of the works.<br>› The implementation of an onsite documented complaints procedure.<br>› The use of independent monitoring by external bodies for verification of results.<br>› Trial blasts in less sensitive areas to assist in blast designs and identify potential zones of influence | | |
| MM40 | Electrical Substation | EIAR Chapter 4,<br><br>CEMP Section 2 | › Soil and overburden will be stripped and temporarily stockpiled for later use in landscaping. Any excess material will be sent to the borrow pit void or within linear berms that will be placed along access roads and turbine hardstand areas, where appropriate within the Site.<br>› The foundations will be excavated down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it. An anti-bleeding admixture will be included in the concrete mix.<br>› Lightning poles will be erected at appropriate locations adjacent to the substation. All lightning poles will be appropriately earthed.<br>› Perimeter fencing will be erected. | | |
| **Operational Phase** | | | | | |
| MM41 | Drainage | CEMP Section 3 | › The Project Hydrologist will inspect and review the drainage system after construction has been completed to provide guidance on the requirements of an operational phase drainage system. This operational phase drainage system will have been installed during the construction phase in conjunction with the road and hardstanding construction work. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › The drainage system will be monitored in the operational phase until such a time that all areas that have been reinstated become re-vegetated and the natural drainage regime has been restored. | | |
| MM42 | Wastewater Management | EIAR Chapter 4 | › The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying<br>› The wastewater storage tank alarm will be part of a continuous stream of data from the Proposed Wind Farm turbines, wind measurement devices and electricity substation that will be monitored remotely 24 hours a day, 7 days per week. Only waste collectors holding valid waste collection permits under the Waste Management (Collection Permit) Regulations, 2007(as amended), will be employed to transport wastewater away from the substation underground storage tank. | | |
| **Decommissioning Phase** | | | | | |
| MM43 | Decommissioning Plan | EIAR Chapter 4 | Prior to the end of the operational period the Decommissioning Plan (Appendix 4-4 of the EIAR) will be updated in line with decommissioning methodologies that may exist at the time and will agree with the competent authority at that time. | | |
| MM44 | Decommissioning Works | EIAR Chapter 4<br><br>DP Section 2 | › Turbine foundations would remain in place underground and would be covered with earth and reseeded as appropriate. Leaving the turbine foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in unnecessary environment emissions such as noise, dust and/or vibration.<br>› Site roadways could be in use for purposes other than the operation of the Proposed Development by the time the decommissioning of the Proposed Development is to be considered, and therefore it may be more appropriate to leave the Site roads in situ for future use. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM45 | Refuelling | EIAR Chapter 4, 8, 9.<br><br>DP Section 3 | The following mitigation measures are proposed to avoid release of hydrocarbons during the Decommissioning Phase:<br><br>› Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles.<br>› On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site.<br>› Fuel volumes stored on site will be minimised.<br>› Heavy plant and machinery will be refuelled on-site by a fuel truck that will come to the Site as required on a scheduled and organised basis.<br>› All refuelling will be carried out outside designated watercourse buffer zones.<br>› Only designated trained and competent operatives will be authorised to refuel plant on-site<br>› Mobile measures such as drip trays and fuel absorbent mats will used during refuelling operations as required.<br>› All plant and machinery will be inspected for leaks and fitness for purpose daily.<br>› All plant and machinery will be equipped with fuel absorbent material and pads to deal with any event of accidental spillage<br>› An emergency plan for the decommissioning phase to deal with accidental spillages will be developed (refer to Section 5 of this Plan). Spill kits will be available to deal with an accidental spillage in and outside the refuelling area.<br>› A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the decommissioning phase. | | |
| MM46 | Noise and Vibration | DP section 3<br><br>EIAR Chapter 12 | › Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers.<br>› All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works.<br>› Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.<br>› Machines, which are used intermittently, will be shut down during those periods when they are not in use.<br>› Training will be provided by the Site Manager to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation; and,<br>› Local residents will be kept informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;<br>› Any extraordinary site work occurring outside of the core working hours will be programmed, when appropriate, so that haulage vehicles would not arrive at or leave the Proposed Wind Farm site between 19:00 and 07:00, with the exception of abnormal loads that would be scheduled to avoid anticipated periods of high traffic flows;<br>› All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers;<br>› Machines will be shut down between work periods (or when not in use) or throttled down to a minimum;<br>› All equipment used on site will be regularly maintained, including maintenance related to noise emissions;<br>› Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation;<br>› All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided; and | | |

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| | | | › Training will be provided to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation. | | |
| **Chapter 5: Population and Human Health** | | | | | |
| **Pre-Construction Phase** | | | | | |
| MM47 | Human Health | EIAR Chapter 5 | › Prior to commencement of any works, the occupants of dwellings in the vicinity of the proposed works will be contacted and the scheduling of works will be made known. Local access to properties will also be maintained throughout any construction works and local residents will be supplied with the number of the works supervisor in order to ensure that disruption will be kept to a minimum. | | |
| **Construction Phase** | | | | | |
| MM48 | Human Health<br><br>(Health and Safety) | EIAR Chapter 5<br><br>CEMP Section 5 | › The Proposed Development will be constructed, operated and decommissioned in accordance with all relevant Health and Safety Legislation, including:<br>o Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005);<br>o Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016);<br>o S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021 and<br>o Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006).<br>› A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed further at construction stage.<br>› All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures | | |

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| | | | will be established. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. Safepass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. The developer is required to ensure a competent contractor is appointed to carry out the construction works. The contractor will be responsible for the implementation of procedures outlined in the Safety and Health Plan. Public safety will be addressed by restricting Site access during construction. Fencing will be erected in areas of the Site where uncontrolled access is not permitted.<br>› Goal posts will be established, where necessary, under overhead electricity lines for the entirety of the construction phase of the Proposed Wind Farm.<br>› The suitability of machinery and equipment for use near power lines will be risk assessed.<br>› All staff will be trained on operating voltages of overhead electricity lines running the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Sites are made aware of the location of lines before they come on to Site.<br>› Barriers will run parallel to the overhead line at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire.<br>› When activities must be carried out beneath overhead lines, e.g., component delivery or substation construction, a Site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required.<br>› Information on safe clearances will be provided to all staff and visitors.<br>› Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on Site. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › The construction of the Proposed Grid Connection underground cabling will be in phases along the proposed grid route. Prior to commencing grid connection works in the agricultural fields in the townland of Moatpark, goal posts will be established under the 110kV and 38kV overhead lines and remain in place for the duration of the works in this area. The goal posts will not exceed a height of 4.2 metres, unless specifically agreed with ESB Networks<br>› All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan<br><br>The scale and scope of the project necessitates that a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) are required to be appointed in accordance with the provisions of the Health & Safety Authority's *'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013'*. The PSDP appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):<br><br>› Identify hazards arising from the design or from the technical, organisational, planning or time related aspects of the project;<br>› Where possible, eliminate the hazards or reduce the risks;<br>› Communicate necessary control measures, design assumptions or remaining risks to the PSCS so they can be dealt with in the Safety and Health Plan;<br>› Ensure that the work of designers is coordinated to ensure safety;<br>› Organise co-operation between designers;<br>› Prepare a written Safety and Health Plan; | | |

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| | | | › Prepare a safety file for the completed structure and give it to the client; and<br>› Notify the Authority and the client of non-compliance with any written directions issued.<br><br>The PSCS appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):<br><br>› Development of the Safety and Health Plan for the construction stage with updating where required as work progresses;<br>› Compile and develop safety file information.<br>› Reporting of accidents / incidents;<br>› Weekly Site meeting with PSCS;<br>› Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out:<br>› Induction of all Site staff including any new staff enlisted for the project from time to time;<br>› Toolbox talks as necessary;<br>› Maintenance of a file which lists personnel on Site, their name, nationality, current Safe Pass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date;<br>› Report on Site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance;<br>› Monitor the compliance of contractors and others and take corrective action where necessary; and<br>› Notify the Authority and the client of non-compliance with any written directions issued. | | |
| | | | **Operational Phase** | | |
| MM49 | Population<br><br>(Residential Amenity) | EIAR Chapter 5 | › There are no turbines proposed within 700m (4 x tip height) of any third-party sensitive receptors. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › A 2.6m high palisade fence will be erected around the substation which will be painted RAL 6005 (green) to help blend the substation infrastructure in with the surrounding rural landscape. Vegetative screening will also be planted along the eastern elevation of the substation compound | | |
| MM50 | Human Health<br><br>(Health and Safety) | EIAR Chapter 5 | › Access to the turbines is through a door at the base of the structure, which will be locked at all times outside maintenance visits. The doors will only be unlocked as required for entry by authorised personnel and will be locked again following their exit.<br>› Staff associated with the project will conduct frequent visits, which will include inspections to establish whether any signs have been defaced, removed, faded, or are becoming hidden by vegetation or foliage, with prompt action taken as necessary.<br>› Signs will also be erected at suitable locations across the Site as required for the ease and safety of operation of the wind farm. These signs include:<br>› Buried cable route markers at 50m (maximum) intervals and change of cable route direction;<br>› Directions to relevant turbines at junctions;<br>› “No access to Unauthorised Personnel” at appropriate locations;<br>› Speed limits signs at Site entrance and junctions;<br>› “Warning these Premises are alarmed” at appropriate locations;<br>› “Danger HV” at appropriate locations;<br>› “Warning – Keep clear of structures during electrical storms, high winds or ice conditions” at Site entrance;<br>› “No unauthorised vehicles beyond this point” at specific Site entrances; and<br>› Other operational signage required as per Site-specific hazards.<br>› The proposed substation, which will be operated by Eirgrid/ESBN will be locked and fenced off from public access. The substation will be operational remotely and manually 24 hours per day, 7 days a week. Supervisory operational and monitoring activities will be carried out remotely using a SCADA system, with the aid of computers connected via a telephone modem link. | | |

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| | | | › Periodic service and maintenance work which include some vehicle movement.<br>› For operational and inspection purposes, substation access is required.<br>› Servicing of the substation equipment will be carried out in accordance with the manufacturer's specifications, which would be expected to entail the following:<br>o Six-month service – three-week visit<br>o Annual service – six-week visit<br>o Weekly and daily visits as required | | |
| MM51 | Shadow Flicker | EIAR Chapter 5 | Where daily or annual shadow flicker exceedances are predicted at any inhabitable or third-party dwelling of the identified 52 no. sensitive receptors, a site visit will be undertaken firstly to determine the presence of existing screening and window orientation at each potentially affected property. This will determine if the receptor has an actual line of sight to any turbine and actual potential for shadow flicker to occur. Once this exercise is completed and all of the potentially affected properties, the following measures will be employed.<br><br>**Screening Measures**<br><br>In the event of an occurrence of shadow flicker exceeding guideline threshold values of 30 minutes per day at residential receptor locations, mitigation options will be discussed with the affected homeowner, including:<br><br>› Installation of appropriate window blinds in the affected rooms of the residence;<br>› Planting of screening vegetation;<br>› Other site-specific measures which might be agreeable to the affected party and may lead to the desired mitigation.<br><br>If agreement can be reached with the homeowner, then it would be arranged for the required mitigation to be implemented in cooperation with | | |

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| | | | the affected party as soon as practically possible and for the full costs to be borne by the wind farm operator.<br><br>**Wind Turbine Control Measures**<br><br>If it is not possible to mitigate any identified shadow flicker limit exceedance locally using the measures detailed above, wind turbine control measures will be implemented.<br><br>Wind turbines can be fitted with shadow flicker control units to allow the turbines to be controlled to prevent the occurrence of shadow flicker at properties surrounding the wind farm. The shadow flicker control units will be added to any required turbines.<br><br>A shadow flicker control unit allows a wind turbine to be programmed and controlled using the wind farm's Supervisory Control and Data Acquisition (SCADA) system to change a particular turbine's operating mode during certain conditions or times, or even turn the turbine off if necessary. | | |
| MM52 | Major Accidents and Natural Disasters | EIAR Chapter 5 | › The Proposed Development will be designed and built in line with current best practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded through the design. In accordance with the provision of the European Commission 'Guidance on the preparation of Environmental Impact Assessment Reports' 2017, a Risk Management Plan will be prepared and implemented on site to ensure an effective response to disasters or the risk of accidents. The plan will include sufficient preparedness and emergency planning measures.<br>› The Proposed Development will also be subject to a fire safety risk assessment in accordance with Chapter 19 of the Safety, Health and Welfare at Work Acts 2005 to 2014, which will assist in the identification of any major risks of fire on site, and mitigation of the same during operation | | |

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| | | | **Chapter 6: Biodiversity** | | |
| | | | **Pre-Construction Phase** | | |
| MM53 | Badger | EIAR Chapter 6 | Due to time that can elapse between the original surveys, any future planning consent and construction, a pre-construction badger survey will be carried out to identify the presence of any new setts that may have been established in the intervening period. Any setts identified within 50m of the Proposed Wind Farm infrastructure will subsequently be monitored for a minimum period of 2 weeks using remote cameras in order to ascertain use by badgers and levels of activity. If an active badger sett is identified and works can be undertaken safely (as to avoid sett collapse) then an exclusion zone will be set up around the sett as follows:<br><br>› Exclusion zone fencing and appropriate signage will be put in place between working areas and badger sett exclusion zones to ensure that there will be no encroachment of the badger sett exclusion zones by construction activities.<br><br>If a newly established and active sett was identified within an area where works could not avoid direct impacts on the sett then the sett would likely need to be excluded prior to works commencing. This would need to be undertaken in line with current guidelines by an appropriately qualified ecologist in advance of construction works commencing. | | |
| MM54 | Otter | EIAR Chapter 6 | Given that otter were found to be very active in the vicinity of the Proposed Grid Connection route and due to time that can elapse between the original surveys and any future planning consent and construction, a pre-construction otter survey will be carried out to identify any changes to the baseline in the intervening period. Any changes to the baseline would need to be addressed following National and European legislation. | | |

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| MM55 | Bats | EIAR Chapter 6<br><br>Appendix 6-2 | The following procedures are proposed prior to linear vegetation removal with Potential Roost Features (PRFs):<br><br>Where trees with identified PRFs are proposed for removal, a pre-confirmatory inspection will be carried out by a suitably qualified ecologist prior to linear vegetation removal to ensure there are no bats present. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the surveys in 2023/2024.If a bat roost is identified within any of the trees to be removed/pruned, a bat derogation licence will be obtained from the NPWS, prior to removal and the removal activity will be supervised by a qualified ecologist. | | |
| **Construction Phase** | | | | | |
| MM56 | Bats | EIAR Chapter 6<br><br>Appendix 6-2 | **Bat Buffer**<br><br>› In accordance with NatureScot and NIEA Guidance, a minimum 50m buffer to all habitat features used by bats (e.g., hedgerows, tree lines etc.) | | |
| MM57 | Groundwater, Surface Watercourses and Sensitive Aquatic Faunal Species | EIAR Chapter 6, Chapter 9<br><br>CEMP Section 3 | › The Proposed Development design has been optimised to utilise the existing infrastructure (i.e. existing site roads) where practicable. Only 1 no. new crossing is proposed.<br>› The proposed new stream crossing will be clear span culvert crossing and the existing banks will remain undisturbed. No in-stream excavation works are proposed at these locations and therefore there will be no direct impact on the stream at the proposed crossing locations. Abutments will be constructed from precast units combined with in-situ foundations; | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › All guidance / mitigation measures required by the OPW and/or the Inland Fisheries Ireland (IFI) is incorporated into the design of the proposed crossings;<br>› All drainage measures will be installed in advance of the works;<br>› Plant and equipment will not be permitted to track across the watercourse;<br>› A foundation base will be excavated to rock or competent ground with a mechanical excavator with the foundation formed in-situ using a semi-dry concrete lean mix. The base will be excavated along the stream bank with no instream works required<br>› Access to the opposite side of the watercourse for excavation and foundation installation will require the installation of a temporary pre-cast concrete or metal bridge across the watercourse to provide temporary access for the excavator. Plant and equipment will not be permitted to track across the watercourse;<br>› Once the foundation base has been completed, the clear-span structure will be installed with no contact with the watercourse;<br>› Once the crossing is in position stone backfill will be placed and compacted against the structure up to the required level above the foundations;<br>› As a further precaution, near stream construction work, will only be carried out during the period permitted by IFI for in-stream works according to the IFI (2016) guidance document "Guidelines on protection of fisheries during construction works in and adjacent to waters", i.e., July to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI);<br>› Where works are necessary inside the 50m buffer double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase; and<br>› All new river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM58 | Linear Habitats | EIAR Chapter 6 | › In order to compensate for the loss of 1.8km of linear habitats, 2.1km of hedgerow reinstatement and 2.4km of hedgerow enhancement will be undertaken within the Proposed Development site.<br>› Hedgerow reinstatement will comprise both translocation of existing hedgerows and new hedgerow planting across the site associated with any new or realigned access tracks and well as planting within existing agricultural fields.<br>› The locations for hedgerow reinstatement (proposed planting and translocation) have been considered to ensure connectivity within the wider landscape for fauna species, in particular bats, and also in consultation with the landowners who are supportive of the proposal.<br>› The proposed reinstatement areas are presented in Figures 2-3 and 2-4 of the Biodiversity Management and Enhancement Plan (BMEP) (Appendix 6-4). This will result in a net gain in this habitat within the site.<br>› Species planted in these locations will be of a similar composition to those occurring on site and will be of local provenance. Translocation of hedgerows will also help with retention of the ground flora seed bank associated with hedgerows on site. Further details with regard to species, planting locations and management is contained within the BMEP. | | |
| MM59 | Invasive Species | CEMP Section 3 | The following measures are proposed to establish good site hygiene to ensure the control of any potential spread of invasive species during construction works:<br><br>› A risk assessment and method statement will be provided by the Contractor prior to commencing works.<br>› Fences will be erected around areas of infestation, as confirmed by test pits, and warning signs shall be erected.<br>› A designated wash-down area will be created, where power-washed material from machinery can be contained, collected and disposed of | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | with other contaminated material. This area will contain a washable membrane or hard surface.<br>› Stockpile areas will be chosen to minimise movement of contaminated soil.<br>› Stockpiles will be marked and isolated.<br>› Contaminated areas which will not be excavated will be protected by a root barrier membrane if they are likely to be disturbed by machinery. Root barrier membranes will be protected by a layer of sand above and below and topped with a layer of hardcore.<br>› The use of vehicles with caterpillar tracks within contaminated areas will be avoided to minimise the risk of spreading contaminated material.<br>› An ECoW/suitably qualified ecologist will be on site to monitor and oversee the implementation of invasive species management plans.<br><br>Plant and equipment which is operated within an area for the management of materials in contaminated areas will be decontaminated prior to relocating to a different works area. The decontamination procedures will take account of the following:<br><br>› Personnel may only clean down if they are familiar with the plant and rhizome material and can readily identify it.<br>› Decontamination will only occur within designated wash-down areas.<br>› Vehicles will be cleaned using stiff-haired brush and pressure washers, paying special attention to any areas that might retain rhizomes e.g. wheel treads and arches.<br>› All run-off will be isolated and treated as contaminated material. This will be disposed of in already contaminated areas | | |
| **Operational Phase** | | | | | |
| MM60 | Bats | EIAR Chapter 6 | In accordance with NatureScot and NIEA Guidance, a minimum 50m buffer to all habitat features used by bats (e.g., hedgerows, tree lines etc.) | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | Appendix 6-2 | **Blade Feathering**<br><br>On a precautionary basis, and in addition to buffers applied to habitat features, it is proposed that all wind turbines are subject to 'feathering' of turbine blades when wind speeds are below the cut-in speed of the proposed turbine. This means that the turbine blades are pitched at 90 degrees or parallel to the wind to reduce their rotation speed to below two revolutions per minute while idling. This measure has been shown to significantly reduce bat fatalities (by up to 50%) in some studies (NIEA, 2021).<br><br>**Lighting**<br>› With regard to the potential for lighting to increase collision risk, it is noted that there will be limited illumination of the turbines in the form of aviation lighting. Post construction monitoring will be carried out (as outlined below) to assess any potential changes in bat activity patterns and collision risk. The proposed lighting around the Proposed Wind Farm shall be designed with consideration of the Institute of Lighting Professionals Guidance Note 08/23 Bats and Artificial Lighting at Night (ILP, 2023).<br>› Significant effects as a result of lighting are not anticipated; however, if in the course of this monitoring, any potential for significant effects on bats is identified, the site-specific mitigation measures will be reviewed and any changes necessary will be implemented to avoid any such impacts | | |
| **Chapter 7 Birds** | | | | | |
| **Pre- Construction Phase** | | | | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM61 | Birds | EIAR Chapter 7 | › It is proposed that construction works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the site and its environs. Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Development to identify sensitive sites (e.g. roosts). Any requirement for construction works to run into the subsequent breeding and winter seasons following commencement will be subject to a repeat of the pre-commencement bird surveys to confirm the absence of breeding birds of conservation concern once per month during the breeding season (April to July) and once during the winter season (October). The survey will aim to identify sensitive sites e.g., nests or roosts depending on the season in question.<br>› The survey will be undertaken by a suitably qualified ornithologist. The survey will comprise a thorough walkover survey of the development footprint and/or all works areas to a 500m radius, where access allows. If winter roosts or nests of birds of high conservation concern are identified, the roost/nest will be earmarked for continued monitoring during works. If the roost/nest is found to be active during works, works will cease within a species-specific buffer of its location in line with best practice guidance (e.g. Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007) to avoid disturbance. No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.<br>› All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked to alert all personnel on site to the suspension of works within that area. | | |
| **Construction Phase** | | | | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM62 | Birds | EIAR Chapter 7 | › If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and no works shall be undertaken within a species-specific disturbance buffer in line with industry best practice (e.g. Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied. | | |
| MM63 | Birds | EIAR Chapter 7 | › The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022.<br>› During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. All plant and equipment for use will comply with the European Communities (Noise Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001).<br>› An ECoW and Project Ecologist will be appointed. Duties will include:<br>o Organise the undertaking of a pre-construction walkover bird survey to ensure that significant effects on birds will be avoided.<br>o Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Proposed Wind Farm site.<br>o Oversee management of ornithological issues during the construction period and advise on ornithological issues as they arise.<br>o Provide guidance to contractors to ensure legal compliance with respect to protected species onsite.<br>o Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress as necessary.<br>› If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and no works shall be undertaken within a species-specific disturbance buffer in line | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | with industry best practice (e.g. Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied. | | |
| MM64 | Kingfisher | EIAR Chapter 7 | › The horizontal direction drilling for the grid connection cables under the River Nore will be undertaken outside the breeding season (1st March to 31st August inclusive) to avoid impacts on breeding kingfisher.<br>› Silt fences will be installed as an additional water protection measure around existing watercourses. | | |
| **Decommissioning Phase** | | | | | |
| MM65 | Birds | EIAR Chapter 7 | It is proposed that decommissioning works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the site and its environs. Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Development to identify sensitive sites (e.g. roosts). Any requirement for construction works to run into the subsequent breeding and winter seasons following commencement will be subject to a repeat of the pre-commencement bird surveys to confirm the absence of breeding birds of conservation concern once per month during the breeding season (April to July) and once during the winter season (October). The survey will aim to identify sensitive sites e.g., nests or roosts depending on the season in question.<br><br>› The surveys will be undertaken by a suitably qualified ornithologist<br>› If the roost/nest is found to be active during works, works will cease within a species-specific buffer of its location in line with best practice guidance (e.g. Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007). No works shall be | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.<br>› All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked to alert all personnel on site to the suspension of works within that area. | | |
| **EIAR Chapter 8 Land Soils & Geology** | | | | | |
| **Construction Phase** | | | | | |
| MM66 | Subsoil and Bedrock Excavation | EIAR Chapter 8 | **Proposed Wind Farm site:**<br>› Placement of turbines and associated infrastructure in areas with suitable ground conditions (based on detailed site investigation data);<br>› The soils and subsoil which will be removed during the construction of turbine hardstands will be localised to the turbine locations. The soil/subsoil will be placed/spread locally alongside the excavations or stored within the borrow pit;<br>› The majority of the excavated soil/subsoil will be used to reinstate the borrow pit. This will significantly reduce the amount of spoil stored at the natural ground level across the site, which might be subject to erosion from rainfall runoff;<br>› Excavated soils/subsoils shall be excavated and stored separately to topsoil; this will prevent mixing of materials and facilitate reuse afterwards;<br>› Where soils/subsoils are stored alongside roads or turbine hardstands, the vegetative top-soil layer will be removed to allow for spoil to be placed and upon reaching the recommended height, the vegetative topsoil layer will be reinstated;<br>› The placement of spoil will be restricted to a maximum height of 1.0m, subject to confirmation by the Geotechnical Engineer; | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Where practical, the surface of the placed spoil is shaped to allow efficient run-off of surface water. Where possible, shaping of the surface of the spoil will be carried out as placement of spoil within the area progresses. This will reduce the likelihood of debris run-off and ensure stability of the placed spoil;<br>› Finished/shaped side slopes of the placed spoil will be not greater than 1 (v): 1 (h) alongside access tracks and adjacent to turbine hardstands;<br>› Inspections of the spoil stored within the borrow pit and alongside access tracks/hardstands will be made by a Geotechnical Engineer through regular monitoring of the works. The appointed contractor will review work practices at these locations when periods of heavy rainfall are expected so as to prevent excessive dirty water runoff from being generated;<br>› All materials which require management will be stockpiled at low angles (< 5-10°) to ensure their stability and secured using silt fencing where necessary. This will help to mitigate erosion and unnecessary additions of suspended solids to the drainage system;<br>› Spoil management will take place within a minimal distance of each turbine to avoid excessive transport of materials within the Site;<br><br>**<u>Proposed Grid Connection underground cabling route</u>**<br><br>› Soils and subsoils excavated along the Proposed Grid Connection underground cabling route will be temporarily stored in covered stock piles along the edge of the road carriageway or alongside the excavated trench within agricultural lands.<br>› Once the emplacement of the cable has been completed, the stored soils and subsoils will be reinstated, with the minimal amount of compaction required to level the top surface.<br>› The tarmacadam road surface will be replaced with the same design standard as the surrounding carriageway. The topsoil surface will be reinstated in agricultural fields | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM67 | Ground Instability and Failure | Chapter 8 | The following measures which will be implemented during the construction phase of the Proposed Development will assist in the management of the geotechnical risks for this site:<br>› Appointment of experienced and competent contractors;<br>› The site will be supervised by experienced and qualified engineering/geotechnical personnel;<br>› Allocate sufficient time for the project;<br>› Prevent undercutting of slopes and unsupported excavations;<br>› Maintain a managed suitable drainage system;<br>› Ensure construction method statements are followed or where agreed modified/ developed; and,<br>› Revise and amend the Geotechnical Risk Register as construction progresses | | |
| **Operational Phase** | | | | | |
| MM68 | Contamination of Soils by Leakages and Spillages | EIAR Chapter 8 | › Mitigation measures for land, soils and geology during the operational phase include the use of aggregate from authorised quarries for use in road and hardstand maintenance.<br>› The base of the substation transformer will bunded and capable of holding 110% of the stored oil volume.<br>› Turbine transformers are located within the turbines, so any leaks would be contained within the turbine. | | |
| **Decommissioning Phase** | | | | | |
| MM69 | Decommissioning Phase | EIAR Chapter 8 | Mitigation measures applied during decommissioning activities will be similar to those applied during the construction phase. Some of the impacts will be avoided by leaving elements of the Proposed Development in place where appropriate. The substation will be permanent infrastructure under the control of ESBN. The turbine foundations will be rehabilitated by covering with local topsoil in order to regenerate vegetation, which will reduce runoff and sedimentation effects. Internal roads will remain as access roads for farmers and forestry operations. Mitigation measures to avoid | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | contamination by accidental fuel leakage and erosion of soil by on-site plant will be implemented as per the construction phase mitigation measures. | | |
| **EIAR Chapter 9 Water** | | | | | |
| **Pre- Construction Phase** | | | | | |
| MM70 | Morphological Changes to Surface Watercourses along the Proposed Grid Connection Cabling Route | EIAR Chapter 9 | Prior to the commencement of cable trenching or crossing works the following key temporary drainage measures will be installed:<br>› A double silt fence perimeter will be placed along the road verge on the down-slope side of any works areas that are located inside the watercourse 50m buffer zone;<br>› Although no in-stream works are proposed, the drilling works will only be done over a dry period between July and September (as required by IFI for in-stream works) to avoid the salmon spawning season and to have more favourable (dryer) ground conditions ;<br>› The crossing works area will be clearly marked out with fencing or flagging tape to avoid unnecessary disturbance;<br>› There will be no storage of material / equipment or overnight parking of machinery inside the hydrological buffer zone;<br>› Before any ground works are undertaken, double silt fencing will be placed between the works area and the River Nore;<br>› Additional silt fencing or straw bales (pinned down firmly with stakes) will be placed across any natural surface depressions / channels that slope towards the watercourse;<br>› Silt fencing will be embedded into the local soils to ensure all site water is captured and filtered;<br>› The area around the bentonite batching, pumping and recycling plant will be bunded using terram (as it will clog) and sandbags in order to contain any spillages;<br>› Drilling fluid returns will be contained within a sealed tank / sump to prevent migration from the works area;<br>› Spills of drilling fluid will be cleaned up immediately and contained in an adequately sized skip before been taken off-site; | | |

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| | | | › If rainfall events occur during the works, there will be a requirement to collect and treat small volumes of surface water from areas of disturbed ground (i.e. soil and subsoil exposures created during site preparation works);<br>› This will be completed using a shallow swale and sump down slope of the disturbed ground; and water will be pumped to a proposed settlement pond area at least 50m from the watercourse;<br>› The discharge of water onto vegetated ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire infiltration area will be enclosed by a perimeter of double silt fencing;<br>› Any sediment laden water from the works area will not be discharged directly to a watercourse or drain;<br>› Works shall not take place during periods of heavy rainfall and will be scaled back or suspended if heavy rain is forecasted;<br>› Daily monitoring of the compound works area, the water treatment and pumping system and the percolation area will be completed by a suitably qualified person during the construction phase. All necessary preventative measures will be implemented to ensure no entrained sediment, or deleterious matter is discharged to the watercourse;<br>› If high levels of silt or other contamination is noted in the pumped water or the treatment systems, all construction works will be stopped. No works will recommence until the issue is resolved and the cause of the elevated source is remedied;<br>› On completion of the works, the ground surface disturbed during the site preparation works and at the entry and exit pits will be carefully reinstated and re-seeded at the soonest opportunity to prevent soil erosion;<br>› The silt fencing upslope of the river will be left in place and maintained until the disturbed ground has re-vegetated;<br>› There will be no batching or storage of cement allowed at the watercourse crossing;<br>› There will be no refuelling allowed within 100m of the watercourse crossing; and, | | |

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| | | | › All plant will be checked for purpose of use prior to mobilisation at the watercourse crossing | | |
| MM71 | Earthworks | Chapter 9 | A key mitigation measure adopted during the design phase is the avoidance of infrastructure close to surface water features across the Proposed Wind Farm site.<br><br>The Proposed Wind Farm site is significantly distal from any significant surface water course, the nearest being the River Nore located 450m east of the Proposed Wind Farm site.<br><br>The Proposed Grid Connection underground cabling route crosses 1 no. watercourse, the River Nore. Additional control measures will be undertaken at this location. | | |
| | | | **Construction Phase** | | |
| MM72 | Earthworks | EIAR Chapter 9 | **Proposed Mitigation by Avoidance:**<br><br>› Avoid physical damage to watercourses, and associated release of sediment;<br>› Avoid excavations within close proximity to surface watercourses;<br>› Avoid the entry of suspended sediment from earthworks into watercourses; and,<br><br>Avoid the entry of suspended sediment from the construction phase drainage system into watercourses, by allowing all surface water/recent rainfall to infiltrate to ground at the Proposed Wind Farm site.<br><br>**Mitigation by Design:**<br><br>**Source controls:** | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Interceptor drains, vee-drains, diversion drains, flume pipes, erosion and velocity control measures such as use of sand bags, oyster bags filled with gravel, filter fabrics, and other similar/equivalent or appropriate systems.<br>› Small working areas, covering stockpiles, weathering off stockpiles, cessation of works in certain areas or other similar/equivalent or appropriate measures.<br><br>**In-Line controls:**<br><br>› Interceptor drains, erosion and velocity control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt bags, silt fences, sedimats, filter fabrics, and collection sumps, temporary sumps/attenuation lagoons, sediment traps, pumping systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems.<br><br>**Treatment systems:**<br><br>› Silt-buster system or equivalent.<br><br>**Silt Fences:**<br><br>Silt fencing will be emplaced downgradient of turbines, to prevent any runoff of sediment laden water. Silt fences are effective at removing heavy settleable solids. Inspection and maintenance of these structures will be carried out during construction phase. They will remain in place throughout the entire construction phase.<br><br>Double silt fences will also be emplaced where the Proposed Grid Connection is near sensitive areas.<br><br>**Silt Bags:** | | |

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| | | | Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, most of the sediment is retained by the geotextile fabric allowing filtered water to pass through. The discharge from the silt bags will be directed to the settlement ponds, where the water will be allowed to naturally infiltrate to ground<br><br>for the wind farm drainage prior to reaching the downstream watercourses.<br><br>**Pre-emptive Site Drainage Management**<br><br>The works programme for the initial construction stage of the Proposed Wind Farm site will also take account of weather forecasts and predicted rainfall in particular. Large excavations and movements of subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.<br><br>**Management of Runoff from Areas of Spoil Placement**<br><br>It is proposed that excavated subsoil will be primarily used to backfill the borrow pit. Any excess will be used for landscaping throughout the Site or accommodated in linear berms alongside the Proposed Wind Farm site access roads and turbine hardstands.<br><br>Proposed surface water quality protection measures regarding the areas of spoil placement are as follows:<br><br>› During the initial emplacement of spoil at the borrow pit, silt fences, straw bales and biodegradable matting will be used to control surface water runoff from the enclosure.<br>› Drainage from areas of spoil placement will be directed to settlement ponds as required or will overflow through controlled overflow pipes (not required for borrow pit as runoff will remain in pit). | | |

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| | | | › Discharge from the areas of spoil placement will be intermittent and will depend on preceding rainfall amounts.<br>› Once the areas of spoil placement have been seeded and vegetation is established the risk to downstream surface water is significantly reduced.<br><br>Therefore, at each stage of the development of the spoil placement areas, the above mitigation measures will be implemented to protect downstream water quality.<br><br>**Timing of Site Construction Works**<br><br>Construction of the drainage system will only be carried out during periods of low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff. Construction of the drainage system during this period will also ensure that attenuation features associated with the drainage system will be in place and operational for all subsequent construction works | | |
| MM73 | Groundwater Flows and Levels due to alteration of recharge | EIAR Chapter 9 | **Mitigation by Avoidance - Groundwater Flows:**<br><br>**Wind Farm site**<br><br>› The construction of the turbines, met mast, access roads and other ancillary features of the Proposed Development could impact groundwater flows within the Proposed Wind Farm site, if a particular pathway *e.g.* karst conduit, existed near the development, however based on all the available site investigation data no reasonable pathways have been identified. The identification and avoidance of any potential karst features has been a key aim of the intrusive and extrusive site investigations, through geophysical surveys, drilling and trial pit excavations and is considered to be the most rational method of mitigating against affecting flow paths, by avoiding any potential karst areas. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › The Site data outlined, within Section 9.3.6.2 and 9.3.6.3 of this chapter and outlined in more detail within Chapter 8 of this EIAR provides sufficient scientific data to say, with a high degree of certainty, that the construction of the turbine foundations, met mast, site access roads, substation and other relatively near surface constructs, will not interact with or alter the existing groundwater recharge, and underlying groundwater flow, regimes.<br><br>**Grid Connection**<br><br>› The Proposed Grid Connection underground cabling route will be routed along an existing road carriageway and within agricultural lands. The trench will be excavated to a depth of ~1.3m with the soil/subsoil removed and backfilled in place. As such there will be no significant change in the permeability of the lands occupied by the Proposed Grid Connection underground cabling route.<br><br>**Mitigation by Design - Groundwater Levels:**<br><br>› As mentioned above, the critical driver of groundwater levels and the potential to affect them is through groundwater recharge. The drainage design of the Proposed Wind Farm site has been designed to mimic the existing hydrological regime within the Site, whereby surface water runoff pathways are generally short and rainfall readily percolates to ground. The drainage design incorporates check dams to reduce velocities, and level spreaders to allow water to infiltrate to ground. | | |
| MM74 | Groundwater Levels and Local Groundwater Well Supplies during Excavation | EIAR Chapter 9 | **Mitigation by design:**<br><br>› The turbine locations are located on lands where the ground elevations are between ~80 and 180m OD;<br>› The elevations of the turbine foundations are above the elevations of groundwater levels recorded in monitoring wells and local domestic/farm wells, and therefore of the known groundwater levels | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | within the Proposed Wind Farm site. The turbine foundations will be excavated to 3-5mbgl and as such will not intercept any aquifer units, but will be excavated within the overlying subsoil and near-surface bedrock | | |
| MM75 | Pile Foundations | EIAR Chapter 4, 9 | Proposed mitigation measures relative to piling works will comprise:<br>› Where driven piles are used, they will have a cross section without re-entrant angles;<br>› Strict QA/QC procedures for piling works will be followed;<br>› Piles will be kept vertical during piling works;<br>› Good workmanship will be employed during all piling works; and,<br>› Where required bentonite seals will be used to prevent upward/downward movement of surface water/groundwater | | |
| MM76 | Surface Water and topographically downgradient Surface Water bodies | EIAR Chapter 9 | **Mitigation by Avoidance:**<br>› The primary mitigating factor in relation to downgradient surface water bodies is the general lack of surface water courses across the Proposed Wind Farm site and the surrounding area. The rainfall falling on the Proposed Wind Farm site recharges to the underlying groundwater aquifer.<br>› The exceptions to this are at turbine T8, where a small seepage face runs into a field drain, before discharging to the Ballyconra stream, as well as at T4, where the Archerstown stream exists ~ 380m southwest of turbine T4. These works will be completed between the months of May-October with minimal consequence as the field drain will be dry.<br>› Along the Proposed Grid Connection underground cabling route, the cabling will be emplaced within existing road carriageways and existing bridges. The utilisation of the existing roadways and bridges avoids any in-stream works. | | |
| MM77 | Refuelling | EIAR Chapter 9 | Mitigation measures not already outlined in MM17,MM46 include: | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Fuel storage areas if required will be bunded appropriately for the fuel storage volume for the time period of the construction and fitted with a storm drainage system and an appropriate oil interceptor;<br>› Surface water runoff from temporary construction compounds will be collected and drained via silt traps and hydrocarbon interceptors prior to recharge to ground. | | |
| MM78 | Water Contamination from Wastewater Disposal | EIAR Chapter 9<br><br>CEMP Section 3 | **Pre-emptive Site Drainage Management:**<br><br>› A self-contained port-a-loo system with an integrated wastewater holding tank will be used at the 2 no. temporary construction compounds, maintained by the providing contractor, and removed from site on completion of the construction works;<br>› Water supply for the Site office and other sanitation will be brought to site and removed after use from the Site to be discharged at a suitable off-site treatment location; and,<br>› No water for sanitation purposes will be sourced on the Site or discharged to the Site | | |
| MM79 | Excavation Dewatering | EIAR Chapter 9<br><br>CEMP | › Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place;<br>› If required, pumping of excavation inflows will prevent build-up of water in the excavation;<br>› The interceptor drainage will be discharged to the site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters;<br>› The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit or silt bag;<br>› There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur;<br>› Daily monitoring of excavations by the ECoW will occur during the construction phase. If high levels of seepage inflow occur, excavation | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | work will immediately be stopped and a geotechnical assessment undertaken; and,<br>› A mobile 'Siltbuster' or similar equivalent specialist treatment system will be available on-site for emergencies in order to treat sediment polluted waters from settlement ponds or excavations should they occur. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. The mobile units are specifically designed for use on construction-sites. They will be used as final line of defence if needed. | | |
| MM80 | Cement Based Products | EIAR Chapter 4,9<br><br>CEMP | Mitigation measures not outlined in MM18, MM19 include:<br><br>› Sand blinding, Damp-proof Membrane (DPM) and concrete blinding are to be provided at turbine formation level to create a vertical cut-off barrier and to mitigate the risk of concrete leakage into the ground below the turbine foundations | | |
| MM81 | Morphological Changes to Surface Watercourses within the Proposed Wind Farm Site | EIAR Chapter 9 | The Proposed Development design has been optimised to utilise the existing infrastructure (i.e. existing site roads) where practicable. Only 1 no. new crossing is proposed. Due to the existing hydrological/hydrogeological regimen, characterised by high recharge through the soils/subsoils, there is a very limited site drainage network.<br><br>Mitigation measures for the crossings are outlined in MM58.<br><br>The watercourse crossing will be constructed to the specifications of the OPW bridge design guidelines 'Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945', and in consultation with Inland Fisheries Ireland. Abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | Confirmatory inspections of the proposed new watercourse crossing location will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing. | | |
| MM82 | Potential Effects on Public Water Schemes and Domestic Water Supplies | EIAR Chapter 9 | Mitigation measures for the protection of surface and groundwater water quality as from MM73-MM81 will be implemented during the construction phase of the Proposed Development to ensure that there is no deterioration in local or downstream water quality. These mitigation measures will ensure the qualitative status the receiving waterbodies remains unaltered by the Proposed Development. | | |
| MM83 | WFD Water Body Status | EIAR Chapter 9 | Mitigation measures for the protection of surface and groundwater water quality as outlined from MM73-MM81 will be implemented during the construction phase of the Proposed Development to ensure that there is no deterioration in local or downstream water quality. These mitigation measures will ensure the qualitative status the receiving waterbodies remains unaltered by the Proposed Development. | | |
| MM84 | Hydrologically Connected Designated Sites | EIAR Chapter 9, Chapter 6 | Mitigation measures for the protection of surface and groundwater water quality as outlined from MM73-MM81 will be implemented during the construction phase of the Proposed Development to ensure that there is no deterioration in local or downstream water quality. These mitigation measures will ensure the qualitative status the receiving waterbodies remains unaltered by the Proposed Development. | | |
| | | | **Operational Phase** | | |
| MM85 | Progressive Replacement of Natural Surface with Lower Permeability Surfaces | EIAR Chapter 9 | **Mitigation by Design:**<br>› Interceptor drains will be installed up-gradient of proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be slowly re-distributed over the ground surface and infiltrate through the soil and subsoils; | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Swales/road side drains will be used to collect runoff from access roads and turbine hardstanding areas of the Proposed Wind Farm site, likely to have entrained suspended sediment, and channel it to infiltration areas for sediment settling; and,<br>› Check dams will be used along sections of access road drains to attenuate flows and intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock. | | |
| MM86 | Effects on Designated Sites | EIAR Chapter 9 | › Regular maintenance of the on-site drainage system. The maintenance schedule will be reduced once natural vegetation is re-established, which will provide consistent filtration through the soil/subsoil;<br>› The use of fuel storage bunds for any hydrocarbons (fuel/oils) and the ongoing maintenance of the bund structures; and,<br>› Any maintenance works which may involve soil movement (such as the removal of sediment from the settlement ponds) will take place during the dry months of the year (May - September). | | |
| MM87 | WFD Status | EIAR Chapter 9 | In addition to the mitigation measures outlined in MM86 infiltration areas will be emplaced downstream of road swale sections and at end of the downstream collector drains, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall and allow the rainfall to recharge to ground effectively | | |
| **Decommissioning Phase** | | | | | |
| MM88 | Decommissioning | EIAR Chapter 9 | Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures. | | |
| **Chapter 10 Air Quality** | | | | | |
| **Construction Phase** | | | | | |
| MM89 | Exhaust Emissions | EIAR Chapter 10<br><br>CEMP Section 3 | › All construction vehicles and plant used onsite during the construction phase will be maintained in good operational order. If a vehicle requires repairs this work will be caried out, thereby minimising any emissions that arise. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Turbines components will be transported to the Site on specified routes only, unless otherwise agreed with the Planning Authority.<br>› All machinery will be switched off when not in use.<br>› Users of the Site will be required to ensure that all plant and vehicles are suitably maintained to ensure that emissions of engine generated pollutants are kept to a minimum.<br>› The majority of aggregate materials for the construction of the Proposed Development will be obtained from the borrow pit on site. This will significantly reduce the number of delivery vehicles accessing the site, thereby reducing the amount of emissions associated with vehicle movements.<br>› The Materials Recovery Facility (MRF) facility will be local to the Proposed Development site to reduce the amount of emissions associated with vehicle movements. The nearest licensed waste facility to the Wind Farm Site is Dunmore Recycling and Waste Disposal located approximately 12.5km to the southeast of the site of the Proposed Development | | |
| MM90 | Dust Emissions | EIAR Chapter 10<br><br>CEMP Section 3 | › Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff.<br>› All plant and materials vehicles shall be stored in dedicated areas within the Wind Farm Site.<br>› Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction.<br>› Turbines and construction traffic will be transported to the site on specified haul routes only.<br>› Grid Connection infrastructure will be transported to the site on specified haul routes only.<br>› Construction materials for the proposed Grid Connection and a small volume for the proposed Wind Farm Site will be sourced locally from licenced quarries. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › The agreed haul route road adjacent to the Wind Farm Site will be regularly inspected for cleanliness and cleaned as necessary.<br>› The roads adjacent to the site entrances will be checked weekly for damage/potholes and repaired as necessary.<br>› The transportation of materials from the borrow pit around the Wind Farm Site will be covered by tarpaulin or similar covered vehicles where necessary.<br>› The transportation of construction materials from locally sourced quarries for the proposed Grid Connection infrastructure and a small volume for the proposed Wind Farm Site will be covered by tarpaulin where necessary.<br>› If necessary, excavated material will be dampened prior to transport to the borrow pit or alongside site access roads, around hardstands .<br>› Waste material will be transferred to a licensed/permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the Proposed Development to reduce the amount of emissions associated with vehicle movements<br>› A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-2). The CEMP includes dust suppression measures. | | |
| **Operational Phase** | | | | | |
| MM91 | Exhaust and Dust Emissions | EIAR Chapter 10 | › Any vehicles or plant brought onsite during the operational phase will be maintained in good operational order that comply with the Road Traffic Acts 1961 as amended, thereby minimising any emissions that arise.<br>› When stationary, delivery and on-site vehicles will be required to turn off engines. | | |
| **Decommissioning Phase** | | | | | |
| MM92 | Decommissioning Phase | EIAR Chapter 10 | Any impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, be it of less effect. The mitigation measures prescribed | | |

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| | | | for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential impacts. | | |
| **Chapter 11 Climate** | | | | | |
| **Construction Phase** | | | | | |
| MM93 | Greenhouse Gas Emissions | EIAR Chapter 11 | › All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise.<br>› When stationary, delivery and on-site vehicles will be required to turn off engines.<br>› Turbines and construction materials will be transported to the site on specified routes only unless otherwise agreed with the Planning Authority. Please see Chapter 15 Material Assets for details.<br>› It is intended to obtain the majority of materials for the construction of the Proposed Wind Farm from the proposed onsite borrow pit (with some material being imported from local licenced quarries as needed). This will significantly reduce the number of delivery vehicles accessing the site, thereby reducing the amount of emissions associated with vehicle movements.<br>› A Construction and Environmental Management Plan (CEMP) (Appendix 4-2) will be in place throughout the construction phase.<br>› The CEMP (Appendix 4-2) includes a Waste Management Plant (WMP) which outlines the best practice procedures that will occur during the construction phase relating to waste material.<br>o The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the Proposed Development. Disposal of waste will be seen as a last resort.<br>o Section 4.3.4.7 of Chapter 4 for this EIAR refers to the methodology that will be utilised to manage onsite waste. This waste material will be transferred to a licensed | | |

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| | | | ○ /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor,<br>○ The MRF facility will be local to the Proposed Development site to reduce the amount of emissions associated with vehicle movements.<br>› Where applicable, low carbon intensive construction materials will be sourced and utilised onsite | | |
| **Operational Phase** | | | | | |
| MM94 | Greenhouse Gas Emissions | EIAR Chapter 11<br><br>Appendix 6-4 | › Ensure that all maintenance and monitoring vehicles will be maintained in good operational order while onsite, and, when stationary, be required to turn off engines thereby minimising any emissions that arise.<br>› As detailed in Appendix 6-4, a BMEP, for the Proposed Wind Farm has identified biodiversity enhancement and management activities such as native hedgerow planting and enhancement. | | |
| **Decommissioning Phase** | | | | | |
| MM95 | Decommissioning Phase | EIAR Chapter 11 | The mitigation measures prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential impacts. | | |
| **EIAR Chapter 12 Noise** | | | | | |
| **Pre- Construction Phase** | | | | | |
| **Construction Phase** | | | | | |
| MM96 | Construction Noise | EIAR Chapter 12<br><br>CEMP Section 3 | › The contract documents will specify that the Contractor undertaking the construction works will be obliged to adopt best practice noise abatement measures contained in British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration | | |
| **Operational Phase** | | | | | |

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| MM97 | Operational Phase Noise | EIAR Chapter 12 | **Noise Monitoring**<br><br>An operational noise survey will be undertaken to ensure compliance with any noise conditions applied to the development. It is common practice to commence surveys within six months of the Proposed Wind Farm being fully commissioned. If an exceedance of the noise criteria is identified as part of the assessment, the guidance outlined in the IOA GPG, specifically Supplementary Guidance Note 5: Post Completion Measurements (July 2014) will be followed, and relevant corrective actions taken.<br><br>**Amplitude Modulation**<br><br>In the event that a complaint which indicates potential excessive amplitude modulation (AM) associated with the Proposed Lifetime Extension, the operator will employ a qualified acoustic consultant to assess the level of AM in accordance with the methods outlined in the Institute of Acoustics IOA Noise Working Group (Wind Turbine Noise) Amplitude Modulation Working Group Final Report: A Method for Rating Amplitude Modulation in Wind Turbine Noise (9 August 2016) or subsequent revisions.<br><br>The measurement method outlined in the IOA AMWG document, known as the 'Reference Method', will provide a robust and reliable indicator of AM and yield important information on the frequency and duration of occurrence, which can be used to evaluate different operational conditions including method to mitigate any excessive AM.<br><br>These mitigation measures, if required, will consist of the implementation of operational controls for the relevant turbine type, which will include turbine curtailment under specific operational conditions.<br><br>In the absence of widely accepted and robust planning conditions to control amplitude modulation (AM) from wind turbines, the commitments outlined in this EIAR are considered best practice. The proposed approach will ensure | | |

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| | | | that any negative impacts arising from AM, if identified, associated with the operation of the Proposed Development will be effectively addressed by the operator | | |
| | | | **Decommissioning Phase** | | |
| MM98 | Noise | EIAR Chapter 12 | During the decommissioning phase of the Proposed Wind Farm there will be noise emissions from site traffic and other on-site activities. A conservative assessment assuming similar overall noise levels as those calculated for the construction phase can be considered for elements that are proposed to be decommissioned. The noise and vibration impacts associated with any decommissioning of the site are considered to be less than those outlined in relation to the construction of the Proposed Development. The mitigation measures prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential impacts. | | |
| | | | **EIAR Chapter 13 Archaeological Architectural & Cultural Heritage** | | |
| | | | **Pre-construction Phase** | | |
| MM99 | Pre-commencement Archaeological Surveys | EIAR Chapter 13 | › Prior to the commencement of construction, a programme of archaeological test trenching will be carried out at the location of the proposed turbine hardstands, compound, borrow pit and along the access roads. This work will be carried out under licence to the National Monuments Service of the DHLGH. Dependent on the results of the testing assessment, further mitigation may be required, such as preservation by record or in-situ and/or archaeological monitoring. Any further mitigation will require agreement from the DHLGH. | | |
| | | | **Construction Phase** | | |
| MM100 | Recorded Monuments and Protected Structures | EIAR Chapter 13 | › All topsoil stripping associated with the proposed development, including site investigation, will be subject to archaeological monitoring. This work will be carried out under licence to the National | | |

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| | | | Monuments Service of the DHLGH. If archaeological remains are identified during the course of these works further mitigation may be required, such as preservation by record or in-situ. Any further mitigation will require agreement from the DHLGH.<br>› All inventions that are required along townland boundaries, as part of the construction of the proposed development, will be subject to archaeological monitoring, to include a full record of the sections of townland boundaries that are removed. This work will be carried out under licence to the National Monuments Service of the DHLGH. | | |
| **Chapter 14 Landscape and Visual** | | | | | |
| **Pre-Commencement, Construction, Operation and Decommissioning** | | | | | |
| MM101 | Landscape Effects | EIAR Chapter 14 | All construction activities will follow best practice methods to reduce impacts upon the environment and landscape of the Site. Further details are presented in the Construction and Environmental Management Plan (CEMP) contained in Appendix 4-2 of this EIAR. The following measures should be implemented to mitigate landscape effects during the construction phase of the Proposed Development:<br>› In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible.<br>› Where the cable trench is to be located in the road verge, subsoil should be piled on site and re-used after cabling works. Should any medium planting be removed, it should be replaced with the same or similar species whenever it is not possible to salvage and reinstate. New topsoil should be provided should the existing topsoil not be of sufficient standard.<br>› Any areas of bare soil remaining after the landscaping phase will be seeded as soon as possible with a grass-seed mix to minimise sediment run-off.<br>› To minimise cut and fill activities required to construct the Proposed Development, the proposed access roads and other infrastructure such as hard stands have been designed to avoid steep gradients and hilly terrain within the Site. | | |

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| | | | › In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible | | |
| MM102 | Visual Effects | EIAR Chapter 14 | General housekeeping measures necessary to meet Health & Safety requirements are implemented to ensure that active construction areas within the Site will be kept tidy, thereby mitigating localised visual impacts on the Site itself during the construction phase | | |
| MM103 | Mitigation by Good Design | EIAR Chapter 14 | › **Appropriate Zoning and Sensitivity Ratings in Local Planning:** Six turbines are in Co. Kilkenny land area zoned as 'Open to Consideration' for wind energy development in the Kilkenny WES; two turbines are in Co. Laois land area with a 'Medium' landscape sensitivity rating and capacity to accommodate new uses without significant adverse effects.<br>› **Compliance with Wind Energy Development Guidelines Set-Back Distances:** Siting of Proposed turbines well exceeds the minimum 500m set-back distance from residences set out in the DoEHLG 2006 Guidelines and adheres to the 4-times-tip-height set-back distance prescribed for residential visual amenity by the Draft 2019 Guidelines.<br>› **Siting in a Working Landscape of Low Sensitivity:** All Proposed turbines and infrastructure of the Proposed Wind Farm are sited in a rural working landscape, a Site that has been highly modified from its natural state and does not comprise any unique or sensitive features of county, regional or national significance and primarily consisting of agricultural farmland, thereby considered to have relatively low sensitivity to wind farm development.<br>› **Appropriate Landscape Character Type:** The landscape character type with active agriculture patchwork fields delineated by hedgerows matches 'Hilly and Flat Farmland' from the Draft 2019 Guidelines, which is considered an appropriate landscape type for accommodating wind energy development.<br>› **Visual Containment by Topography:** The siting of turbines within the Nore Valley, on the upland plateau between Ballynalacken Hill (east) and Knockmannon Hill (west) provides extensive visual containment, | | |

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| | | | with Zone of Theoretical Visibility (ZTV) mapping showing no visibility across large areas of the LVIA Study Area, especially to the north-east, east, south-east, and south-west.<br>› **Visual Balance and Scenic Integration:** The Proposed turbines have been strategically sited to ensure visual balance within the landscape of the wider Nore River Valley landscape, as demonstrated by photomontages showing that turbines most often appear as a neatly arranged linear arrays upon an elevated ridgeline when viewed from prominent receptors in the valley.<br>› **Long Ranging Views:** The Proposed Development does not obstruct long-ranging views of general scenic value or does not obstruct views of a high scenic amenity within the high sensitivity Nore Valley LCA<br>› **Distance from Scenic Designations:** The Proposed Development is well set-back from designated Scenic Views and Prospects (closest = 4.5km) and therefore will not give rise to significant effects on designations with potential visibility.<br>› **Localised Visual Screening:** Mature vegetation and undulating terrain restrict wider landscape visibility within a 5km radius.<br>› **Coherent Turbine Layout:** The Proposed turbines are spaced appropriately in two staggered linear arrays in response to the underlying field pattern, such that they read coherently within the landscape and are of acceptable form and arrangement in alignment with the recommended siting and design of turbines for Hilly and Flat Farmland in the DoEHLG 2006 and Draft 2019 Guidelines.<br>› **Minimal New Ancillary Infrastructur**e: The internal site road layout makes use of the existing tracks where possible (to be upgraded for construction and the delivery of wind turbine components), thereby minimising the requirement for new tracks within the Site.<br>› **Underground Grid Connection:** The Proposed Grid Connection Route to the national electricity grid is underground, thereby eliminating potential landscape and visual effects during the operational phase.<br>› **Avoidance of Landscape Receptors on Site:** The layout of the Proposed Wind Farm ensures minimal loss of valuable landscape receptors and biodiversity corridors such as mature hedgerows, the design ensures the integrity of existing field boundaries. | | |

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| **Chapter 15 Material Assets - Traffic** | | | | | |
| **Pre-Construction, Construction and Operation** | | | | | |
| MM104 | Traffic and Transport | Chapter 15, Appendix 15-2 | **Mitigation by Design**<br><br>› Selection of the most appropriate delivery route to transport the wind turbine components, requiring the minimum remedial works to accommodate the vehicles as set out in Section 15.1.9 of this EIAR.<br>› Selection of the shortest underground grid connection route, minimising the impacts on the existing road network and traffic | | |
| MM105 | Traffic Management Plan | Chapter 15, Appendix 15-2 | A detailed Traffic Management Plan (TMP), incorporating all the mitigation measures included as Appendix 15-2 of this EIAR, will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the roads authority and An Garda Síochána prior to construction works commencing on Site. In addition, the traffic management measures proposed for the following construction traffic scenarios are set out for the grid connection in Appendix 15-2: Traffic Management Plan for Seskin Renewables Wind Farm Development;<br><br>**Delivery of abnormal sized loads:**<br><br>The transport of large components is challenging and can only be done following extensive route selection, route proofing and consultation with An Garda Síochána, the local authority and its road section and roads authorities. Turbine components are usually transported in convoys of 3 vehicles (sometimes up to 5 vehicles subject to approval) at night when traffic is lightest. This will be undertaken in consultation with the roads authorities, An Garda Síochána Traffic Corp and special permits are generally required.<br><br>**Management of Standard HGVs on L58333 leading to site:** | | |

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| | | | It is proposed that access for all general construction traffic will be provided to and from the Proposed Wind Farm site the access junction off the L58333. The proposed junction has a radii of 13m to provide for standard HGVs turning right into the site and right out of the site, in accordance with TII guidelines Geometric Design of Junctions (DN-GEO-03060). Visibility splays of 90m taken from a setback of 2.4m are provided in accordance with a design speed of 60 kph. The proposed junction layout and visibility splays are shown in Figure 15-12 of the EIAR.<br><br>**Temporary traffic management for access on the L58333 during concrete foundation pouring days**<br><br>As set out in Section 2, the abnormally sized loads will be delivered via the access junction on the L58333 during night-time hours accompanied by an escort provided by An Garda Síochána. For the 8 days that it is proposed that concrete deliveries are made via the access junction on the L58333 it is proposed that the junction will be controlled by the following temporary traffic management measures:<br><br>› Introduction of signage warning of roadworks ahead on northbound and southbound approaches to the access on the L58333.<br>› Signage on the L58333 northbound approach indicating the construction access approaching on the left and similar on the southbound approach to the access approaching on the right.<br>› Signage on the L58333 northbound and southbound approaches to access junction warning of Flagmen.<br>› The presence of a Flagman at the proposed temporary access on the L58333 during hours of operation on the concrete foundation pouring days.<br>› Closure by means of a gate at all times outside of operation during the construction and operational stages of the Proposed Development | | |

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| | | | **Traffic management measures during construction of cable grid connection**<br><br>In addition to traffic management measures required for additional traffic movements generated during the construction of the Proposed Wind Farm site, traffic arrangements for the proposed grid connection underground cabling route works are included in Section 15.1.7 of the EIAR.<br><br>The proposed 38kV onsite electrical substation will be connected by 38kV underground cabling to the existing 110kV Ballyragget Substation. The underground cabling route measures approximately 3.4km of which approx. 2.2km is located within the public road corridor. The proposed route is shown in Figure 15-6 of the EIAR.<br><br>It is considered that the retention of 2 lane operation on the N77 will be possible for the majority of the duration of the construction of the Proposed Grid Connection underground cabling route. The exception to this will be during the construction of the short 35m section of the route when it crosses west to east over the N77. During the construction of this section, which could be undertaken during one night, a "Stop & Go" traffic management system will be in operation in order to retain 2-way flow on the N77. It is therefore concluded that no road closures will be required during the construction of the Proposed Grid Connection underground cabling route.<br><br>It is estimated that the route will take a total of approximately 23 days to construct. On 22 of these days 2-way traffic flow will be retained on the N77 and on one day, or night, a stop & go facility will require to be operated on the N77. | | |
| MM106 | Detailed Traffic Management Plan | EIAR Chapter 15 | A Traffic Management Plan (TMP), included as Appendix 15-2 of this EIAR, will be finalised and confirmatory detailed provisions in respect of traffic management agreed with the road's authority and An Garda Síochána prior | | |

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| | | | to construction works commencing. The detailed TMP will also include the following measures:<br><br>› **Traffic Management Coordinator** – a competent Traffic Management Co-ordinator will be appointed for the duration of the construction of the Proposed Development and this person will be the main point of contact for all matters relating to traffic management.<br>› **Delivery Programme** – a programme of deliveries will be submitted to Kilkenny County Council and other relevant authorities in advance of deliveries of turbine components to the Proposed Development site. Liaison with the relevant local authorities including the roads sections of local authorities that the delivery routes traverse and An Garda Siochana, during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required.<br>› **Information to locals** – Locals in the area will be informed of any upcoming traffic related matters e.g. delivery of turbine components at night, via letter drops and posters in public places. Information will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided.<br>› **A Pre and Post Construction Condition Survey** – A pre-condition survey of roads associated with the Proposed Development will be carried out prior to construction commencement to record the condition of the road. A post construction survey will be carried out after works are completed. Where required the timing of these surveys will be agreed with the local authority.<br>› **Implementation of temporary alterations to road network at critical junctions** – At locations where required highlighted in Section 15.1.9.<br>› **Identification of delivery routes** – These routes will be agreed and adhered to by all contractors.<br>› **Travel plan for construction workers to Proposed Development site**– While the assessment above has assumed the worst case that construction workers will drive to the Proposed Development site, the construction company will be required to provide a travel plan for | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | construction staff, which will include the identification of a routes to / from the site and identification of an area for parking.<br>› **Travel plan for construction workers to underground electric cabling route** – Due to the transient nature of the underground grid connection construction site which will generally be on a section of the public road, construction workers will be transported to and from the site by the construction company at the beginning and end of each shift.<br>› **Traffic management measures on L58333** - Marshalling (at site access and southern end of L58333) and control of traffic will be in operation during the 8 days during which the concrete foundations are poured, as set out in the TMP included as Appendix 15-2.<br>› **Drivers conduct** – All drivers will follow normal rules of the road and will receive toolbox talk regarding the delivery route and planned holding points prior to any deliveries.<br>› **Standard permitted axial loads** – Will not be exceeded.<br>› **Temporary traffic signs** – As part of the traffic management measures temporary traffic signs will be put in place at all key junctions, including the access junction on the L58333 during the 12 month construction period. All measures will be in accordance with the "Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works" (DoT now DoTT&S) and "Guidance for the Control and Management of Traffic at Roadworks" (DoTT&S). A member of construction staff (flagman) will be present at the access junction on the L58333, and the N77 / L58333 junction during the 8 days on which the concrete turbine foundations are poured.<br>› **Delivery times of large turbine components** - The management plan will include the delivery of large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage.<br>› **Re-instatement works** - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. All works will be done in accordance with the Guidelines for the Opening, Backfilling and Reinstatement of Openings in Public Roads, DTToS, September 2015. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › **Additional measures** - Various additional measures will be put in place in order to minimise the effects of the development traffic on the surrounding road network including wheel washing facilities on Site and sweeping / cleaning of local roads as required.<br><br>It is confirmed that details for the Traffic Management Plan for the Proposed Development will be agreed with the Road Section of Kilkenny County Council prior to construction and contact will be maintained with the Road and Traffic Section throughout the construction phase. | | |
| | | | **Decommissioning Phase** | | |
| MM107 | Decommissioning | Chapter 15 | In the event that the Proposed Development is decommissioned after the 35 years of operation, a decommissioning plan, will be prepared for agreement with the local authority, as described in Chapter 4 and Appendix 4-4 Decommissioning Plan. This plan will include a material recycling / disposal and traffic management plan will be prepared for agreement with the local authority prior to decommissioning, in accordance with Scottish Natural Heritage report (SNH) Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms (SNH, 2013). | | |
| | | | **Chapter 15 Other Material Assets** | | |
| | | | **Construction Phase** | | |
| MM108 | Overhead Lines | EIAR Chapter 15 | › Goal posts will be established under overhead lines for the entirety of the construction phase. They will not exceed a height of 4.2 metres, unless specifically agreed with ESB Networks<br>› The suitability of machinery and equipment for use near power lines will be risk assessed.<br>› All staff will be trained on the routes and operating voltages of overhead electricity lines running across the proposed main site entrance. All staff will be trained to be aware of the risks associated | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | with overhead lines. All contractors that may visit the sites are made aware of the location of lines before they come on to site.<br>› Barriers will run parallel to the overhead line at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire.<br>› Prior to the delivery of turbines to the Proposed Development site, a dry run of the route using vehicles with similar dimensions will occur. Please see Section 15.1.9 above for details.<br>› When activities must be carried out beneath overhead lines, e.g. component delivery or grid cable laying, a site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used is undertaken prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required.<br>› Information on safe clearances will be provided to all staff and visitors.<br>› Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on site.<br>› All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the site Health and Safety Plan.<br>› All health and safety measures as detailed in Section 5 of Construction Environment Management Plan and Chapter 5 Population and Human Health will be adhered to during the construction, operation and decommissioning phases.<br>› Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works.<br>› Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › Excavation permits will be completed, and all plant operators and general operatives will be inducted and informed as to the location of any services.<br>› The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks. | | |
| MM109 | Water Services | EIAR Chapter 15 | › In advance of any construction activity, the contractor will undertake pre-commencement surveys to confirm the presence or otherwise of any services such as water supply. If found to be present, the relevant service provider will be consulted with in order to determine the requirement for specific excavation or relocation methods and to schedule a suitable time to carry out works. In the event that water mains are encountered the water supply will be turned off by the utility so work can commence on diverting the service. The section of existing pipe will be removed and will be replaced with a new pipe along the new alignment of the service. The works will be carried out in accordance with the specifications of the relevant utility provider | | |
| MM110 | Broadband Services | | › Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works.<br>› Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified.<br>› Excavation permits will be completed, and all plant operators and general operatives will be inducted and informed as to the location of any services.<br>› The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks | | |
| MM111 | Aviation | EIAR Chapter 15 | The scoping response from the IAA and DoD sets out lighting requirements for turbines as detailed above. These requirements will be complied with | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | for the Proposed Development and any further details will be agreed in advance of construction with the IAA, i.e. crane erection. The coordinates and elevations for built turbines will be supplied to the IAA, as is standard practice for wind farm developments. | | |
| **Operational Phase** | | | | | |
| MM112 | Telecommunications | EIAR Chapter 15 | In the event of interference occurring to telecommunications, the Guidelines acknowledge that 'electromagnetic interference can be overcome' by the use of divertor relay links out of line with the wind farm. The following mitigation options are proposed in the event of any potential impact that the Proposed Wind Farm turbines may have on telecommunications links.<br>› Increasing the Radio Antenna Installation heights;<br>› Relaying the link via existing links in the surrounding area and; | | |
| **Decommissioning** | | | | | |
| MM113 | Decommissioning | EIAR Chapter 15 | The measures outlined for the construction phase are considered the same for the decommissioning phase. | | |

# 8. MONITORING PROPOSALS

All monitoring proposals relating to the pre-commencement, construction and operational phases of the Proposed Development are set out in various sections of the EIAR, NIS and Biodiversity Enhancement Plan prepared as part of the planning application to Laois and Kilkenny County Councils.

This section of the Construction and Environment Management Plan groups together all of the monitoring proposals presented in the EIAR. The monitoring proposals are presented in the following pages. The monitoring proposals are also outlined within Chapter 18: Schedule of Mitigation and Monitoring Measures. Decommissioning Phase monitoring measures are not included in the table below, however, can be viewed in Appendix 4-4 (Decommissioning Plan) of this EIAR.

By presenting the monitoring proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the future phases of the Proposed Development. The tabular format in which the below information is presented, can be further expanded upon during the course of future project phases to provide a reporting template for site compliance audits.

*Table 8-1 Proposed Monitoring Measures*

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| **Pre-Construction Phase** | | | | | | |
| MX1 | Water and Drainage | EIAR Chapter 4,9<br><br>CEMP Section 4<br><br>SWMP Section 4 | Prior to commencement of works in sub-catchments across the Site, main drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis as the construction works develop across the Site, as works in all areas will not commence simultaneously.<br><br>Water quality field testing and laboratory analysis will be undertaken prior to commencement of construction at the site. The monitoring programme will be subject to agreement with Laois and Kilkenny County Councils but will be based on the planning stage programme already outlined in the EIAR and CEMP and presented in this document.<br><br>Baseline sampling will be completed on at least two occasions and these will coincide with low flow and high flow stream conditions. The high flow sampling event will be undertaken after a period of sustained rainfall, and the low flow event will be undertaken after a dry spell.<br><br>However, prior to commencement of works in sub-catchments across the site, drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage. These inspections will be done on a catchment by catchment basis as the construction works develop across the site, as works in all areas will not commence simultaneously<br><br>An inspection and maintenance plan for the on-site drainage system will be prepared in advance of the commencement of any works. | On going | Monthly | Project Hydrologist |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| MX2 | Traffic | EIAR Chapter 15, CEMP Section 3 | A pre-condition survey of roads associated with the Proposed Development will be carried out prior to construction commencement to record the condition of the road. | Once | Once | Traffic Consultant |
| MX3 | Ecology/Ornithology | EIAR Chapter 4,6,7<br><br>CEMP Section 4 | The Project Ecologist will not be full time on site but will undertake pre-commencement surveys and visit the site as required. The project ecologist/ornithologist will undertake a pre-construction transect/walkover bird survey to ensure that significant effects on breeding birds will be avoided. In the event that the presence of such species is found at or adjacent to the Proposed Development footprint during pre-commencement surveys, particularly in areas where its excavation may be required, an Invasive Species Management Plan will be prepared for the site to prevent the introduction or spread of any invasive species within the footprint of the works. | On going | As required | Project Ecologist/Ornithologist |
| MX4 | Ornithology | EIAR Chapter 7 | It is proposed that construction works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the site and its environs. Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Development to identify sensitive sites (e.g. roosts). Any requirement for construction works to run into the subsequent breeding and winter seasons following commencement will be subject to a repeat of the pre-commencement bird surveys to confirm the absence of breeding birds of conservation concern once per month during the breeding season (April to July) and once during the winter season (October). The survey will aim to identify sensitive sites e.g., nests or roosts depending on the season in question.<br><br>The survey will be undertaken by a suitably qualified ornithologist. The survey will comprise a thorough walkover survey of the development footprint and/or all works areas to a 500m radius, where access allows. If winter roosts or nests of birds of high conservation | Once | As required | Project Ornithologist |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | concern are identified, the roost/nest will be earmarked for continued monitoring during works. If the roost/nest is found to be active during works, works will cease within a species-specific buffer of its location in line with best practice guidance (e.g. Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007) to avoid disturbance. No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied. | | | |
| MX5 | Archaeology | EIAR Chapter | Prior to the commencement of construction, a programme of archaeological test trenching will be carried out at the location of the proposed turbine hardstands, compound, borrow pit and along the access roads. This work will be carried out under licence to the National Monuments Service of the DHLGH. Dependent on the results of the testing assessment, further mitigation may be required, such as preservation by record or in-situ and/or archaeological monitoring. Any further mitigation will require agreement from the DHLGH. | Once | As Required | Project Archaeologist |
| | | | **Construction Phase** | | | |
| MX6 | Health and Safety | EIAR Chapter 5, CEMP Section 5 | The PSCS appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):<br>› Development of the Safety and Health Plan for the construction stage with updating where required as work progresses;<br>› Compile and develop safety file information.<br>› Reporting of accidents / incidents;<br>› Weekly Site meeting with PSCS;<br>› Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out: | Daily | Daily | PSCS |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | › Induction of all Site staff including any new staff enlisted for the project from time to time;<br>› Toolbox talks as necessary;<br>› Maintenance of a file which lists personnel on Site, their name, nationality, current Safe Pass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date;<br>› Report on Site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance;<br>› Monitor the compliance of contractors and others and take corrective action where necessary; and<br>› Notify the Authority and the client of non-compliance with any written directions issued | | | |
| MX7 | Ecology and Environment | EIAR Chapter 4 CEMP Section 4 | The Project Developer will be required to engage a qualified Environmental Engineer, Environmental Scientist, or equivalent, with experience in wind farm construction to fulfil the role of Environmental Clerk of Works (ECoW) to oversee the construction works and audit the implementation of the CEMP. The ECoW will report to the Project Developer and Project Contractor but will liaise closely with the Construction Manager in relation to the Project Contractor's day-to-day implementation of the CEMP on site. The responsibilities and duties of the ECoW will include the following:<br><br>› Review/approval of the CEMP and supporting environmental documentation and review/approval of contractor method statements;<br>› Undertake environmental monitoring, inspections and reviews to ensure the works are carried out in compliance with the CEMP by the Project Contractor;<br>› Manage the water quality monitoring programme and turbidity monitors; | Daily | As Required | ECoW |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | › Maintain a live Actions List and accompanying map outlining any corrective actions across the site requiring attention or action by the contractor;<br>› Confirm for the Project Contractor that pre-commencement requirements have been met to allow construction activities to commence;<br>› Highlight for the contractor, any abandonment triggers that are occurring and inform the contractor that works are to cease;<br>› Generate environmental reports as required to show environmental data trends and ensure environmental records are maintained throughout the construction period;<br>› Advise site management/contractor/sub-contractors on:<br>› Prevention of environmental pollution and improvement to existing working methods;<br>› Changes in legislation and legal requirements affecting the environment;<br>› Suitability and use of plant, equipment and materials to prevent pollution;<br>› Environmentally sound methods of working and systems to identify environmental hazards;<br>› Assist the contractor in coordinating the required inputs and site visits from the Project Ecologist or Project Hydrologist to support the ECoW role;<br>› Ensure immediate notification of any environmental incidents are issued to the Construction Manager and Project Developer;<br>› Support the investigation of incidents of significant, potential or actual environmental damage and ensure corrective actions are carried out, recommend means to prevent recurrence and communicate incident findings to relevant parties.<br>› Liaise with the Project Design Team and attend meetings to report on audit findings<br>› Support the contractor who will be responsible for providing toolbox talks and site induction content to ensure the requirements of the CEMP are delivered on site. | | | |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | › The geotechnical design requirements of the Proposed Development are not within the remit of the ECoW.<br><br>The level, detail and frequency of reporting expected from the ECoW for the Construction Manager, Developer's Project Manager, and any Authorities or other Agencies, will be agreed by all parties prior to commencement of construction, and may be further adjusted as required during the course of the Proposed Development. | | | |
| MX8 | Water Quality and Monitoring | EIAR Chapter 9<br><br>CEMP Section 4<br><br>SWMP Section 4 | Daily visual inspections of the installed drains and outfalls will be performed during the construction period to ensure suspended solids are not entering streams and rivers on site, to identify any obstructions to channels and to allow appropriate maintenance of the drainage regime. Should the suspended solids levels measured during construction, at the pre-determined sampling locations, be higher than the baseline levels, the source will be identified, and additional mitigation measures implemented.<br><br>Inspection sheets and photographic records will be kept on site. Inspection points will include the in-situ field monitoring point locations, the laboratory analysis sampling points and continuous monitoring locations. Inspection points will depend on works being completed within the catchment upstream of the identified monitoring locations. Visual inspections will also be completed after major rainfall events, i.e., after events of >25mm rainfall in any 24-hour period and data including photographs will be collected by visual inspections and independently assessed by the supervising hydrologist who will monitor and advise on the records being received.<br><br>Daily Visual Inspection locations will be confirmed by the Project Hydrologist prior to the commencement of the construction phase.<br><br>The following periodic inspection regime will be implemented: | Daily | Monthly | ECoW |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | › Daily general visual inspections of site operations and inspections of all watercourses within the site and in the surrounding area by the ECoW or a suitably qualified and competent person as delegated by the ECoW;<br>› Inspections to include all elements of drainage infrastructure to ensure the system is operating correctly and to identify any maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter shall be noted and corrective action shall be implemented. High risk locations such as settlement ponds will be inspected daily. Daily inspections checks will be completed on plant and equipment, and whether materials such as straw bales or oil absorbent materials need replacement;<br>› Event based inspections by the Environmental Clerk of Works as follows:<br>› >10 mm/hr (i.e. high intensity localised rainfall event);<br>› >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,<br>› Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week).<br>› Monthly site inspections by the Project Hydrologist/ Environmental Clerk of Works of the drainage measures during construction phase;<br>› Quarterly site inspections by the Project Hydrologist/ Environmental Clerk of Works of the drainage measures after construction for a period of one year following the construction phase; and,<br>› A written record will be maintained or available on-site within this Construction Environmental Management Plan (CEMP) which will be maintained on-site during the construction phase. | | | |
| MX9 | Turbidity Monitoring | EIAR Chapter 9 CEMP Section 4 | › Continuous, in-situ, monitoring equipment will be installed where required at locations surrounding the wind farm site. The monitoring equipment will provide continuous readings for | Daily | As Required | ECoW/Project Hydrologist |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | turbidity levels, flow rate and water depth in the watercourse. This equipment will be supplemented by daily visual monitoring at their locations.<br>› The proposed locations for continuous, in-situ monitoring will be confirmed by the Project Hydrologist prior to the commencement of the construction phase | | | |
| MX10 | Laboratory Analysis and Field Monitoring | | › Baseline laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken as per water monitoring programme for the overall windfarm development and each primary watercourse along the route. This will not be restricted to just these locations around the immediate wind farm site with further sampling points added as deemed necessary by the ECoW, in consultation with the Project Hydrologist and Site Manager, as the construction phase progresses<br>› Field chemistry measurements of unstable parameters, (pH, conductivity, temperature) will be taken at the surface water monitoring locations, as per water monitoring programme for the overall wind farm development and each primary watercourse along the route and also at all installed sonde locations. These analyses will be carried out by either the ECoW or the Project Hydrologist. In-situ field monitoring will be completed on a weekly basis. In-situ field monitoring will also be completed after major rainfall events, i.e., after events of >25mm rainfall in any 24-hour period. The Project Hydrologist will monitor and advise on the readings collected by in-situ field monitoring | Monthly | Monthly | ECow/Project Hydrologist |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| MX11 | Reactive Site Drainage Management | EIAR Chapter 9<br>CEMP Section 4<br>SWMP Section 3 | The detailed drainage plan prepared for the site has provided for reactive management of drainage measures. The effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treat potentially silt-laden water from the works areas, will be monitored continuously by the Environmental Clerk of Works (ECoW) on-site. The ECoW or project hydrologist will respond to changing weather, ground or drainage conditions on the ground as the project proceeds, to ensure the effectiveness of the drainage design is maintained. This may require the installation of additional check dams, interceptor drains or swales as deemed necessary on-site. The drainage design may have to be modified on the ground as necessary, and the modifications will draw on the various features outlined above in whatever combinations are deemed to be most appropriate to the situation on the ground at a particular time.<br><br>In the unlikely event that works are giving rise to siltation of watercourses, the ECoW or project hydrologist will stop all works in the immediate area around where the siltation is evident. The source of the siltation will be identified and additional drainage measures, as outlined in Section 2.5 above, will be installed in advance of works recommencing. | As required | As Necessary | ECoW |
| MX12 | Plant and Equipment Inspections | EIAR Chapter 4,9<br>CEMP Section 4 | The plant used will be regularly inspected for leaks and fitness for purpose. | As Required | Monthly | ECoW |
| MX13 | Biodiversity | CEMP Section 4 | A Project Ecologist will be appointed. The responsibilities and duties of the Project Ecologist will include the following:<br><br>› Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Site. | As required | As required | Project Ecologist |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | › Oversee management of ornithological and ecological issues during the construction period and advise on ornithological issues as they arise.<br>› Provide guidance to contractors to ensure legal compliance with respect to protected species onsite.<br>› Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress | | | |
| MX14 | Geotechnical Aspects | EIAR Chapter 4, CEMP Section 2,4 | The Geotechnical Engineer will report to the Construction Manager and is responsible for inspection and review of geotechnical aspects associated with construction of the Proposed Development. The Geotechnical Engineer will not be full time on site but will visit site at least once a month during the construction phase civil works and on a weekly basis during site preparation/groundworks.<br>The responsibilities and duties of the Geotechnical Engineer will include the following:<br><br>› Visit site regularly, or at least once a month during the construction phase, to complete geotechnical audits and reviews and report any issues to the Construction Manager;<br>› Ensuring that identified hazards are listed in the Geotechnical Risk Register and that these are subject to ongoing monitoring; and,<br>› Ongoing inspection and monitoring of the Proposed Development, particularly in temporary stockpile areas, through all phases of construction (including pre, during and post construction) and ensure construction is carried out as specified in the EIAR, NIS and in relevant planning conditions. | Monthly | Monthly | Geotechnical Engineer |
| MX15 | Archaeological Monitoring | EIAR Chapter 13 | › All inventions that are required along townland boundaries, as part of the construction of the proposed development, will be subject to archaeological monitoring, to include a full record of the sections of townland boundaries that are removed. This work will be carried out under licence to the National Monuments Service of the DHLGH. | As Required | As Required | Project Archaeologist |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | › All topsoil stripping associated with the proposed development, including site investigation, will be subject to archaeological monitoring. This work will be carried out under licence to the National Monuments Service of the DHLGH. If archaeological remains are identified during the course of these works further mitigation may be required, such as preservation by record or in-situ. Any further mitigation will require agreement from the DHLGH | | | |
| **Operational Phase** | | | | | | |
| MX16 | Surface Water Quality | CEMP Section 4 | › The Project Hydrologist will inspect and review the drainage system after construction has been completed to provide guidance on the requirements of an operational phase drainage system. This operational phase drainage system will have been installed during the construction phase in conjunction with the road and hardstanding construction.<br>› The drainage system will be monitored in the operational phase until such a time that all areas that have been reinstated become re-vegetated and the natural drainage regime has been restored<br>› Monthly sampling for laboratory analysis for the range of parameters adopted during pre-commencement and construction phases will continue after construction is complete. The project hydrologist will monitor and advise on the readings received from the testing laboratory and monitoring will only cease once the hydrologist is satisfied that the chemical and biological monitoring results show that there is no adverse impact on the quality of surface water within the natural watercourses draining the site. | Monthly | Monthly | ECoW |
| MX17 | Bats | EIAR Chapter 6<br><br>Appendix 6-2 | To assess the effects of the Proposed Development on bat activity, at least 3 years of post-construction monitoring is proposed. Post-construction monitoring will include static detector surveys, walked survey transects and corpse searching to record any bat fatalities resulting from collision. | Years 1, 2, 3 | Annually | Project Ecologist |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | At the end of each year, the efficacy of the mitigation and monitoring plan will be reviewed, and any identified efficiencies incorporated into the programme. This approach allows for an evidence-based review of the potential for bat fatalities at the Proposed Wind Farm, post construction, to ensure that the necessary measures, based on a new baseline post-construction, are implemented for the protection of bat species locally. The effectiveness of any mitigation/curtailment needs to be monitored in order to determine (a) whether it is working effectively (i.e. the level of bat mortality is incidental), and (b) whether the curtailment regime can be refined such that turbine down-time can be minimised whilst ensuring that it remains effective at preventing casualties<br><br>**Monitoring Year 1**<br><br>**Bat activity surveys:**<br><br>The post-construction surveys will be carried out as per the pre-construction survey effort. Static monitoring will take place at each turbine during the bat activity season (between April and October) (NatureScot, 2021, NIEA, 2021). Full spectrum recording detectors will be utilised for the same duration as during pre-application surveys and at the same density (NatureScot, 2021). As described in Section 3.5 above, the assessment of bat activity levels will include the use of 'Ecobat' (or similar alternative), a web-based interface, allowing uploaded activity data to be contrasted with a comparable reference range, allowing objective and robust interpretation. Walked survey transects will also be conducted.<br><br>Key weather parameters and other factors that are known to influence collision risk will be monitored and shall include:<br><br>› Windspeed in m/s (measured at nacelle height) | | | |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | › Temperature (ºC)<br>› Precipitation (mm/hr)<br><br>**Carcass searches**<br><br>Carcass searches, to monitor and record bat fatalities, shall be conducted at each turbine in accordance with NIEA Guidance. This shall include searcher efficiency trials and an assessment of scavenger removal rates to determine the appropriate correction factor to be applied in relation to determining an accurate estimate of collision mortality. Surveys should cover all activity seasons and the use of a trained dog detection team will be carried out to ensure maximum efficiency.<br><br>**Monitoring Years 2 & 3**<br><br>Monitoring surveys shall continue in Year 2 and 3, and where a curtailment requirement has been identified, the success of the curtailment strategy shall be assessed in line with the baseline data collected in the preceding year(s). The performance of any curtailment programme in terms of its ability to respond to the changes in bat abundance based on temperature and wind speed shall be analysed to confirm it is neither significantly over- nor under-curtailing during different periods of bat activity.<br><br>At the end of each year, the efficacy of any mitigation/curtailment programme shall be reviewed, and any identified efficiencies incorporated into the programme. The requirement for continued post-consent monitoring will also be considered. Should no bat fatalities be recorded in Year 1, curtailment (where applicable) in Year 2 and Year 3 could be reduced/re-evaluated or removed with monitoring continuing to inform this strategy.<br><br>**Bat Boxes** | | | |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | A licenced ecologist will carry out a yearly bat box Monitoring protocol for the first three years of the operational life of the Proposed Wind Farm. The ecologist will confirm and flag bat boxes in use by bats, evidence of bats, droppings, urine splashing, bat fur oil stains and/or dead bats. Monitoring will be carried out a suitable time of year to ensure no disturbance to any roosting bats, particularly in the case of a maternity roost. The best time of year for a bat box monitoring protocol to be carried out is September/ October.<br><br>Evidence or presence of nesting birds will be flagged and removed outside the bird nesting season. 2FN bat boxes must be checked to remove excess bat droppings and flag any bird nests being constructed within a bat box. If a bird nest is found, a secondary bat roosting source must be erected to replace the bat roosting source lost.<br><br>The results of the first three years of monitoring will inform the need for and frequency of further monitoring and maintenance of the bat boxes, to be reviewed by the Project Ecologist and agreed with the wind farm operator | | | |
| MX18 | Biodiversity | EIAR Chapter 6<br><br>Appendix 6-4 | The Biodiversity Management and Enhancement Plan will be maintained and monitored in partnership between the developer, the Project Ecologist and the Landowners. The proposed management actions will be conveyed to the developer and each of the landowners, and management alterations implemented as required to achieve the targets of the management plan.<br><br>**Maintenance of Newly Planted Hedgerow:**<br><br>In order to facilitate the successful establishment of the new hedgerow to be planted within the Proposed Wind Farm site, and to | Annually | Annually | Project Ecologist |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | promote biodiversity value of these the following measures are proposed (DAERA, 2022):<br><br>› New hedgerow shrub planting will be kept weed and litter free until the new plants are established, particularly from ruderal weeds. Healthy growth will be maintained by allowing the plant to occupy as much of the planting areas as possible to allow them to achieve as close their natural form as possible.<br>› During spring and autumn maintenance periods all trees and plants will be checked and adjusted/replaced as required, soil firmed, and any dead wood present removed back to healthy tissue and mulch added if required. Where tree guards are no longer required these will be removed to avoid damage to the tree.<br>› During the first growing season, all standard trees/ semi-mature trees will be watered regularly during any prolonged dry periods during the growing season (i.e. in April, May, June, July and August). During the second growing season the trees will be kept well-watered as often as required, particularly during June, July and August.<br>› Hedgerows should be trimmed every two – three years, with the cutting height raised 10-15cm each year, with trimming taking place in late winter (January / February), thus allowing flowers and fruit to develop.<br>› Hedgerows can be trimmed to produce an 'A' Shaped hedgerow which allows more light into the base.<br>› Any tree, hedge or shrub that is removed, uprooted, destroyed or that becomes seriously damaged, defective diseased or dead shall be replaced in the same location with another plant of the same species and size as that originally planted. All such replacements shall be carried out within the first planting season following the loss. | | | |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | **Monitoring and Maintenance of Translocated Hedgerow**<br><br>Once translocated, the hedgerow should be well watered to ensure topsoil is washed in to fill any voids. Leave a 1-2m wide margin on each side of the hedge for biodiversity. Double fencing at 1-2m on either side of the hedge to protect against livestock. Control competing vegetation, such as grasses and ruderal vegetation (DAERA, 2022). The hedgerow should be inspected in the growing season following translocation to assess the percentage take of the plants (following heavy pruning and translocation, some plants can be very late producing leaves). Any dead plants should be replaced. The translocated hedgerow will require trimming back after the first season's growth to encourage bushy growth, followed by bi-annual cutting (Devon Hedge Group, 2015).<br><br>**Monitoring and Reporting:**<br><br>Hedgerows and replanted trees will be inspected following the main growing season (i.e. in September) for the first three years of growth, where the requirement for replacement planting will be assessed. If any shrubs are dead or damaged these will be replaced using the same species within the next planting season. Recommendations for ongoing or remedial management required will be specified within an Environmental and Ecological Report and corrective actions implemented. Monitoring results will be reported after each monitoring year as noted above. Reports detailing the monitoring works carried out, the results obtained and a review of their success, along with any suggestions for amendments to the plan | | | |
| MX19 | Ornithology | EIAR Chapter 7 | In line with best practice measures, a detailed post-construction Bird Monitoring Programme has been prepared for the operational phase of the proposed development. The programme of works will monitor parameters associated with | Years 1-5, 10 and 15 | Monthly | Project Ornithologist |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | Appendix 7-6 | collision, displacement/barrier effects and habituation during the lifetime of the project. Surveys will be scheduled to coincide with years 1, 2, 3, 5, 10 & 15 of the lifetime of the wind farm. Monitoring measures are broadly based on guidelines issued by the NatureScot (SNH, 2009). The following individual components are proposed:<br><br>› Flight activity surveys: vantage point surveys.<br>› Breeding bird surveys: O'Brien & Smith<br>› Targeted bird collision surveys (corpse searches) will be undertaken with trained dogs. The surveys will include detection and scavenger trials, to correct for these two biases and ensure the resulting data is robust.<br><br>The proposed programme of monitoring was not proposed in response to any identified significant effect but rather as a best practice measure (as per guidance outlined in NatureScot, 2009). The monitoring is comprehensive and considered entirely adequate in this regard. The results of this monitoring will be reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation or adaptation if required | | | |
| MX20 | Noise and Vibration | Chapter 12 | Commissioning noise surveys will be undertaken to ensure compliance with any noise conditions applied to the development. It is common practice to commence surveys within six months of a wind farm being commissioned.<br><br>In the unlikely event that an exceedance of the noise criteria is identified as part of the commissioning assessment, the guidance outlined in the IOA GPG and Supplementary Guidance Note 5: Post Completion Measurements (July 2014) will be followed, and relevant corrective actions taken. For example, implementation of noise reduced operational modes resulting in curtailment of turbine | Once within six months | As required | Noise Consultant |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | operation can be implemented for specific turbines in specific wind conditions to ensure turbine noise levels are within the relevant noise criterion curves/planning conditions limits. Such curtailment can be applied using the wind farm SCADA system without undue effect on the wind turbine performance. Following implementation of these measures, noise surveys will be repeated to confirm compliance with the noise criteria.<br><br>The commissioning survey will include a review for the presence of audible tones associated with the operation of the wind turbine farm in accordance with Annex C of ISO 1996-2:2017 Acoustics – Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels | | | |
| **Decommissioning Phase** | | | | | | |
| MX21 | Decommissioning | DP Section 1 | In accordance with SNH guidance, "best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm". A Decommissioning Plan will be reviewed and updated prior to commencement of decommissioning works to take account of the relevant conditions of the planning permission and current health and safety standards | End of operational life | As required | Developer/ Appointed Contractor |
| MX22 | Decommissioning | DP Section 3 | In general, the ECoW will maintain responsibility for monitoring the decommissioning works and Contractors/Sub-contractors from an environmental perspective. The ECoW will act as the regulatory interface on environmental matters. The Site Manager will be responsible for reporting to and liaising with Kilkenny County Council and other statutory bodies as required.<br><br>The Site Manager in consultation with the ECoW will be responsible for employing the services of a suitably qualified ecologist and any other suitably qualified professionals as required throughout the decommissioning works. | As required | As required | Site Manager |
| MX23 | Decommissioning | DP Section 3 | Prior to decommissioning, a suitably qualified ecologist will complete an invasive species survey of the Site to identify invasive species | As required | As required | Project Ecologist |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | where any minor excavation will be required. If present in these areas, the ecologist will propose suitable management measures. | | | |
| MX24 | Decommissioning | EIAR Chapter 7 | Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Development to identify sensitive sites (e.g. roosts). Any requirement for construction works to run into the subsequent breeding and winter seasons following commencement will be subject to a repeat of the pre-commencement bird surveys to confirm the absence of breeding birds of conservation concern once per month during the breeding season (April to July) and once during the winter season (October). The survey will aim to identify sensitive sites e.g., nests or roosts depending on the season in question.<br><br>The surveys will be undertaken by a suitably qualified ornithologist. The surveys will comprise a thorough walkover survey of the development footprint and/or all works areas to a 500m radius, where access allows. If winter roosts or nests of birds of high conservation concern are identified, the roost/nest will be earmarked for continued monitoring during works. If the roost/nest is found to be active during works, works will cease within a species-specific buffer of its location in line with best practice guidance (e.g. Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.<br><br>All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked to alert all personnel on site to the suspension of works within that area. | Prior to Decomissioning | As required | Project Ornithologist |

# 9. PROGRAMME OF WORKS

## 9.1 Construction Schedule

The construction phase will take approximately 12-18 months to complete from starting on site to the commissioning of the electrical system and export of electricity from site.

The EIAR stipulates that in the interest of breeding birds, construction will not commence during the breeding bird season, which runs from April to July. The EIAR stipulates that construction may commence between August to the end of March, so that construction activities are ongoing by the time the next breeding bird season comes around and can continue throughout the next breeding season.

Works during the construction phase of the development, including delivery of construction materials will generally take place between 7 a.m. and 7 p.m. daily Monday to Saturday with large concrete pours requiring an earlier start when deemed necessary. Delivery of abnormal loads such as turbine tower sections and blades will take place at night outside of peak traffic hours.

The phasing and scheduling main construction task items are outlined in Figure 9-1 below.

| | | Year 1 | | | | Year 2 | |
|---|---|---|---|---|---|---|---|
| ID | Task Name | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 |
| 1 | Site Health and Safety | ■ | ■ | ■ | ■ | ■ | ■ |
| 2 | Grid Connection | ■ | ■ | ■ | ■ | ■ | |
| 3 | Site Compounds | ■ | | | | | |
| 4 | Site Roads | ■ | ■ | ■ | ■ | ■ | |
| 5 | Substation and Electrical Works | | ■ | ■ | ■ | ■ | ■ |
| 6 | Turbine Hardstands | | ■ | ■ | ■ | | |
| 7 | Turbine Foundations | | | ■ | ■ | ■ | |
| 8 | Backfilling and Landscaping | | | | ■ | ■ | ■ |
| 9 | Turbine Delivery and Erection | | | | ■ | ■ | ■ |
| 10 | Substation Commissioning | | | | | | ■ |
| 11 | Turbine Commissioning | | | | | | ■ |

*Figure 9-1 Indicative Construction Schedule*

# 10. COMPLIANCE AND REVIEW

## 10.1 Site Inspections and Environmental Audits

Routine inspections of construction activities will be carried out on a daily and weekly basis by the ECoW and the Site Supervisor/Construction Manager to ensure all controls to prevent environmental impact, relevant to the construction activities taking place at the time, are in place.

Environmental inspections will ensure that the works are undertaken in compliance with this CEMP and all other planning application documents. Only suitably trained staff will undertake environmental site inspections.

## 10.2 Auditing

An Environmental audit will first be carried out prior to the construction phase of the Proposed Development to ensure the implementation of pre-construction mitigation measures and completion of baseline studies. Further environmental audits will be carried on a monthly basis during the construction phase of the Proposed Development and again after the commissioning of the wind turbines and substation.

In contrast to monitoring and inspection activities, audits are designed to shed light on the underlying causes of non-compliance, and not merely detect the non-compliance itself. In addition, audits are the main means by which system and performance improvement opportunities may be identified. Environmental audits will be carried out by the ECoW on behalf of the Project Developer, in an and objective manner. Environmental audits will be conducted at planned intervals to determine whether the CEMP is being properly implemented and maintained. The results of environmental audits will be provided to the Project Developer and Project Contractor.

An audit of compliance with the pre-commencement mitigation measures will be completed by the ECoW prior to the commencement of the construction phase of the Proposed Development. An audit of compliance with the construction phase mitigation measures will be completed monthly during the construction phase. The findings of each audit will be documented by the ECoW within the EMP for the site. The findings of each audit will be made available to Laois and Kilkenny County Councils on request.

Once the Proposed Development is operational and turbines have been commissioned, a report of compliance with operational phase mitigation measures will be prepared.

## 10.3 Environmental Compliance

The following definitions shall apply in relation to the classification of Environmental Occurrences during construction of the wind farm:

**Environmental Near Miss:** An occurrence which if not controlled or due to its nature could lead to an Environmental Incident.

**Environmental Incident:** Any occurrence which has potential, due to its scale and nature, to migrate from source and have an environmental impact beyond the site boundary.

**Environmental Exceedance Event:** An environmental exceedance event occurs when monitoring results indicate that limits for a particular environmental parameter (as indicated in the Environmental Monitoring Programme) has been exceeded.

An exceedance will immediately trigger an investigation into the reason for the exceedance occurring and the application of suitable mitigation where necessary.

Exceedance events can be closed out on achieving a monitoring result below the assigned limit for a particular environmental parameter.

**Environmental Non-Compliance:** Non-fulfilment of a requirement and includes any deviations from established procedures, programs and other arrangements related to the EMP.

## 10.4 Corrective Action Procedure

A corrective action is implemented to rectify an environmental problem on-site. Corrective actions will be implemented by the Site Supervisor/Construction Manager, as advised by the Site Environmental Clerk of Works. Corrective actions may be required as a result of the following:

- Environmental Audits;
- Environmental Inspections and Reviews;
- Environmental Monitoring;
- Environmental Incidents; and,
- Environmental Complaints.

A Corrective Action Notice will be used to communicate the details of the action required to the main contractor. A Corrective Action Notice is a form that describes the cause and effect of an environmental problem on site and the recommended corrective action that is required. The Corrective Action Notice, when completed, will include details of close out and follow up actions.

If an environmental problem occurs on site that requires immediate attention, direct communications between the Site supervisor/Construction Manager and the Site Environmental Clerk of Works will be conducted. This in turn will be passed down to the site staff involved. A Corrective Action Notice will be completed at a later date.

## 10.5 Construction Phase Review

The Project Contractor's CEMP will be the subject of review by the ECoW on behalf of the Project Developer whenever a revised version of the CEMP is presented for approval.

# APPENDIX 4-3

## *SURFACE WATER MANAGEMENT PLAN*

Planning and Environmental Consultants



# Surface Water Management Plan

## Seskin Renewables Wind Farm

Appendix 4-3

# DOCUMENT DETAILS

| | |
|---|---|
| Client: | **Seskin Renewable Energy Ltd** |
| Project Title: | **Seskin Renewables Wind Farm** |
| Project Number: | **231103** |
| Document Title: | **Surface Water Management Plan** |
| Document File Name: | **Appendix 4-3 SWMP F - 2025.06.27 - 231103** |
| Prepared By: | **MKO**<br>**Tuam Road**<br>**Galway**<br>**Ireland**<br>**H91 VW84** |

Planning and Environmental Consultants

| Rev | Status | Date | Author(s) | Approved By |
|---|---|---|---|---|
| 01 | Final | 27/06/2025 | ER | EM |
| | | | | |

# Table of Contents

# 1. INTRODUCTION

This Surface Water Management Plan (SWMP) is intended, as an accompanying document to the Construction and Environmental Management Plan (CEMP), to compile the proposed surface water drainage control and treatment measures, set out in Chapter 4 and Chapter 9 of the Environmental Impact Assessment Report (EIAR), and the proposed surface water monitoring programme, in a single document.

This document has been prepared by Michéal Cahill and reviewed by Eoin McCarthy of MKO. Michéal is an Environmental Scientist with a years experience with MKO. Eoin is a Senior Environmental scientist with over 11 years' experience with MKO and has been involved in the development of surface water management plans for a number of wind energy EIARs in that time.

This document has also benefited from input by Michael Gill and Adam Keegan of Hydro Environmental Services Ltd. (HES). HES are the authors of the Water chapter of the EIAR and also designed the proposed drainage plan for the Seskin Renewables Wind Farm development that was submitted as part of the planning application. Adam Keegan PGeo (B.Sc., M.Sc.) is a hydrogeologist with 7 years environmental consultancy experience in Ireland. Adam has worked on numerous Environmental Impact Assessments for infrastructure projects, including several wind farm projects, strategic housing developments and quarries. Adam has experience in intrusive site investigation works within mapped karst environments and experience in trial and production well drilling within areas mapped as Regionally Karstified Aquifers. Michael Gill is an Environmental Engineer with over 22 years' environmental consultancy experience in Ireland. Michael has completed numerous hydrological and hydrogeological impact assessments of wind farms in Ireland. He has also managed EIAR assessments for infrastructure projects including private residential and commercial developments which are occasionally sited within areas of known karstification, particularly in the East Galway/Clare area. In addition, he has substantial experience in intrusive site investigation and site suitability assessments.

This SWMP has been divided into three sections, as listed below, and draws and expands on information already provided in Chapter 4 and Chapter 9 of the submitted EIAR and Section 4.2 of the CEMP (Appendix 4-2 of the EIAR).

- Surface Water Drainage Design
- Surface Water Drainage Management
- Surface Water Monitoring Programme

# 2. SURFACE WATER DRAINAGE DESIGN



The drainage design for the Proposed Development has been prepared by Adam Keegan of Hydro Environmental Services Ltd. (HES), and by the firm's principal, Mr. Michael Gill. The protection of the watercourses within and surrounding the site, and downstream catchments that they feed is of utmost importance in considering the most appropriate drainage proposals for the site of the Proposed Development. The Proposed Development's drainage design has therefore been proposed specifically with the intention of having no negative impact on the water quality of the site and its associated rivers and lakes, and consequently no impact on downstream catchments and ecological ecosystems. No routes of any natural drainage features will be altered as part of the Proposed Development and turbine locations and associated new roadways were originally selected to avoid natural watercourses, and existing roads are to be used wherever possible. There will be no direct discharges to any watercourses, with all drainage waters being dispersed as overland flows. All discharges from the proposed works areas will be made over vegetation filters at an appropriate distance from natural watercourses. Buffer zones of 50m around streams, respectively, have been used to inform the layout of the Proposed Development.

A copy of the drainage design drawing which are included in Appendix A of this document.

## 2.1 Existing Drainage Features

No field drains were observed across the site, apart from at the origin point of the Ballyconra stream, where it appears the channel has been dug out to encourage drainage from the spring seepage which emerges to the northwest. The agricultural fields are primarily improved grassland, which are well drained. Drainage along the Proposed Grid Connection underground cabling route is broadly localised to the River Nore which flows along the N77 road. Drainage from the road carriageway will primarily drain in the direction of the River Nore, however under typical moderate rainfall conditions, the surface water will likely infiltrate through the soil/subsoil before reaching the river as shallow baseflow, due to the soils (Sand and gravel) and subsoils (High permeability) along the Proposed Grid Connection underground cabling route.

The routes of any drainage features will not be altered as part of the Proposed Development. Turbine locations have been selected to avoid natural watercourses. The routes of any natural drainage features will not be altered as part of the Proposed Development. Turbine locations have been selected to avoid natural watercourses. Only 2 no. new watercourse crossing will be required as part of the Proposed Development.

There will be no direct discharges to any watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an appropriate distance from natural watercourses and lakes. Buffer zones around the existing natural drainage features have informed the layout of the Proposed Development and are indicated on the drainage design drawings.

## 2.2 Drainage Design Principles

Runoff control and drainage management are key elements in terms of mitigation against impacts on surface water bodies. Two distinct methods will be employed to manage drainage water within the Proposed Development. The first method involves 'keeping clean water clean' by avoiding disturbance to natural drainage features, minimising any works in or around artificial drainage features, and diverting clean surface water flow around excavations, construction areas and temporary storage areas. The second method involves collecting any drainage waters from works areas within the site that might carry silt or sediment, and nutrients, to route them towards stilling ponds prior to controlled diffuse release over vegetated surfaces. There will be no direct discharges to surface waters. During the construction phase all runoff from works areas (i.e., dirty water) will be attenuated and treated to a high quality prior to being released.

The drainage design is intended to maximise erosion control, which is more effective than having to control sediment during high rainfall. Such a system also requires less maintenance. The area of exposed ground will be minimised. The drainage measures will prevent runoff from entering the works areas of the site from adjacent ground, to minimise the volume of sediment-laden water that has to be managed. Discoloured run-off from any construction area will be isolated (through the installation of drainage swales) from natural clean run-off.

The proposed wind farm drainage process flow is presented in Figure 2-1 below.

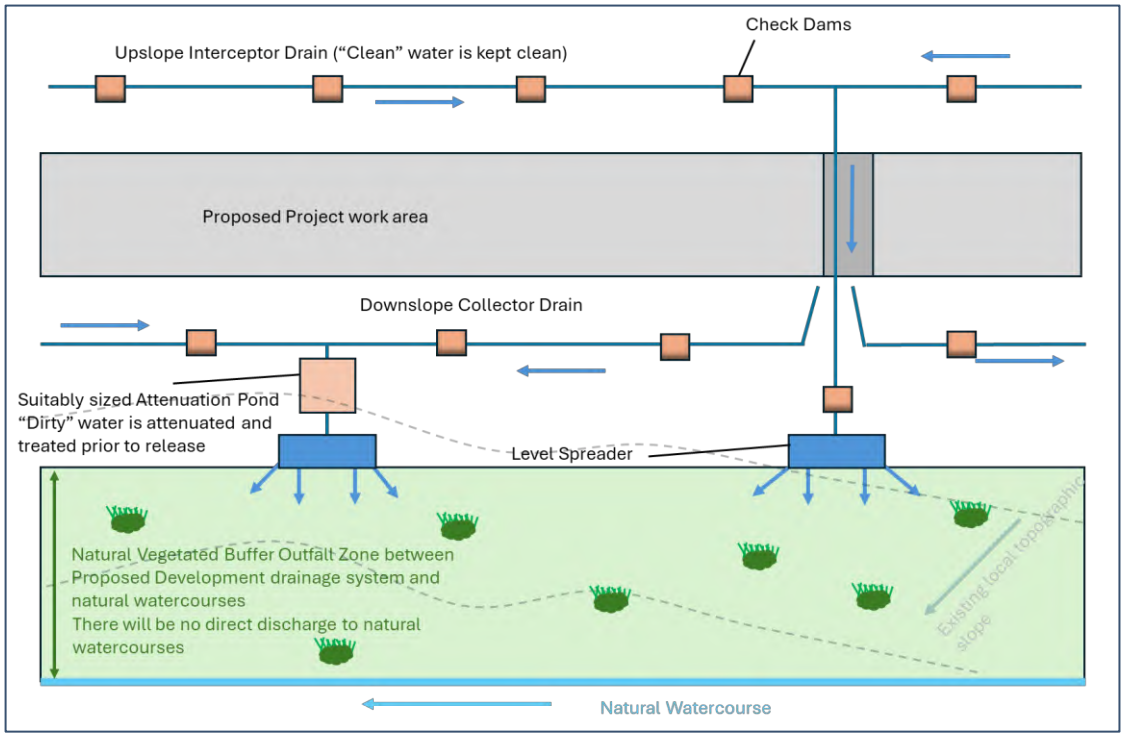



*Figure 2-1 Proposed Wind Farm Drainage Process Flow*

Comprehensive surface water mitigation and controls are outlined below to ensure protection of all downstream receiving waters. Mitigation measures will ensure that surface runoff from the developed areas of the site will be of a high quality and will therefore not impact on the quality of downstream surface water bodies. Any introduced drainage works at the site will mimic the existing hydrological regime thereby avoiding changes to flow volumes leaving the site.

## 2.3 Best Practice Guidance

The drainage design has been prepared based on experience of the project team of other renewable energy sites in peat-dominated environments, and in accordance with a number of best practice guidance documents.

There is no one guidance document that deals with drainage management and water quality controls for wind farms and other renewable energy developments. However, a selection of good practice approaches have been adopted in preparation of this drainage design, and these are taken from the various best practice guidance documents listed below. These relate to infrastructure and operational works on forested sites, forest road design, water quality controls for linear projects, forestry road drainage and management of geotechnical risks. To achieve best practice in terms of water protection through construction management all drainage management is prepared in accordance with guidance contained in the following:

- Forestry Commission (2004): Forests and Water Guidelines, Fourth Edition. Publ. Forestry Commission, Edinburgh;
- Coillte (2009): Forest Operations & Water Protection Guidelines;
- Forest Service (Draft): Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures;
- Forest Service (2000): Forestry and Water Quality Guidelines. Forest Service, DAF, Johnstown Castle Estate, Co. Wexford;
- Forest Service, (2000): Code of Best Forest Practice – Ireland. Forest Service, DAF, Johnstown Castle Estate, Co. Wexford;
- COFORD (2004): Forest Road Manual – Guidelines for the design, construction and management of forest roads;
- MacCulloch (2006): Guidelines for risk management of peat slips on the construction of low volume low cost roads over peat (Frank MacCulloch Forestry Civil Engineering Forestry Commission, Scotland);
- National Roads Authority (2005): Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes;
- Wind Farm Development Guidelines for Planning Authorities (September 1996);
- Eastern Regional Fisheries Board: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries During Construction Works Adjacent to Waters;
- Scottish Natural Heritage, 2010: Good Practice During Wind Farm Construction;
- PPG1 - General Guide to Prevention of Pollution (UK Guidance Note);
- PPG5 – Works or Maintenance in or Near Water Courses (UK Guidance Note);
- CIRIA Report No. C648 (2006): CIRIA (Construction Industry Research and Information Association) guidance on 'Control of Water Pollution from Linear Construction Projects';
- CIRIA Report Number C532 (2001): Control of water pollution from construction sites - Guidance for consultants and contractors.; and,
- Control of water pollution from linear construction projects -Technical guidance. CIRIA C648 London, 2006;
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (Inland Fisheries Ireland, 2016);

## 2.4 Drainage System

The early establishment of the drainage measures outlined in Section 2.5 below will manage the risk of impacts on watercourses on and adjacent to the site during construction. In addition, construction operations will adopt best working practices. The development of the site will need to be phased accordingly. The construction of the drainage will start from the downstream sections and progress upstream, connecting conveyance systems with other drainage features as each development phase progresses. They will therefore need to be designed with sufficient flexibility and capacity to respond to an early phase incoming flow during the construction phase.

The implementation of a Scheduling of Works Operating Record (SOWOR) prior to commencement will provide a series of pre-commencement triggers which set out specific conditions which will be met before the commencement of works in particularly sensitive areas. These pre-commencement triggers will apply to the installation of any drainage infrastructure. An example of an SOWOR is included in Appendix B.

The detailed drainage measures proposed to address surface water management based upon the design criteria and philosophy will be implemented. The drainage system will be excavated and constructed in conjunction with the road and hard standing construction. Drains will be excavated, and settlement ponds constructed to eliminate any suspended solids within surface water running off the site.

## 2.5 Surface Water Drainage Measures

### 2.5.1 Interceptor Drains

Interceptor drains will be installed upgradient of any works areas to collect surface flow runoff and prevent it reaching excavations and construction areas of the site where it might otherwise have come into contact with exposed surfaces and picked up silt and sediment. The drains will be used to divert upslope runoff around the works area to a location where it can be redistributed over the ground surface as sheet flow. This will minimise the volume of potentially silty runoff to be managed within the construction area.

The interceptor drains will be installed in advance of any main construction works commencing. The material excavated to make the drain will be compacted on the downslope edge of the drain to form a diversion dike. On completion of the construction phase works, it is envisaged that the majority of the interceptor drains could be removed. At that stage, there will be no open excavations or large areas of exposed ground that are likely to give rise to large volumes of potentially silt-laden run off. Any areas in which works were carried out to construct roads, turbine bases or hardstands, will have been built up with large grade hardcore, which even when compacted in place, will retain sufficient void space to allow water to infiltrate the subsurface of these constructed areas. It is not anticipated that roadways or other installed site infrastructure will intercept ground-conveyed surface water runoff to any significant extent that would result in scouring or over-topping or spill over. Where the drains are to be removed, they will be backfilled with the material from the diversion dike. Interceptor drains may have to be retained in certain locations, for example where roadways are to be installed on slopes, to prevent the roadways acting of conduits for water that might infiltrate the roadway sub-base. In these cases, interceptor drains will be maintained in localised areas along the roadway with culverts under the roadway, which will allow the intercepted water to be discharged to vegetation filters downgradient of the roadway. Similarly, in localised hollows where water is likely to be funnelled at greater concentrations than on broader slopes, interceptor drains, and culverts may be left in situ following construction.

The velocity of flow in the interceptor will be controlled by check dams (see Section 2.5.3 below), which will be installed at regular intervals along the drains to ensure flow in the channel is non-erosive. On steeper sections where erosion risks are greater, a geotextile membrane will be added to the channel.

Interceptor drains will be installed horizontally across slopes to run in parallel with the natural contour line of the slope. Intercepted water will travel along the interceptor drains to areas downgradient of works areas, where the drain will terminate at a level spreader (see Section 2.5.4 below). Across the entire length of the interceptor drains, the design elevation of the water surface along the route of the drains will not be lower than the design elevation of the water surface in the outlet at the level spreader. An illustration of an interceptor drain is shown in Figure 2-2.

### 2.5.2 Swales

Drainage swales (or collector drains) are shallow drains that will be used to intercept and collect run off from construction areas of the site during the construction phase. Drainage swales will remain in place to collect runoff from roads and hardstanding areas of the Proposed Development during the operational phase and channel it to infiltration area for sediment settling. A swale is an excavated drainage channel located along the downgradient perimeter of construction areas, used to collect and carry any potentially sediment-laden runoff to a sediment-trapping facility and stabilised outlet. Swales are proven to be most effective when a dike is installed on the downhill side. They are similar in design to interceptor drains and collector drains described above.

Drainage swales will be installed downgradient of any works areas to collect surface flow runoff where it might have come into contact with exposed surfaces and picked up silt and sediment. Swales will intercept the potentially silt-laden water from the excavations and construction areas of the site and prevent it reaching natural watercourses.

Drainage swales will be installed in advance of any main construction works commencing. The material excavated to make the swale will be compacted on the downslope edge of the drain to form a diversion dike. An illustration of a drainage swale is shown in Figure 2-2.



### 2.5.3 Check Dams

The velocity of flow in the interceptor drains and drainage swales, particularly on sloped sections of the channel, will be controlled by check dams, which will be installed at regular intervals along the drains to ensure flow in the swale is non-erosive. Check dams will also be installed in some existing artificial drainage channels that will receive waters from works areas of the Site.

Check dams will restrict flow velocity, minimise channel erosion and promote sedimentation behind the dam. The check dams will be installed as the interceptor drains are being excavated.

Check dams will be used along sections of access road drains to attenuate flows and intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock.

The check dams will be installed at regular intervals along the interceptor drains to ensure the bottom elevation of the upper check dam is at the same level as the top elevation of the next down-gradient check dam in the drain. The centre of the check dam will be approximately 150mm lower than the edges to allow excess water to overtop the dam in flood conditions rather than cause upstream flooding or scouring around the dams.

Check dams will not be used in any natural watercourses, only artificial drainage channels and interceptor drains. The check dams will be left in place at the end of the construction phase to limit erosive linear flow in the drainage swales during extreme rainfall events.

Check dams are designed to reduce velocity and control erosion and are not specifically designed or intended to trap sediment, although sediment is likely to build up. If necessary, any excess sediment build up behind the dams will be removed. For this reason, check dams will be inspected and maintained regularly to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam. An illustration of a check dam is shown in Figure 2-2.

### 2.5.4 Level Spreader

A level spreader will be constructed at the end of each interceptor drain to convert concentrated flows in the drain, into diffuse sheet flow on areas of vegetated ground. The levels spreaders will be located downgradient of any proposed works areas in locations where they will not contribute further to water ingress to construction areas of the site.

The water carried in interceptor drains will not have come in contact with works areas of the site, and therefore should be free of silt and sediment. The level spreaders will distribute clean drainage water onto vegetated areas where the water will not be reconcentrated into a flow channel immediately below the point of discharge. The discharge point will be on level or only very gently sloping ground rather than on a steep slope so as to prevent erosion.

The slope in the channel leading into the spreader will be less than or equal to 1%. The spreader lip over which the water will spill will be made of a concrete kerb, wooden board, pipe, or other similar piece of material that can create a level edge similar in effect to a weir. The spreader will be level across

the top and bottom to prevent channelised flow leaving the spreader or ponding occurring behind the spreader. The top of the spreader lip will be 150mm above the ground behind it. The length of the spreader will be a minimum of four metres and a maximum length of 25 metres, with the actual length of each spreader to be determined by the size of the contributing catchment, slope and ground conditions.

Clean four-inch stone can be placed on the outside of the spreader lip and pressed into the ground mechanically to further dissipate the flow leaving the level spreader over a larger area. An illustration of a level spreader is shown in Figure 2-2.

### 2.5.5 Piped Slope Drains

Piped slope drains will be used to convey surface runoff from diversion drains safely down slopes to flat areas without causing erosion. Once the runoff reaches the flat areas it will be reconverted to diffuse sheet flow. Level spreaders will only be established on slopes of less than 6% in grade. Piped slope drains will be used to transfer water away from areas where slopes are too steep to use level spreaders.

The piped slope drains will be semi-rigid corrugated pipes with a stabilised entrance and a rock apron at the outlet to trap sediment and dissipate the energy of the water. The base of drains leading into the top of the piped slope drain will be compacted and concavely formed to channel the water into the corrugated pipe. The entrance at the top of the pipe will be stabilised with sandbags if necessary. The pipe will be anchored in place by staking at approximately 3-4 metre intervals or by weighing down with compacted soil. The bottom of the pipe will be placed on a slope with a grade of less than 1% for a length of 1.5 metres, before outflowing onto a rock apron.

The rock apron at the outlet will consist of 6-inch stone to a depth equal to the diameter of the pipe, a length six times the diameter of the pipe. The width of the rock apron will be three times the diameter of the pipe where the pipe opens onto the apron and will fan out to six times the diameter of the pipe over its length.

Piped slope drains will only remain in place for the duration of the construction phase of the Proposed Development. On completion of the works, the pipes and rock aprons will be removed, and all channels backfilled with the material that was originally excavated from them. Piped slope drains will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and blockages. Stake anchors or fill over the pipe will be checked for settlement, cracking and stability. Any seepage holes where pipe emerges from drain at the top of the pipe will be repaired promptly. An illustration of the type of piped slope drain is shown in Figure 2-2.

### 2.5.6 Vegetation Filters

Vegetation filters are the existing vegetated areas of land that will be used to accept surface water runoff from upgradient areas. The selection of suitable areas to use as vegetation filters will be determined by the size of the contributing catchment, slope and ground conditions.

Vegetation filters will carry outflow from the level spreaders as overland sheet flow, removing any suspended solids and discharging to the groundwater system by diffuse infiltration.

Vegetation filters will not be used in isolation for waters that are likely to have higher silt loadings. In such cases, silt-bearing water will already have passed through stilling ponds prior to diffuse discharge to the vegetation filters via a level spreader.

## 2.5.7 Stilling Ponds



Stilling or settlement ponds will be used to attenuate runoff from works areas of the site of the Proposed Development during the construction phase and will remain in place to handle runoff from roads and hardstanding areas of the Proposed Development during the operational phase. The purpose of the stilling ponds is to intercept runoff potentially laden with sediment and to reduce the amount of sediment leaving the disturbed area by reducing runoff velocity. Reducing runoff velocity will allow larger particles to settle out in the stilling ponds, before the run-off water is redistributed as diffuse sheet flow in filter strips downgradient of any works areas.

Stilling ponds will be excavated/constructed to the appropriate size at each required location as shown on the drainage design drawings included in Appendix A of this document. The points at which water enters and exits the stilling ponds will be stabilised with rock aprons, which will trap sediment, dissipate the energy of the water flowing through the stilling pond system, and prevent erosion. The stilling ponds will reduce the velocity of flows in order to allow settlement of silt to occur. Water will flow out of the stilling pond through a stone dam, partially wrapped in geo-textile membrane, which will control flow velocities and trap any sediment that has not settled out.

Water will flow by gravity through the stilling pond system. The stilling ponds have been sized according to the size of the area they will be receiving water from and are large enough to accommodate a 10-year return rainfall event. The settlement ponds are designed for 11hr and 24hr retention times used to settle out medium silt (0.006mm) and fine silt (0.004mm) respectively (EPA, 2006)[1]. The stilling ponds will be dimensioned so that the length to width ratio will be greater than 2:1, where the length is the distance between the inlet and the outlet. Where ground conditions allow, stilling ponds will be constructed in a wedge shape, with the inlet located at the narrow end of the wedge. Each stilling pond will be a minimum of 1-1.5 metres in depth. Deeper ponds will be used to minimise the excavation area needed for the required volume.

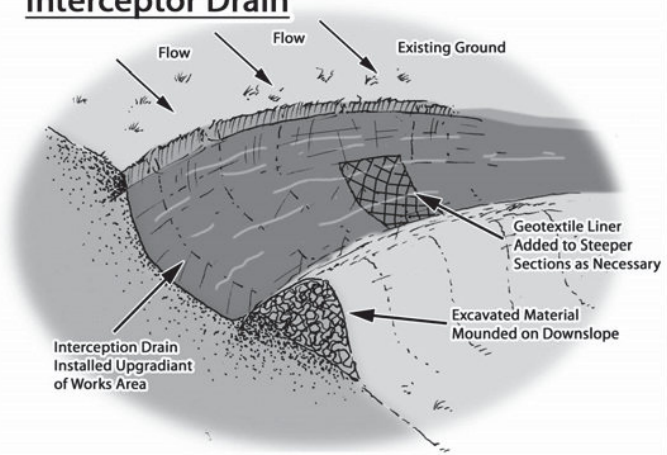
The embankment that forms the sloped sides of the stilling ponds will be stabilised with vegetated turves, which will have been removed during the excavation of the stilling ponds area.

Stilling ponds will be located towards the end of swales, close to where the water will be reconverted to diffuse sheet flow. Upon exiting the stilling pond system, water will be immediately reconverted to diffuse flow via a fan-shaped rock apron if there is adequate space and ground conditions allow. Otherwise, a swale will be used to carry water exiting the stilling pond system to a level spreader to reconvert the flow to diffuse sheet flow.

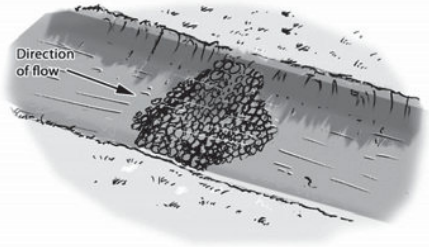
A water level indicator such as a staff gauge will be installed in each stilling pond with marks to identify when sediment is at 10% of the stilling pond capacity. Sediment will be cleaned out of the still pond when it exceeds 10% of pond capacity. Stilling ponds will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows. An illustration of a stilling pond is shown in Figure 2-2.

[1] Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (EPA, 2006)

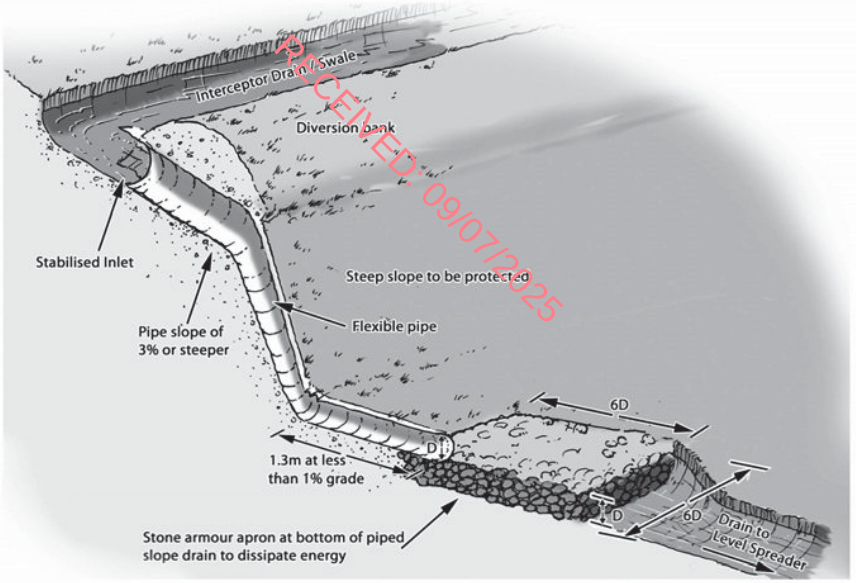
## Interceptor Drain




## Check Dam (Stone Dam in Drain)

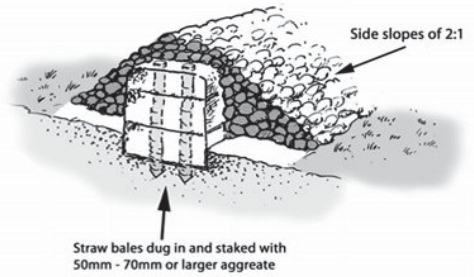



## Slope Pipe Drain

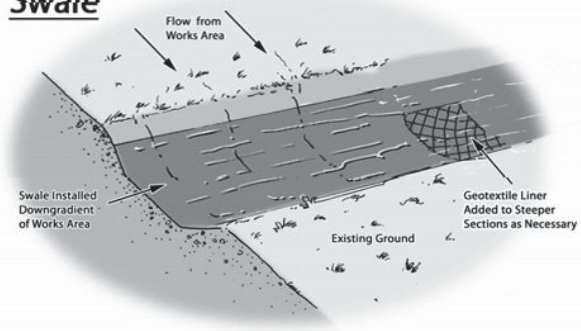





## Check Dam
(Straw Bale & Stone Dam - Cross Section)

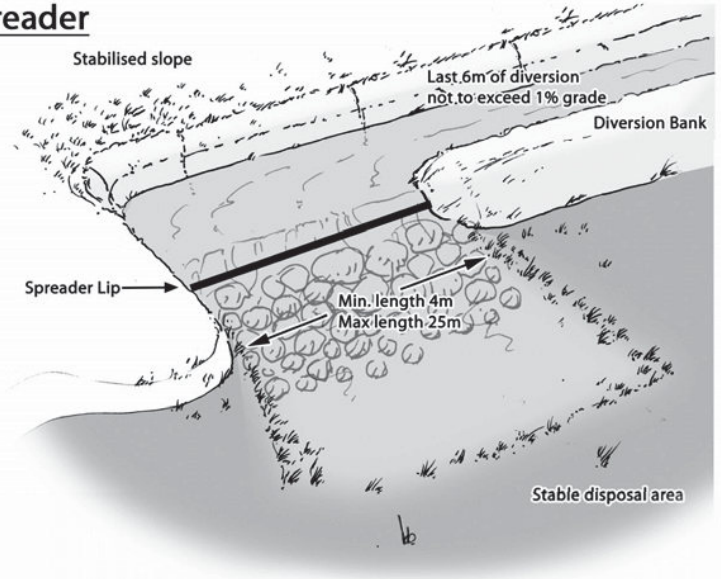



## Swale

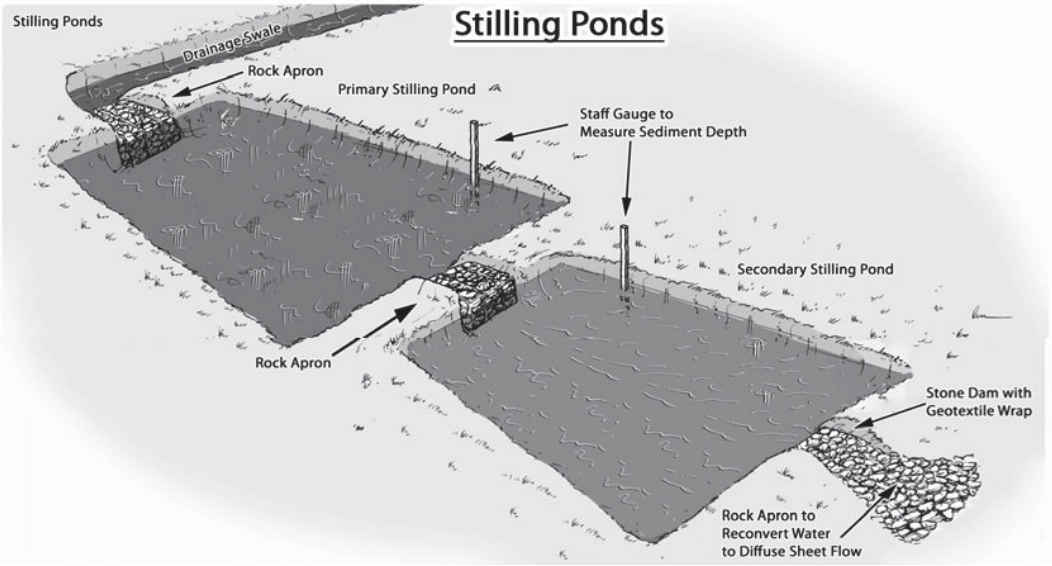



# Drainage Design Measures

## Level Spreader




## Stilling Ponds




| | | | |
|---|---|---|---|
| Drawing Title: Drainage Design Measures | Drawing No.: Figure 2-2 | Scale: NTS |
| Project Title: Seskin Renewables Wind Farm | | Date: 26.06.2025 |
| Drawn By: Edward Ryan | Checked By: Eoin McCarthy | Project No.: 231103 |

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## 2.5.8 Siltbuster

A "siltbuster" or similar equivalent piece of equipment will be available to filter any water pumped out of excavation areas, if necessary, prior to its discharge to stilling ponds or swales.

Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. The mobile units are specifically designed for use on construction sites.

The unit stills the incoming water/solids mix and routes it upwards between a set of inclined plates for separation. Fine particles settle onto the plates and slide down to the base for collection, whilst treated water flows to an outlet weir after passing below a scum board to retain any floating material. The inclined plates dramatically increase the effective settling area of the unit giving it a very small footprint on site and making it highly mobile. Figure 2-3 below shows an illustrative diagram of the Siltbuster.

The Siltbuster units are now considered best practice for the management of dirty water pumped from construction sites. The UK Environment Agency and the Scottish Environmental Protection Agency have all recommended/specified the use of Siltbuster units on construction projects.

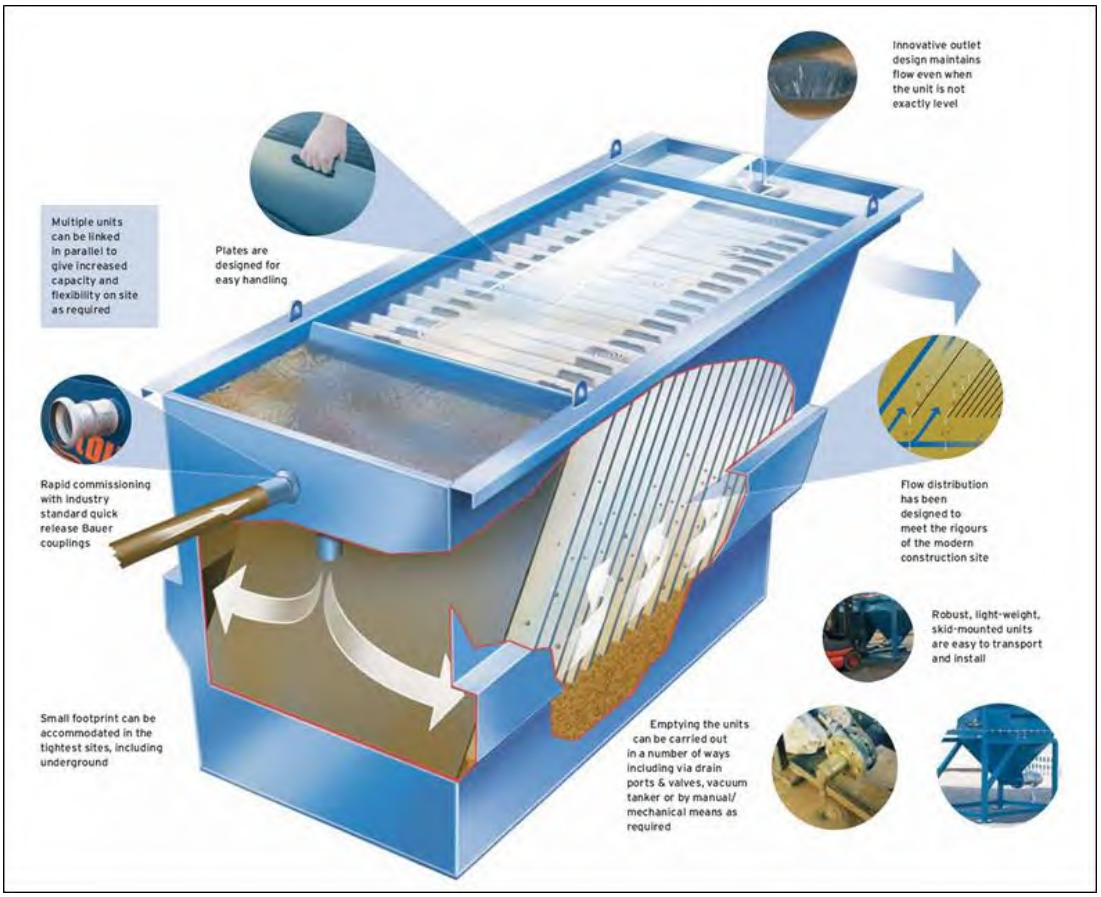



*Figure 2-3 Siltbuster (Source: https://www.siltbuster.co.uk/sb_prod/siltbuster-fb50-settlement-unit/)*

## 2.5.9 Silt Bags

Dewatering silt bags allow the flow of water through them while trapping any silt or sediment suspended in the water. The silt bags provide a passive non-mechanical method of removing any remaining silt contained in the potentially silt-laden water collected from works areas within the site.

Dewatering silt bags are an additional drainage measure that can be used downgradient of the stilling ponds at the end of the drainage swale channels and will be located, wherever it is deemed appropriate, throughout the site. The water will flow, via a pipe, from the stilling ponds into the silt bag. The silt bag will allow the water to flow through the geotextile fabric and will trap any of the finer silt and sediment remaining in the water after it has gone through the previous drainage measures. The dewatering silt bags will ensure that there will be no loss of peaty silt into the stream.

The dewatering silt bag that will be used will be approximately 3 metres in width by 4.5 metres (see Plate 2-1 and Plate 2-2 below) in length and will be capable of trapping approximately four tonnes of silt. The dewatering silt bag, when full, will be removed from site by a waste contractor with the necessary waste collection permit, who will then transport the silt bag to an appropriate, fully licensed waste facility.

*Plate 2-1 Silt Bag under inspection*

*Plate 2-2 Silt Bag with water being pumped through*

## 2.5.10 Sedimats

Sediment entrapment mats, consisting of coir or jute matting, will be placed at the outlet of the silt bag to provide further treatment of the water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure as shown in Plate 2-3 below.

*Plate 2-3 Typical* Sedimat Details (Source: https://www.hy-tex.co.uk/)

## 2.5.11 Culverts

All new proposed culverts and proposed culvert upgrades will be suitably sized for the expected peak flows in the watercourse.

Some culverts may be installed to manage drainage waters from works areas of the Proposed Development, particularly where the waters have to be taken from one side of an existing roadway to

the other for discharge. The size of culverts will be influenced by the depth of the track or road sub-base. In some cases, two or more smaller diameter culverts may be used where this depth is limited, though this will be avoided as they will have a higher associated risk of blockage than a single, larger pipe. In all cases, culverts will be oversized to allow mammals to pass through the culvert.



Culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. This will help dissipate its energy and help prevent problems of erosion. Smaller water crossings will simply consist of an appropriately sized pipe buried in the sub-base of the road at the necessary invert level to ensure ponding or pooling doesn't occur above or below the culvert and water can continue to flow as necessary.

All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.

### 2.5.12 Silt Fences

Silt fences will be installed as an additional water protection measure around existing watercourses in certain locations, particularly where works are proposed within the 50-metre buffer zone of a natural watercourse, which is inevitable where existing roads in proximity to watercourses are to be upgraded as part of the Proposed Development. These areas include around existing culverts, around the headwaters of watercourses, and the proposed locations are indicated on the detailed drainage design drawings included in Appendix A of this document.

Silt fences will be installed as single, double or a series of triple silt fences, depending on the space available and the anticipated sediment loading. The silt fence designs follow the technical guidance document 'Control of Water Pollution from Linear Construction Projects' published by CIRIA (Ciria, No. C648, 1996). Up to three silt fences may be deployed in series.

All silt fencing will be formed using Terrastop Premium or equivalent silt fence product.

Site fences will be inspected regularly to ensure water is continuing to flow through the fabric, and the fence is not coming under strain from water backing up behind it.

Site fences will be inspected regularly to ensure water is continuing to flow through the fabric, and the fence is not coming under strain from water backing up behind it. Typical silt fence details are shown below in Plate 2.4.

*Plate 2-4 Typical Silt Fence Details*

### 2.5.12.1 Hydrocarbon Interceptors

A hydrocarbon interceptor is a trap used to filter out hydrocarbons from surface water runoff. A suitably sized hydrocarbon interceptor will be installed wherever it is intended to store hydrocarbons and oils (i.e., construction compounds and substation compound) or where it is proposed to park vehicles during the construction and operational phases of the Proposed Development (i.e., construction compounds, substation compound and visitor car park).

# 3. SURFACE WATER DRAINAGE MANAGEMENT

The following sections give an outline of drainage management arrangements in terms of pre-construction, construction, and operational phases of the Proposed Development.

## 3.1 Good Environmental Management During Construction

Timing of works can strongly influence the potential for damaging the freshwater environment. Operations during wetter periods of the year pose a significantly greater risk of causing erosion and siltation, which can be particularly severe following major rainfall or snowmelt events. Traditionally, wind farm construction undertaken during the drier summer months will result in significantly less erosion and siltation. Construction of the drainage system during this period will also ensure that attenuation features associated with the drainage system will be in place and operational for all subsequent construction works. Construction activities in the hydrological buffer zones shall be avoided during or after prolonged rainfall or an intense rainfall event and work will cease entirely near watercourses when it is evident that water quality could potentially be impacted.

## 3.2 Drainage Measure Implementation and Management

### 3.2.1 Pre-Construction Drainage

There are no main watercourses traversing the Wind Farm site. There is one mapped small stream, the Ballyconra stream, mapped by the EPA ~480m southeast of turbine T8. There is also a seepage face leading to a field drain situated ~500m northwest of this point. There is a further unmapped short watercourse north of the Ballyconra stream. This unmapped stream emerges as a small seepage face. This seepage then travels along a relatively steep stream channel towards a swallow hole located ~180m north of turbine T6.

No field drains were observed across the site, apart from at the origin point of the Ballyconra stream, where it appears the channel has been dug out to encourage drainage from the spring seepage which emerges to the northwest. The agricultural fields are primarily improved grassland, which are well drained.

### 3.2.2 Construction Phase Drainage

The Project Hydrologist will attend the Site to set out and assist with the implementation of the proposed drainage controls as outlined in Section 2.5 above and shown in the drainage design drawings included in Appendix A. The drainage system will be excavated and constructed in conjunction with the road and hard standing construction. Drains will be excavated and stilling ponds constructed to eliminate any suspended solids within surface water running off the site.

The implementation of a Schedule of Works Operation Record (SOWOR) will continue through the construction phase of the project. The SOWOR provides number of abandonment triggers which will ensure that site management are well informed as to the level of incident that will require the abandonment of works. The various triggers both pre-commencement and abandonment ensure best practice in terms of water quality management is maintained prior to commencement and during the various felling and construction phases.

Best practice and practical experience on other similar projects suggest that in addition to the drainage plans that are included in and as part of this application, there are additional site based decisions that can only be made in the field through interaction between the Site Construction Manager, the Project Hydrologist and the Project Geotechnical Engineers. The mechanisms for interaction between these are outlined within Section 4 of the CEMP.

In relation to decisions that are made on site it is important to stress that these will be implemented in line with the associated drainage controls and mitigation measures outlined in Section 2.5 above and 3.3 below, and to ensure protection of all watercourses.

#### 3.2.2.1 Preparative Site Drainage Management

All materials and equipment necessary to implement the drainage measures outlined above will be brought on-site in advance of any works commencing.

An adequate quantity of straw bales, clean stone, terram, stakes, etc. will be kept on site at all times to implement the drainage design measures as necessary. The drainage measures outlined in the above will be installed prior to, or at the same time as the works they are intended to drain.

#### 3.2.2.2 Pre-emptive Site Drainage Management

The works programme for the initial construction stage of the development will also take account of weather forecasts and predicted rainfall in particular. Large excavations and movements of soils/subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.

The following forecasting systems are available and will be used on a daily basis at the site to direct proposed construction activities:

- General Forecasts: Available on a national, regional and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates;
- MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale;
- 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events;
- Rainfall Radar Images: Images covering the entire country are freely available from the Met Eireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive; and,
- Consultancy Service: Met Eireann provide a 24-hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest.

Using the threshold rainfall values, listed below, will allow work to be safely controlled (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event.

Works will be suspended if forecasting suggests either of the following is likely to occur:

- >10 mm/hr (i.e. high intensity local rainfall events);
- >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
- >half monthly average rainfall in any 7 days.

Prior to works being suspended the following control measures shall be completed:

- Secure all open excavations;
- Provide temporary or emergency drainage to prevent back-up of surface runoff; and,
- Avoid working during heavy rainfall (listed above) and for up to 24 hours after heavy events to ensure drainage systems are not overloaded.

#### 3.2.2.3 Reactive Site Drainage Management

The detailed drainage plan prepared for the site has provided for reactive management of drainage measures. The effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treat potentially silt-laden water from the works areas, will be monitored continuously by the Environmental Clerk of Works (ECoW) on-site. The ECoW or project hydrologist will respond to changing weather, ground or drainage conditions on the ground as the project proceeds, to ensure the effectiveness of the drainage design is maintained. This may require the installation of additional check dams, interceptor drains or swales as deemed necessary on-site. The drainage design may have to be modified on the ground as necessary, and the modifications will draw on the various features outlined above in whatever combinations are deemed to be most appropriate to the situation on the ground at a particular time.

In the unlikely event that works are giving rise to siltation of watercourses, the ECoW or project hydrologist will stop all works in the immediate area around where the siltation is evident. The source of the siltation will be identified and additional drainage measures, as outlined in Section 2.5 above, will be installed in advance of works recommencing.

### 3.2.3 Operational Phase Drainage Management

The project hydrologist will inspect and review the drainage system after construction has been completed to provide guidance on the requirements of an operational phase drainage system. This operational phase drainage system will have been installed during the construction phase in conjunction with the road and hardstanding construction work as described below:

- Some interceptor drains will be left in place, upgradient of the proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed over the ground by means of a level spreader.
- Swales/road side drains will remain in place to intercept and collect runoff from access roads and hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to stilling ponds for sediment settling;
- Check dams will be put in place at regular intervals along interceptor drains and swales/roadside drains in order to reduce flow velocities and therefore minimise erosion within the system during storm rainfall events; and,
- Stilling ponds/settlement ponds, emplaced downstream of swales and roadside drains, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses. The stilling ponds will be sized according to the size of the area they will be receiving water from, but will be sufficiently large to accommodate peak flows storm events. Inspection and maintenance of all settlement ponds, along with the entire drainage network, will be ongoing through the construction period.

In the operational phase of the wind farm, the reliance on the drainage system summarised above will become reduced as areas naturally revegetate. Once areas revegetate, this will result in a resumption of the natural drainage management that will have existed prior to any construction.

### 3.2.4 Spoil and Soil Management

During the initial placement of spoil at the respective repository areas, silt fences, straw bales and biodegradable matting will be used to control surface water runoff from the repository area. 'Siltbuster' treatment drains will be employed if previous treatment is not to a high quality.
Drainage from the repository areas will ultimately be routed to an oversized swale and a stilling ponds designed for a 24 hour retention time, and for a 1 in 10 year return period, before being discharged to the on-site drains.
The repository areas will be sealed with a digger bucket and vegetated as soon possible to reduce sediment entrainment in runoff. Once re-vegetated and stabilised subsoil reinstatement areas will no longer be a potential source of silt laden runoff.

### 3.2.5 Cable Trench Drainage

Cable trenches are typically developed in short sections, thereby minimising the amount of ground disturbed at any one time and minimising the potential for drainage runoff to pick up silt or suspended solids. Each short section of trench is excavated, ducting installed and bedded, and backfilled with the appropriate materials, before work on the next section commences.

To efficiently control drainage runoff from cable trench works areas, excavated material is stored on the upgradient side of the trench. Should any rainfall cause runoff from the excavated material, the material is contained in the downgradient cable trench. Excess subsoil is removed from the cable trench works area immediately upon excavation, and in the case of the Proposed Development, will be transported to one of the spoil management areas, or used for landscaping and reinstatements of other areas elsewhere on site.

On steeper slopes, silt fences, as detailed in Section 2.5.12, above, will be installed temporarily downgradient of the cable trench works area, or on the downhill slope below where excavated material is being temporarily stored to control run-off.

### 3.2.6 Refuelling, Fuel and Hazardous Materials Storage

The following mitigation measures are proposed to avoid release of hydrocarbons at the site:

- Minimal refuelling or maintenance of construction vehicles or plant will take place on site. Off-site refuelling will occur at a controlled fuelling station;
- On site re-fuelling of machinery will be carried out using a mobile double skinned refuelling truck.
    - A refuelling truck will be used to refuel construction equipment used on site.
    - The refuelling truck will also carry fuel absorbent material and pads in the event of any accidental spillages.
    - The fuel truck will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site.
    - Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations;
- Onsite refuelling will be carried out by trained personnel only;
- Fuels stored on site will be minimised. Fuel storage areas if required will be bunded appropriately for the fuel storage volume for the time period of the construction and fitted with a storm drainage system and an appropriate oil interceptor;
- Surface water runoff from temporary construction compounds will be collected and drained via silt traps and hydrocarbon interceptors prior to recharge to ground;
- The plant used during construction will be regularly inspected for leaks and fitness for purpose; and,

- An emergency plan for the construction phase to deal with accidental spillages will be contained within Construction and Environmental Management Plan (Appendix 4.2). Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area.



### 3.2.7 Cement Based Products Control Measures

The following mitigation measures are proposed to avoid release of cement leachate from the site:

- No batching of wet-cement products will occur on site. Ready-mixed supply of wet concrete products and emplacement of pre-cast elements, will take place;
- Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined cement washout ponds;
- Weather forecasting will be used to plan dry days for pouring concrete;
- The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event; and,
- Sand blinding, Damp-proof Membrane (DPM) and concrete blinding are to be provided at turbine formation level to create a vertical cut-off barrier and to mitigate the risk of concrete leakage into the ground below the turbine foundations

The 50m wide natural watercourse buffer zones will be emplaced for the duration of the construction phase. No construction activity will occur within the buffer zone with the exception of bridge and culvert construction. The buffer zone will:

- Prevent any cement based products accidentally entrained in the construction phase drainage system entering directly into watercourses, achieved in part by ending drain discharge outside the 50m buffer zone and allowing percolation across the vegetation of the buffer zone;
- Provide a buffer against accidental direct run-off to surface waters by any pollutants, or by pollutants entrained in surface water run-off.

## 3.3 Construction Phase Drainage Inspections and Maintenance

Drainage performance will form part of the civil works contract requirements. During the construction phase the effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treatment of potentially silt-laden water from the works areas will be monitored periodically (daily, weekly, and event-based monitoring, i.e., after heavy rainfall events) by the ECoW and/or the Project Hydrologist. The ECoW will respond to changing weather and drainage conditions on the ground as the project proceeds, to ensure the effectiveness of the drainage design is maintained.

Prior to the commencement of construction an inspection and maintenance plan for the on-site drainage system will be prepared by the ECoW in consultation with the Project Hydrologist. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended.

Any excess build-up of silt levels at check dams, the settlement ponds, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed.

The following periodic inspection regime is proposed:

- Daily general visual inspections at pre-determined locations by ECoW;
- Weekly (existing & new drains) inspections of all drainage measures by the ECoW and/or the site Construction Manager;
- Inspection to include all elements of drainage systems and all water quality monitoring. Inspections required to ensure that drainage systems are operating correctly and to identify any maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter shall be noted and corrective action shall be implemented. High risk locations such as settlement ponds will be inspected daily. Daily inspections checks will be completed on plant and equipment, and whether materials such as silt fencing or oil absorbent materials need replacement;
- Event based inspections by the ECoW as follows:
- >10 mm/hr (i.e. high intensity localised rainfall event);
- >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
- Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week).
- Monthly site inspections of the drainage measures by the Project Hydrologist during construction phase; and,
- Quarterly site inspections of the drainage measures by the Project Hydrologist after construction for a period of one year following the construction phase.
- A written record will be maintained or available on-site of all construction phase monitoring undertaken.

The abandonment triggers as set out in the SOWOR will be adopted as part of drainage inspections to ensure that any of the conditions prescribed under any abandonment trigger does not exist at the locations under inspection.

# 4. SURFACE WATER QUALITY MONITORING



This section of the SWMP sets out the programme for water quality monitoring during the pre-construction, construction, commissioning and operational phases of the wind farm development.

The surface water quality monitoring programme combines the use of laboratory analysis, water quality monitoring instrumentation and visual inspection to develop a comprehensive schedule of monitoring of all watercourse that exist both at the site and the surrounding area. The information collected by this schedule of water monitoring, particularly the continuous turbidity monitoring will inform the pre-commencement triggers in the SOWOR before works commence in an area. The turbidity monitors both upstream and downstream of the site will provide instant data on the quality of water in which they are deployed and will be equipped with an alarm system to alert site management if a peak in turbidity occurs as set out in the SOWOR.

The water monitoring programme was prepared in accordance with the following legislation:

- Planning and Development Act 2000, as amended;
- Planning and Development Regulations, 2001 (as amended);
- S.I. No. 94 of 1997: European Communities (Natural Habitats) Regulations, resulting from EU Directives 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive) and 79/409/EEC on the conservation of wild birds (the Birds Directive);
- S.I. No. 293 of 1988: Quality of Salmon Water Regulations, resulting from EU Directive 78/659/EEC on the Quality of Fresh Waters Needing Protection or Improvement in order to Support Fish Life;
- S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009 and S.I. No. 722 of 2003 European Communities (Water Policy) Regulations which implement EU Water Framework Directive (2000/60/EC) and provide for implementation of 'daughter' Groundwater Directive (2006/118/EC). Since 2000 water management in the EU has been directed by the Water Framework Directive (WFD). The key objectives of the WFD are that all water bodies in member states achieve (or retain) at least 'good' status by 2015. Water bodies comprise both surface and groundwater bodies, and the achievement of 'Good' status for these depends also on the achievement of 'good' status by dependent ecosystems. Phases of characterisation, risk assessment, monitoring and the design of programmes of measures to achieve the objectives of the WFD have either been completed or are ongoing. In 2015 it replaced a number of existing water related directives, which were successively being repealed, while implementation of other Directives (such as the Habitats Directive 92/43/EEC) form part of the achievement of implementation of the objectives of the WFD;
- S.I. No. 41 of 1999: Protection of Groundwater Regulations, resulting from EU Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances (the Groundwater Directive);
- S.I. No. 249 of 1989: Quality of Surface Water Intended for Abstraction (Drinking Water), resulting from EU Directive 75/440/EEC concerning the quality required of surface water intended for the abstraction of drinking water in the Member States (repealed by 2000/60/EC in 2007);
- S.I. No. 439 of 2000: Quality of Water intended for Human Consumption Regulations and S.I. No. 278 of 2007 European Communities (Drinking Water No. 2) Regulations, arising from EU Directive 98/83/EC on the quality of water intended for human consumption (the Drinking Water Directive) and WFD 2000/60/EC (the Water Framework Directive);

- S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009;
- S.I. No. 9 of 2010: European Communities Environmental Objectives (Groundwater) Regulations 2010; and,
- S.I. No. 296 of 2009: European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009.



This water monitoring programme will be the subject of independent review by the supervising hydrologist who will provide the necessary guidance on the monitoring requirements. The water monitoring programme is outlined in the following sections.

### 4.1.1 Pre-Construction Baseline Monitoring

Water quality field testing and laboratory analysis will be undertaken prior to commencement of felling and construction at the site. The monitoring programme will be subject to agreement with Laois and Kilkenny County Councils but will be based on the planning stage programme already outlined in the EIAR and CEMP and presented in this document.

Analysis will be for a range of parameters with relevant regulatory limits along with Environmental Quality Standard's (EQSs) and sampling will be undertaken for each stream that drains from the construction site.

Baseline sampling will be completed on at least two occasions and these will coincide with low flow and high flow stream conditions. The high flow sampling event will be undertaken after a period of sustained rainfall, and the low flow event will be undertaken after a dry spell.

No field drains were observed across the site, apart from at the origin point of the Ballyconra stream, where it appears the channel has been dug out to encourage drainage from the spring seepage which emerges to the northwest. This existing drain will continue to function as it is during the pre-construction phase.

However, prior to commencement of works in sub-catchments across the site, drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage. These inspections will be done on a catchment by catchment basis as the construction works develop across the site, as works in all areas will not commence simultaneously.

### 4.1.2 Construction Phase Monitoring

#### 4.1.2.1 Daily Visual Inspections

Daily visual inspections of the installed drains and outfalls will be performed during the construction period to ensure suspended solids are not entering streams and rivers on site, to identify any obstructions to channels and to allow appropriate maintenance of the drainage regime. Should the suspended solids levels measured during construction, at the pre-determined sampling locations, be higher than the baseline levels, the source will be identified, and additional mitigation measures implemented.

Inspection sheets and photographic records will be kept on site. Inspection points will include the in-situ field monitoring point locations, the laboratory analysis sampling points and continuous monitoring locations. Inspection points will depend on works being completed within the catchment upstream of the identified monitoring locations. Visual inspections will also be completed after major rainfall events, i.e., after events of >25mm rainfall in any 24-hour period and data including photographs will be collected by visual inspections and independently assessed by the supervising hydrologist who will monitor and advise on the records being received.

Daily Visual Inspection locations will be confirmed by the Project Hydrologist prior to the commencement of the construction phase. A Daily Visual Check Sheet Template is included in Appendix C. Daily Visual Inspections are subject to change upon commencement of construction activity and works in progress within the catchment areas.

The following periodic inspection regime will be implemented:

- Daily general visual inspections of site operations and inspections of all watercourses within the site and in the surrounding area by the ECoW or a suitably qualified and competent person as delegated by the ECoW;
- Inspections to include all elements of drainage infrastructure to ensure the system is operating correctly and to identify any maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter shall be noted and corrective action shall be implemented. High risk locations such as settlement ponds will be inspected daily. Daily inspections checks will be completed on plant and equipment, and whether materials such as straw bales or oil absorbent materials need replacement;
- Event based inspections by the Environmental Clerk of Works as follows:
- >10 mm/hr (i.e. high intensity localised rainfall event);
- >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
- Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week).
- Monthly site inspections by the Project Hydrologist/ Environmental Clerk of Works of the drainage measures during construction phase;
- Quarterly site inspections by the Project Hydrologist/ Environmental Clerk of Works of the drainage measures after construction for a period of one year following the construction phase; and,
- A written record will be maintained or available on-site within this Construction Environmental Management Plan (CEMP) which will be maintained on-site during the construction phase.

#### 4.1.2.2 Continuous Monitoring

Continuous, in-situ, monitoring equipment will be installed where required at locations surrounding the wind farm site. The monitoring equipment will provide continuous readings for turbidity levels, flow rate and water depth in the watercourse. This equipment will be supplemented by daily visual monitoring at their locations as outlined in the Section 4.1.2.1 above.

The proposed locations for continuous, in-situ monitoring will be confirmed by the Project Hydrologist prior to the commencement of the construction phase.

#### 4.1.2.3 Monthly Laboratory Analysis

Baseline laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken as per water monitoring programme for the overall windfarm development and each primary watercourse along the route. This will not be restricted to just these locations around the immediate wind farm site with further sampling points added as deemed necessary by the ECoW, in consultation with the Project Hydrologist and Site Manager, as the construction phase progresses.

#### 4.1.2.4 Field Monitoring

Field chemistry measurements of unstable parameters, (pH, conductivity, temperature) will be taken at the surface water monitoring locations, as per water monitoring programme for the overall wind farm development and each primary watercourse along the route and also at all installed sonde locations. These analyses will be carried out by either the ECoW or the Project Hydrologist. In-situ field monitoring will be completed on a weekly basis. In-situ field monitoring will also be completed after

major rainfall events, i.e., after events of >25mm rainfall in any 24-hour period. The Project Hydrologist will monitor and advise on the readings collected by in-situ field monitoring.



#### 4.1.2.5 Monitoring Parameters

The analytical determinants of the monitoring programme (including limits of detection and frequency of analysis) will be as per S.I. No. 272 of 2009 European Communities Environmental Objectives (Surface Waters) Regulations and European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009. The likely suite of determinants will include:

- pH (field measured)
- Electrical Conductivity (field measured)
- Temperature (field measured)
- Dissolved Oxygen (field measured)
- Total Phosphorus
- Chloride
- Nitrate
- Nitrite
- Total Nitrogen
- Ortho-Phosphate
- Ammonia N
- Biochemical Oxygen Demand
- Total Suspended Solids

### 4.1.3 Surface Water Monitoring Reporting

Visual inspection and monthly laboratory analysis results of water quality monitoring shall assist in determining requirements for any necessary improvements in drainage controls and pollution prevention measures implemented on site.

It will be the responsibility of the Environmental Clerk of Works to present the ongoing results of water quality and weather monitoring at or in advance of regular site meetings.

Reports on water quality will consider all field monitoring and visual inspections, and results of laboratory analysis completed for that period. Reports will describe how the results compare with baseline data as well as previous reports on water quality. The reports will also describe whether any deterioration or improvement in water quality has been observed, whether any effects are attributable to construction activities and what remedial measures or corrective actions have been implemented. Any proposed alteration to sampling frequency will be agreed with Tipperary County Council in advance.

### 4.1.4 Post Construction Monitoring

#### 4.1.4.1 Monthly Laboratory Analysis Sampling

Monthly sampling for laboratory analysis for the range of parameters adopted during pre-commencement and construction phases will continue after construction is complete. The project hydrologist will monitor and advise on the readings received from the testing laboratory and monitoring will only cease once the hydrologist is satisfied that the chemical and biological monitoring results show that there is no adverse impact on the quality of surface water within the natural watercourses draining the site.

# 5. COMPLIANCE AND REVIEW

## 5.1 Site Inspections and Auditing

Field inspections and testing will only be carried out by an experienced Environmental Clerk of Works to ensure all correct protocols are carried out. The project hydrologist will also assist in compliance of testing and monitoring as required.

The SWMP will be reviewed in line with the CEMP and updated as required prior to commencement of construction to address any relevant planning conditions and mitigation measures, and also every six months thereafter during the construction phase of the project.

# APPENDIX A

## *COPY OF DRAINAGE DESIGN DRAWINGS*

## POLLUTION PREVENTION NOTES:

1. Site management proposals are intended to ensure protection against surface water and groundwater pollution, siltation and erosion.
2. Suitable drainage control measures will be in place at all times to prevent conveyance of significant volumes of silt to off site receiving watercourses.
3. Silty water can arise from dewatering excavations, erosion of exposed/disturbed ground, temporary stockpiles, plant and wheel wash, site roads/tracks, and disturbance of existing field drains and ditches.

Discharges

4. Water containing silt will not be discharged or pumped directly to any natural watercourse. All discharges will be made over open ground or into existing field drain with silt trap at a minimum of 20m from nearest watercourse unless otherwise stated.
5. No excavated material will be stored within any surface water buffer zone.
6. Pumped water will be directed into track side ditches and treated in settlement ponds and vegetation swales prior to overland discharge.
7. Pumping of clean water from excavations / or over-pumping in drains/ditches/streams will be completed in a manner that will not cause scour or erosion at the point of release/discharge. This will be done by reducing the flow velocities or by use of suitable splash plates, and/or other similar discharge controls.
8. Vegetation will NOT be stripped from existing drains/ditches unless absolutely necessary.

Excavations

9. Where (temporary) deep excavations are proposed, cut-off drains will be used to reduce the amount of surface water entering the excavation. This will be the case around turbine base excavations.

Exposed Ground & Stockpiles

10. The amount of temporary exposed ground and temporary stockpiles open/exposed at any time will be minimised.

Site tracks

11. Use of track side swales with check dams, and/or filtration check dams will reduce silt in runoff water as required.
12. Check dams to be inspected and cleaned regularly.

Refueling

13. Refuelling of mobile plant will be completed in designated refueling areas only, on an impermeable surface and away from field drains / ditches and watercourses/waterbodies.
14. Spill kits and drip trays will be available on site for use as required.

Concrete

15. Concrete pours will be managed and supervised to ensure there will be no leakage/seepage/discharge of concrete or concrete water during the construction phase.
16. Concrete wash water, and waste concrete will be managed appropriately on site at a lined concrete wash out pit.

## IF WATER POLLUTION IS IDENTIFIED THE FOLLOWING STEPS WOULD BE ADHERED TO:

STOP - work in the immediate area should be stopped and the source of the pollution identified.

CONTAIN - the source of the pollution should be bunded using a suitable method. Natural watercourses should be temporarily diverted around any source of pollution.

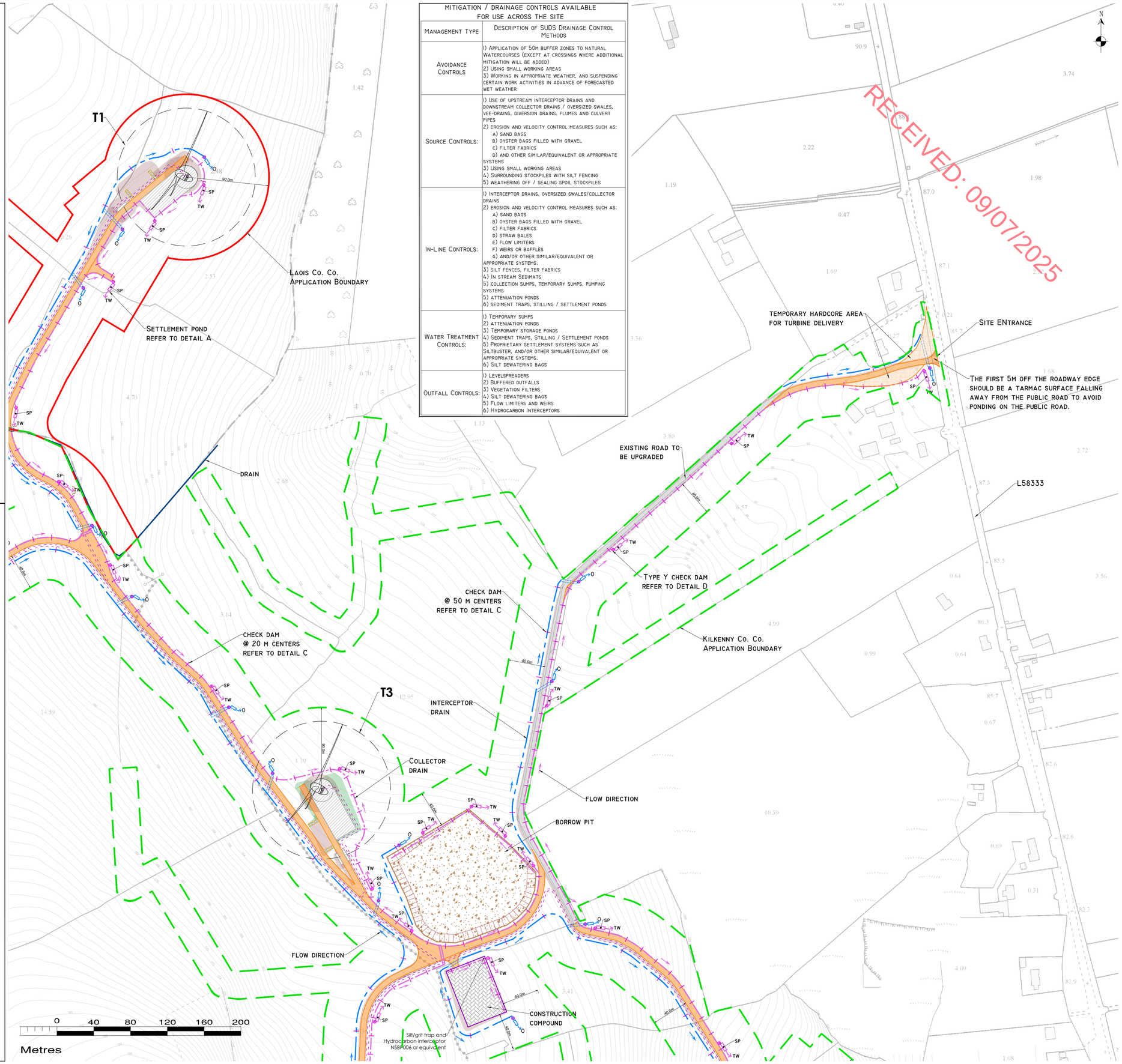
NOTIFY - The relevant authorities (Site Manager / Fisheries / NPWS / Local Authority etc.) should be notified immediately to ensure that measures can be implemented downstream to protect fisheries and other sensitive receptors.

## DRAINAGE NOTES:

1. Site Tracks and Roadway surfacing design and construction to Engineer's Specification (i.e. by others).
2. Spare straw bales/silt fencing/ or similar, will be stored on site. The level of silt in runoff during construction is to be monitored visually and excessive silt levels in any area to be temporarily managed by placing silt fences, straw bales / or similar or additional check dams at the problem areas. Mobile siltbuster system to be available on-site for use as required also.
3. SUDS drainage system to be constructed prior to, or at the same time as the access tracks. Interim measures such as the placement of straw bales/silt fencing/or similar approved method or additional check dams and silt fences to be employed in all instances where work carried out to construct the access tracks is likely to cause adverse environmental effects through increased silt loadings being generated during the construction phase.
4. Suitable prevention measures will be in place at all times to prevent the conveyance of significant volumes of silt to receiving watercourses. See notes on pollution prevention.
5. Interceptor swales / ditches will be used to collect upstream surface water flows. Regular cross drains / discharge to field ditches/drains will be installed to transfer / discharge surface water in interceptor drains to suitable field drain outfall points.
6. Drainage swales / ditches to be excavated adjacent to the access tracks. Regular cross drains to be located along access tracks to prevent excessive volumes of water collecting in the swales / ditches. Optimum locations of cross drains to be agreed with the Engineer on site. Surface water will not be allowed to discharge directly into any existing watercourses.
7. A buffer zone of >20m to any existing watercourse will be required where over land discharges are proposed from access track swales / ditches. This buffer will not be possible at river/stream crossings, but other suitable controls are proposed in those areas (i.e. additional silt fencing).
8. Batters of all proposed swales / ditches to have a slope of between 1 : 1.5 to 1 : 2 depending upon depth of swale/ditch and will be left as cut to re-vegetate with local species.
9. Track side swales / ditches to be shallow with moderate gradients to prevent scouring. In steep areas check dams will be installed to reduce flow velocities and provide source control of silt containment. These have been designated in conjunction with settlement ponds and silt traps, prior to discharge.
10. Settlement ponds to be constructed for silt removal at turbine bases and hard stand areas. Pond sizes depend on the catchment area being served. Sample pond sizes for various catchment areas shown on Drawing D501.
11. Straw bales / or similar and silt fences to be used also around spoil heaps to mitigate silt runoff. Silt fences may be removed when suitable vegetation cover is established.
12. Silt fences to be provided along the edge of existing watercourses where works comes within <15m of edge of any ditch / drain / ephemeral channel.
13. Slopes of the swales / ditches to be vegetated or protected from erosion until vegetation has been established. Stripped vegetative layer (peat 'sod' or 'scraw') from excavations to be stored locally and used to line slopes and base of swales / ditches or longitudinal mounds of vegetation swales at field drain discharge points.
14. Areas stripped of vegetation will be kept to a minimum.
15. Clean stone flow control check dams to be made of locally won / geologically similar well graded stone. Aggregate size for stone check dams to be typically 20- 40mm clean stone. On sloping sections of the access tracks, 40mm check dams to be protected from washing away through the placement of 100m stone on the downhill face of the check dam and by wrapping in geotextile.
16. Build up of silt levels at check dams to be removed and disposed of appropriately. Silt levels at check dams to be visually inspected as part of an ongoing drainage maintenance programme during the construction phase. Where check dams become clogged with silt or vegetation, stone check dam to be removed and replaced subsequent to the removal of silt.
17. Spacing and frequency of check dams will be dependent upon longitudinal gradient of swale.
18. Location of filtration check dams (if required) to be agreed on site with Engineer. Settlement ponds to be constructed in a manner where they may be easily infilled at a later date (post completion of the turbine base and hardstand construction). Only suitable materials excavated from the pond to be used to form part of the embankment around the pond.
19. Oil fuel will only be stored within bunded containment structures.
20. Temporary use of silt bags will be used on site where pumping from excavations is required.

## MITIGATION / DRAINAGE CONTROLS AVAILABLE FOR USE ACROSS THE SITE

| Management Type | Description of SUDS Drainage Control Methods |
|---|---|
| Avoidance Controls | 1) Application of 50m buffer zones to natural Watercourses (except at crossings where additional mitigation will be added)<br>2) Using small working areas<br>3) Working in appropriate weather, and suspending certain work activities in advance of forecasted wet weather |
| Source Controls: | 1) Use of upstream interceptor drains and downstream collector drains / oversized swales, vee-drains, diversion drains, flumes and culvert pipes<br>2) Erosion and velocity control measures such as:<br>A) Sand bags<br>B) Oyster bags filled with gravel<br>C) Filter fabrics<br>D) and other similar/equivalent or appropriate systems<br>3) Using small working areas<br>4) Surrounding stockpiles with silt fencing<br>5) Weathering off / sealing spoil stockpiles |
| In-Line Controls: | 1) Interceptor drains, oversized swales/collector drains<br>2) Erosion and velocity control measures such as:<br>A) Sand bags<br>B) Oyster bags filled with gravel<br>C) Filter fabrics<br>D) Straw bales<br>E) Flow limiters<br>F) Weirs or baffles<br>G) and/or other similar/equivalent or appropriate systems.<br>3) Silt fences, filter fabrics<br>4) In stream Sediments<br>5) collection sumps, temporary sumps, pumping systems<br>5) attenuation ponds<br>6) sediment traps, stilling / settlement ponds |
| Water Treatment Controls: | 1) Temporary sumps<br>2) attenuation ponds<br>3) Temporary storage ponds<br>4) Sediment traps, Stilling / Settlement ponds<br>5) Proprietary settlement systems such as Siltbuster, and/or other similar/equivalent or appropriate systems.<br>6) Silt dewatering bags |
| Outfall Controls: | 1) Levelspreaders<br>2) Buffered outfalls<br>3) Vegetation filters<br>4) Silt dewatering bags<br>5) Flow limiters and weirs<br>6) Hydrocarbon Interceptors |



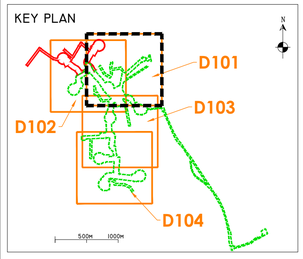

## Drawing Legend :

Existing Drainage
- Watercourses
- Watercourse 50m buffer
- Stream flow direction

- Upstream Interceptor Drain
- Swales/Downstream Collector Drain
- Direction of flow
- Silt Fences
- Double/Triple Silt Fences
- Settlement pond - level spreader
- Check Dam 'type A'
- Check Dam 'type B'
- proposed wc crossing
- Interceptor Ditch Culvert
- Collector Ditch Culvert
- O Overland Flow Discharge
- TW Treated Water Discharge
- SP Settlement Pond
- VS Semi-Natural Vegetation Swale / Filter Bed /secondary sp
- Pumping Sump

- Laois Co. Co. Application Boundary
- Kilkenny Co. Co. Application Boundary
- Existing ground surface minor contour (1m interval)
- Turbine and turbine foundation
- Hardstand
- Soft levelled area
- Proposed new roads
- Temporary hardcore area for turbine delivery
- Existing roads proposed to be upgraded
- Proposed Underground Grid Connection Cabling
- Electricity cable trench
- Substation
- Temporary construction compound
- Borrow pit
- Met mast
- Cut area
- Fill area

## KEY PLAN




## Drawing Notes

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4. All dimensions are in metres.



| Date | Description | Chkd | Signed |
|---|---|---|---|
| Revisions | | | |

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Client: Seskin Renewable Energy Ltd

Job: Seskin Renewable Energy Development, Co. Laois

Title: Proposed Drainage Layout

Figure No: L-D101

| | |
|---|---|
| Drawing No: P1653-1-0625-A1-D101-00B | |
| Sheet Size: A1 | Project No.: P1653-1 |
| Scale: 1:2,000 (A1) | Drawn By: GA |
| Date: 27/06/2025 | Checked By: MG |

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3. Silty water can arise from dewatering excavations, erosion of exposed/disturbed ground, temporary stockpiles, plant and wheel wash, site roads/tracks, and disturbance of existing field drains and ditches.

Discharges

4. Water containing silt will not be discharged or pumped directly to any natural watercourse. All discharges will be made over open ground or into existing field drain with silt trap at a minimum of 20m from nearest watercourse unless otherwise stated.
5. No excavated material will be stored within any surface water buffer zone.
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12. Check dams to be inspected and cleaned regularly.

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3. SUDS drainage system to be constructed prior to, or at the same time as the access tracks. Interim measures such as the placement of straw bales/silt fencing/or similar approved method or additional check dams and silt fences to be employed in all instances where work carried out to construct the access tracks is likely to cause adverse environmental effects through increased silt loadings being generated during the construction phase.
4. Suitable prevention measures will be in place at all times to prevent the conveyance of significant volumes of silt to receiving watercourses. See notes on pollution prevention.
5. Interceptor swales / ditches will be used to collect upstream surface water flows. Regular cross drains / discharge to field ditches/drains will be installed to transfer / discharge surface water in interceptor drains to suitable field drain outfall points.
6. Drainage swales / ditches to be excavated adjacent to the access tracks. Regular cross drains to be located along access tracks to prevent excessive volumes of water collecting in the swales / ditches. Optimum locations of cross drains to be agreed with the Engineer on site. Surface water will not be allowed to discharge directly into any existing watercourses.
7. A buffer zone of >20m to any existing watercourse will be required where over land discharges are proposed from access track swales / ditches. This buffer will not be possible at river/stream crossings, but other suitable controls are proposed in those areas (i.e. additional silt fencing).
8. Batters of all proposed swales / ditches to have a slope of between 1 : 1.5 to 1 : 2 depending upon depth of swale/ditch and will be left as cut to re-vegetate with local species.
9. Track side swales / ditches to be shallow with moderate gradients to prevent scouring. In steep areas check dams will be installed to reduce flow velocities and provide source control of silt containment. These have been designated in conjunction with settlement ponds and silt traps, prior to discharge.
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16. Build up of silt levels at check dams to be removed and disposed of appropriately. Silt levels at check dams to be visually inspected as part of an ongoing drainage maintenance programme during the construction phase. Where check dams become clogged with silt or vegetation, stone check dam to be removed and replaced subsequent to the removal of silt.
17. Spacing and frequency of check dams will be dependent upon longitudinal gradient of swale.
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20. Temporary use of silt bags will be used on site where pumping from excavations is required.

## MITIGATION / DRAINAGE CONTROLS AVAILABLE FOR USE ACROSS THE SITE

| Management Type | Description of SUDS Drainage Control Methods |
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| Avoidance Controls | 1) Application of 50m buffer zones to natural Watercourses (except at crossings where additional mitigation will be added)<br>2) Using small working areas<br>3) Working in appropriate weather, and suspending certain work activities in advance of forecasted wet weather |
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| In-Line Controls: | 1) Interceptor drains, oversized swales/collector drains<br>2) Erosion and velocity control measures such as:<br>A) Sand bags<br>B) Oyster bags filled with gravel<br>C) Filter fabrics<br>D) Straw bales<br>E) Flow limiters<br>F) Weirs or baffles<br>G) And/or other similar/equivalent or appropriate systems.<br>3) Silt fences, filter fabrics<br>4) In Stream Sediments<br>5) Collection sumps, temporary sumps, pumping systems<br>5) Attenuation ponds<br>6) Sediment traps, stilling / settlement ponds |
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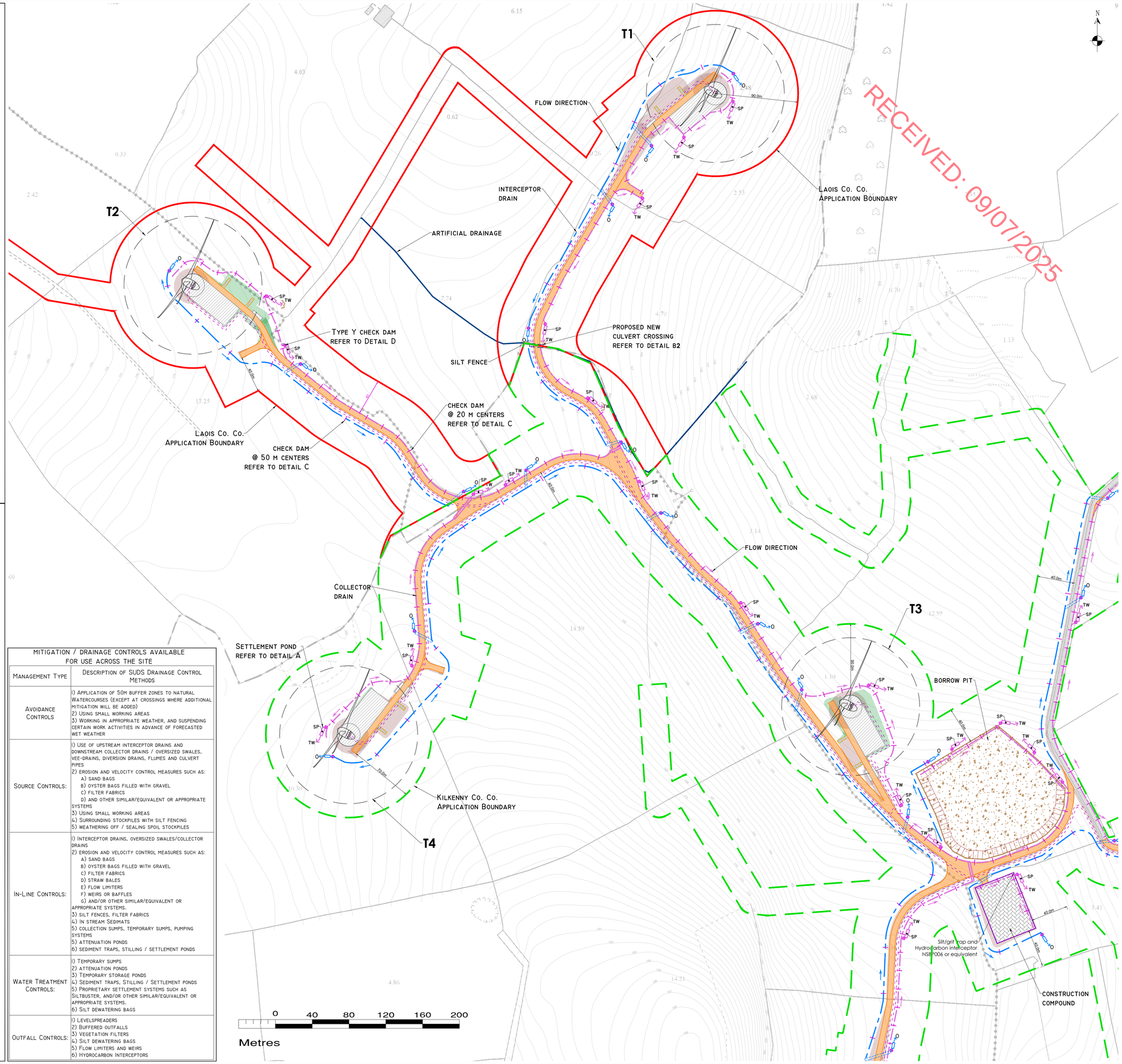


## DRAWING LEGEND :

- Watercourses
- Watercourse 50m buffer
- Stream flow direction

Existing Drainage

- Upstream Interceptor Drain
- Swales/Downstream Collector Drain
- Direction of flow
- Silt Fences
- Double/Triple Silt Fences
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- Hardstand
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- Existing roads proposed to be upgraded
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- Substation
- Temporary construction compound
- Borrow pit
- Met mast
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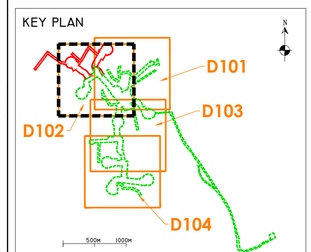
- Fill area

## KEY PLAN

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| Date | Description | Chkd | Signed |
|---|---|---|---|

Revisions

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web: www.hydroenvironmental.ie

Client: Seskin Renewable Energy Ltd

Job: Seskin Renewable Energy Development, Co. Laois

Title: Proposed Drainage Layout

Figure No: L-DI02

| | |
|---|---|
| Drawing No: P1653-1-0625-A1-D102-00B | |
| Sheet Size: A1 | Project No.: P1653-1 |
| Scale: 1:2,000 (A1) | Drawn By: GA |
| Date: 27/06/2025 | Checked By: MG |

## POLLUTION PREVENTION NOTES:

1. Site management proposals are intended to ensure protection against surface water and groundwater pollution, siltation and erosion.
2. Suitable drainage control measures will be in place at all times to prevent conveyance of significant volumes of silt to off site receiving watercourses.
3. Silty water can arise from dewatering excavations, erosion of exposed/disturbed ground, temporary stockpiles, plant and wheel wash, site roads/tracks, and disturbance of existing field drains and ditches.

Discharges

4. Water containing silt will not be discharged or pumped directly to any natural watercourse. All discharges will be made over open ground or into existing field drain with silt trap at a minimum of 20m from nearest watercourse unless otherwise stated.
5. No excavated material will be stored within any surface water buffer zone.
6. Pumped water will be directed into track side ditches and treated in settlement ponds and vegetation swales prior to overland discharge.
7. Pumping of clean water from excavations / or over-pumping in drains/ditches/streams will be completed in a manner that will not cause scour or erosion at the point of release/discharge. This will be done by reducing the flow velocities or by use of suitable splash plates, and/or other similar discharge controls.
8. Vegetation will NOT be stripped from existing drains/ditches unless absolutely necessary.

Excavations

9. Where (temporary) deep excavations are proposed, cut-off drains will be used to reduce the amount of surface water entering the excavation. This will be the case around turbine base excavations.

Exposed Ground & Stockpiles

10. The amount of temporary exposed ground and temporary stockpiles open/exposed at any time will be minimised.

Site tracks

11. Use of track side swales with check dams, and/or filtration check dams will reduce silt in runoff water as required.
12. Check dams to be inspected and cleaned regularly.

Refueling

13. Refuelling of mobile plant will be completed in designated refueling areas only, on an impermeable surface and away from field drains / ditches and watercourses/waterbodies.
14. Spill kits and drip trays will be available on site for use as required.

Concrete

15. Concrete pours will be managed and supervised to ensure there will be no leakage/seepage/discharge of concrete or concrete water during the construction phase.
16. Concrete wash water, and waste concrete will be managed appropriately on site at a lined concrete wash out pit.

## IF WATER POLLUTION IS IDENTIFIED THE FOLLOWING STEPS WOULD BE ADHERED TO:

STOP - work in the immediate area should be stopped and the source of the pollution identified.

CONTAIN - the source of the pollution should be bunded using a suitable method. Natural watercourses should be temporarily diverted around any source of pollution.

NOTIFY - The relevant authorities (Site Manager / Fisheries / NPWS / Local Authority etc.) should be notified immediately to ensure that measures can be implemented downstream to protect fisheries and other sensitive receptors.

Drainage Notes:

1. Site Tracks and Roadway surfacing design and construction to Engineer's Specification (i.e. by others).
2. Spare straw bales/silt fencing/ or similar, will be stored on site. The level of silt in runoff during construction is to be monitored visually and excessive silt levels in any area to be temporarily managed by placing silt fences, straw bales / or similar or additional check dams at the problem areas. Mobile siltbuster system to be available on-site for use as required also.
3. SUDS drainage system to be constructed prior to, or at the same time as the access tracks. Interim measures such as the placement of straw bales/silt fencing/or similar approved method or additional check dams and silt fences to be employed in all instances where work carried out to construct the access tracks is likely to cause adverse environmental effects through increased silt loadings being generated during the construction phase.
4. Suitable prevention measures will be in place at all times to prevent the conveyance of significant volumes of silt to receiving watercourses. See notes on pollution prevention.
5. Interceptor swales / ditches will be used to collect upstream surface water flows. Regular cross drains / discharge to field ditches/drains will be installed to transfer / discharge surface water in interceptor drains to suitable field drain outfall points.
6. Drainage swales / ditches to be excavated adjacent to the access tracks. Regular cross drains to be located along access tracks to prevent excessive volumes of water collecting in the swales / ditches. Optimum locations of cross drains to be agreed with the Engineer on site. Surface water will not be allowed to discharge directly into any existing watercourses.
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17. Spacing and frequency of check dams will be dependent upon longitudinal gradient of swale.
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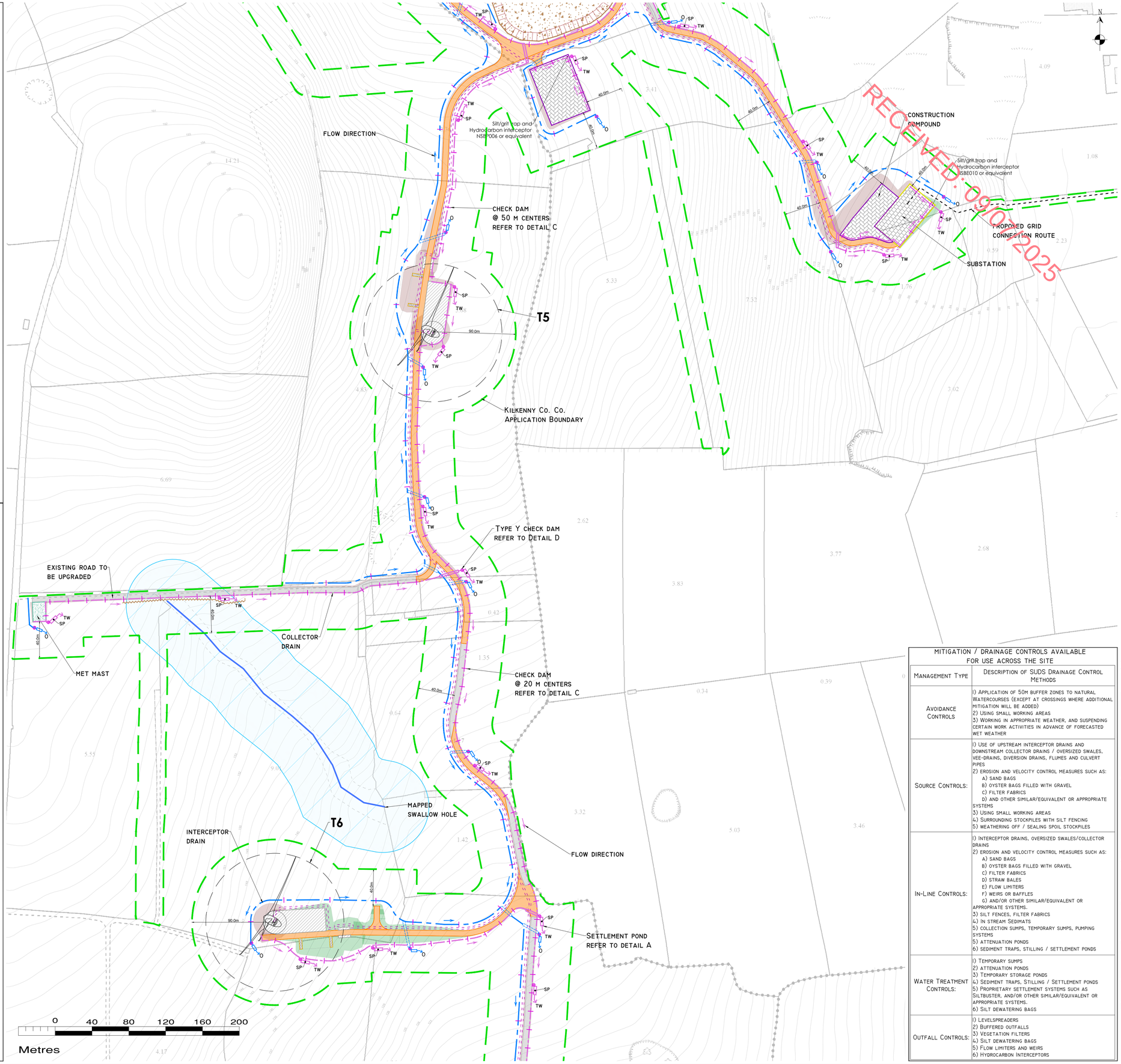




Drawing Legend :

- Watercourses
- Watercourse 50m buffer
- Stream flow direction

Existing Drainage

- Upstream Interceptor Drain
- Swales/Downstream Collector Drain
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- Silt Fences
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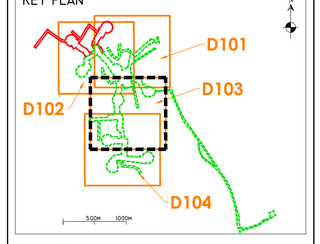
KEY PLAN

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## MITIGATION / DRAINAGE CONTROLS AVAILABLE FOR USE ACROSS THE SITE

| Management Type | Description of SUDS Drainage Control Methods |
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| Date | Description | Chkd | Signed |
|---|---|---|---|
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| | | | |

Revisions

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web: www.hydroenvironmental.ie

Client:
Seskin Renewable Energy Ltd

Job:
Seskin Renewable Energy Development, Co. Laois

Title:
Proposed Drainage Layout

Figure No: L-D103

| | |
|---|---|
| Drawing No: P1653-1-0625-A1-D103-00B | |
| Sheet Size: A1 | Project No.: P1653-1 |
| Scale: 1:2,000 (A1) | Drawn By: GA |
| Date: 27/06/2025 | Checked By: MG |

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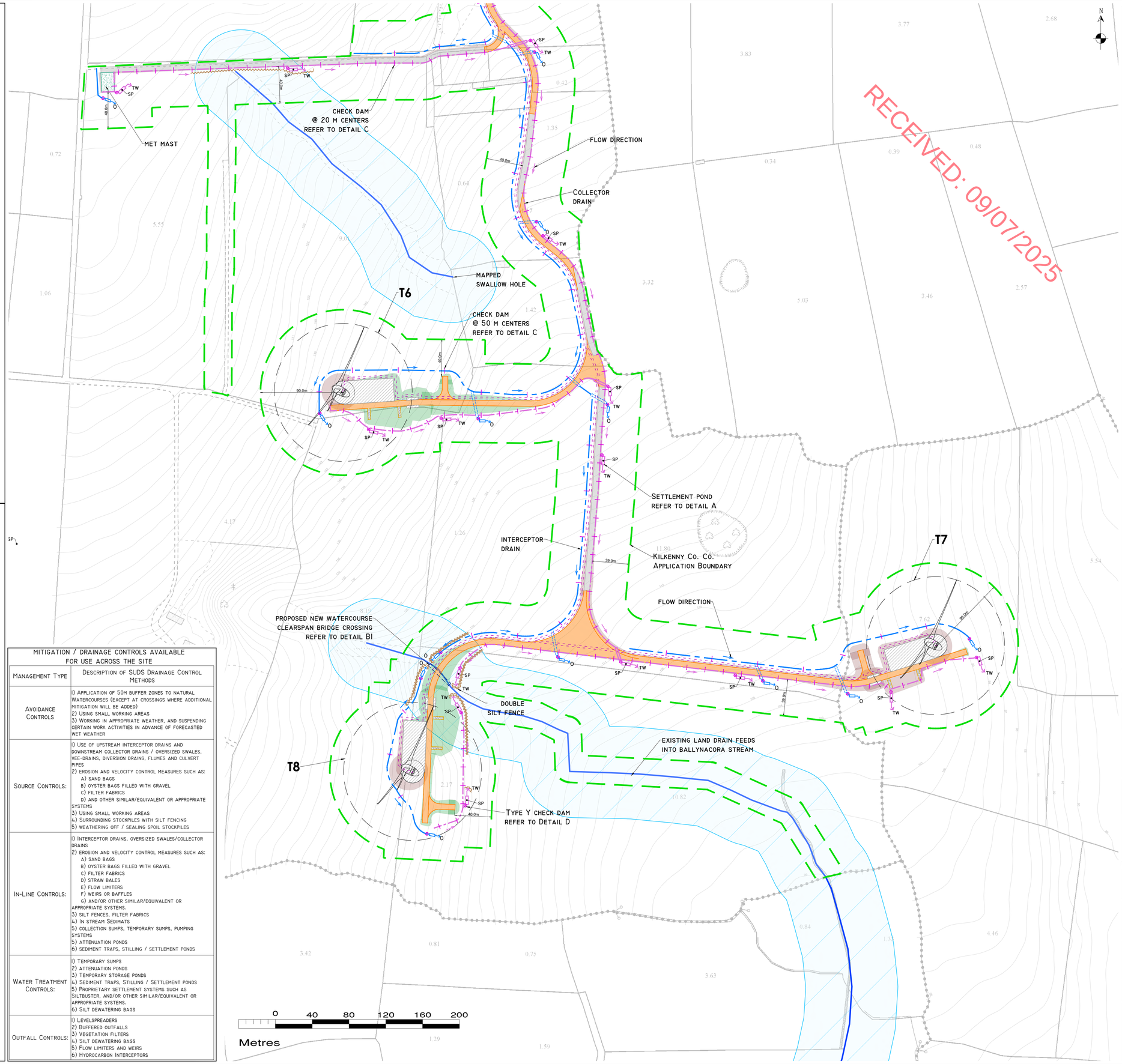


## DRAWING LEGEND :

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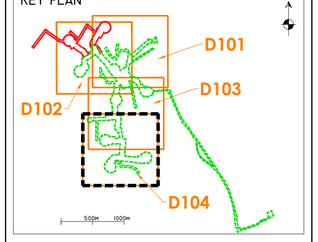
- Settlement pond - level spreader
- Check Dam 'Type A'
- Check Dam 'Type B'
- Proposed wc crossing
- Interceptor Ditch Culvert
- Collector Ditch Culvert
- O Overland Flow Discharge
- TW Treated Water Discharge
- SP Settlement Pond
- VS Semi-Natural Vegetation Swale / Filter Bed /secondary sp
- Pumping Sump

- Laois Co. Co. Application Boundary
- Kilkenny Co. Co. Application Boundary
- Existing ground surface minor contour (1m interval)
- Turbine and turbine foundation
- Hardstand
- Soft levelled area
- Proposed new roads
- Temporary hardcore area for turbine delivery
- Existing roads proposed to be upgraded
- Proposed Underground Grid Connection Cabling
- Electricity cable trench
- Substation
- Temporary construction compound
- Borrow pit
- Met mast
- Cut area
- Fill area

## KEY PLAN

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| Date | Description | Chkd | Signed |
|---|---|---|---|

Revisions

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Client:
Seskin Renewable Energy Ltd

Job:
Seskin Renewable Energy Development, Co. Laois

Title:
Proposed Drainage Layout

Figure No: L-D104

| | |
|---|---|
| Drawing No: P1653-1-0425-A1-D104-00B | |
| Sheet Size: A1 | Project No.: P1653-1 |
| Scale: 1:2,000 (A1) | Drawn By: GA |
| Date: 27/06/2025 | Checked By: MG |

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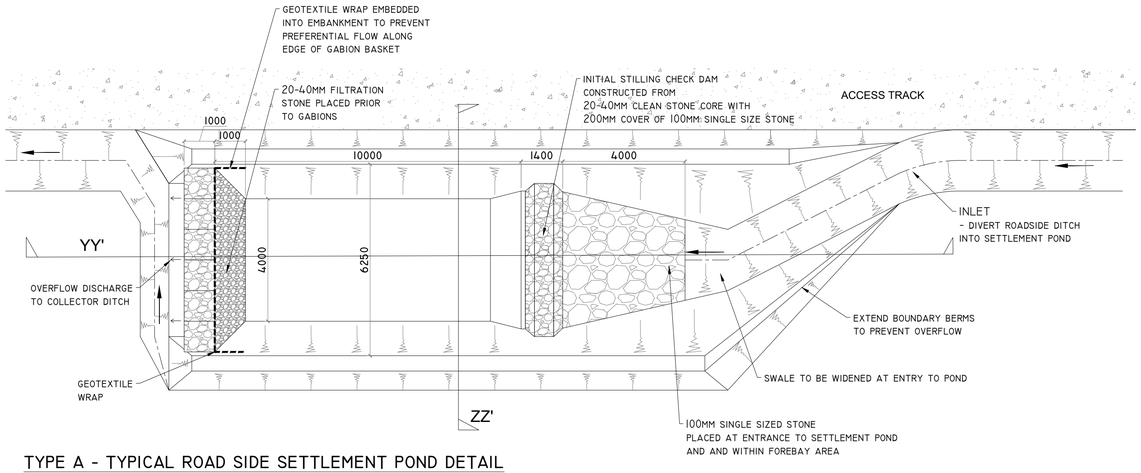
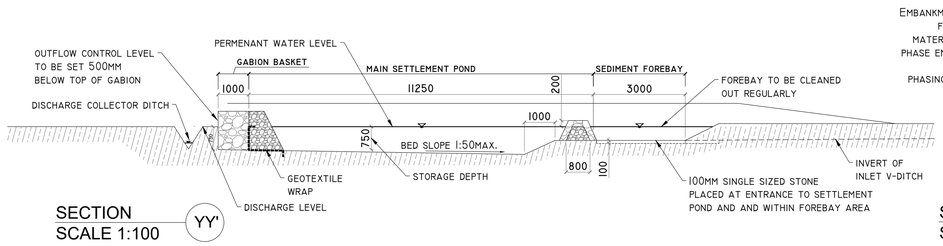
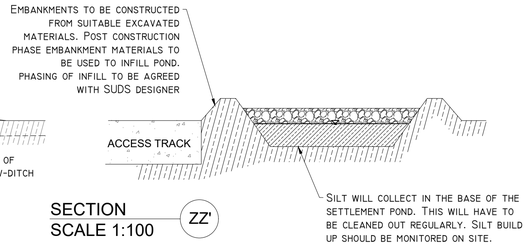



TYPE A - TYPICAL ROAD SIDE SETTLEMENT POND DETAIL
SCALE 1:100 (NOTE DIMENSIONS VARY DEPENDING ON CATCHMENT SIZE - SEE ATTACHED TABLE)

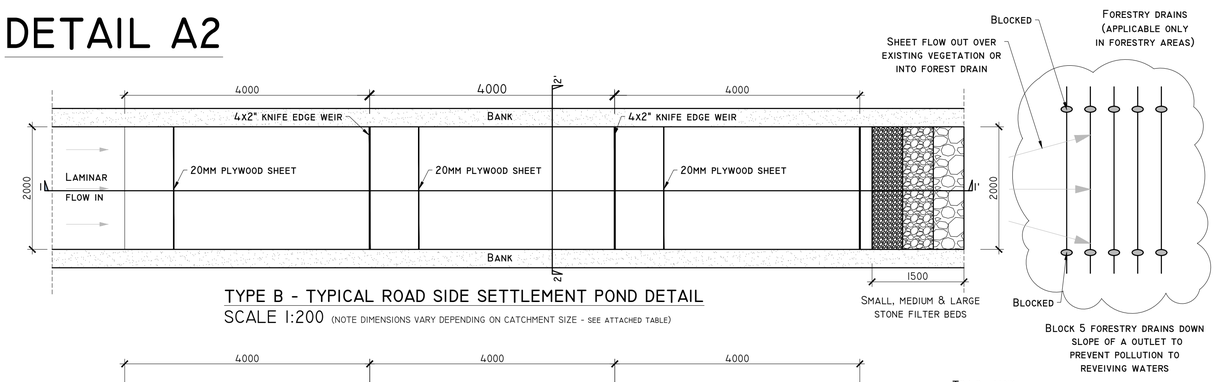



SECTION YY'
SCALE 1:100

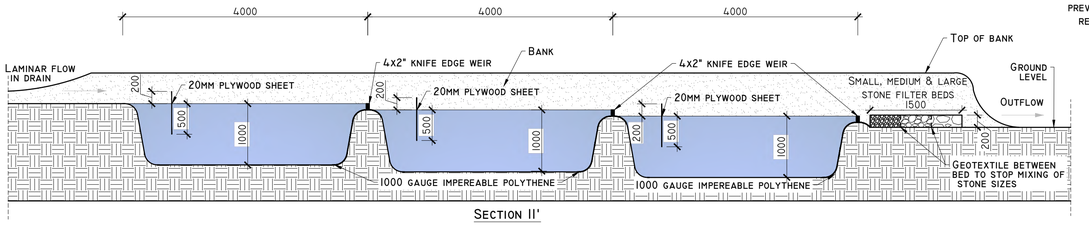



SECTION ZZ'
SCALE 1:100

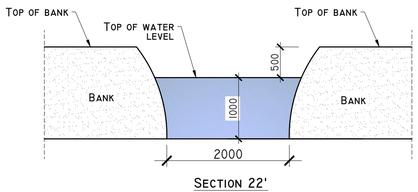
# DETAIL A2




TYPE B - TYPICAL ROAD SIDE SETTLEMENT POND DETAIL
SCALE 1:200 (NOTE DIMENSIONS VARY DEPENDING ON CATCHMENT SIZE - SEE ATTACHED TABLE)

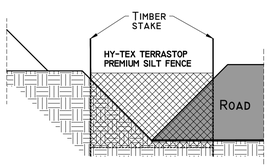



SECTION 11'




SECTION 22'

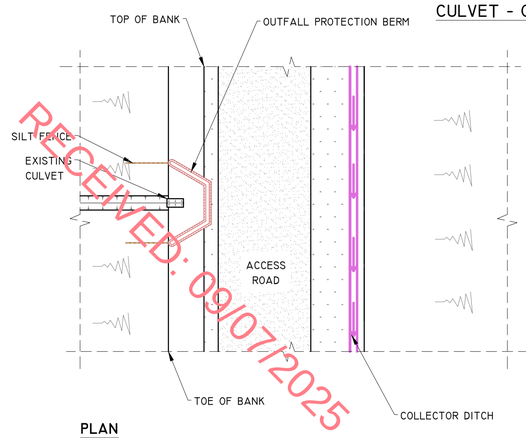
SEDIMENT FENCE/CHECK DAM DETAIL




| POND SIZE W [m] x L [m] x D [m] | | | TRACK/HARDSTAND CATCHMENT SIZE ($m^2$) | | | BORROW PIT ($m^2$) |
|---|---|---|---|---|---|---|
| *RETURN PERIOD* | *10 YRS* | STORM DURATION | 500 | 1000 | 2000 | 15222 |
| *6HR RETENTION FOR COARSE SILT* | | 6 HRS | 2.4 x 7.5 x 1 m | 3.5 x 11 x 1 m | 5.6 x 18.5 x 1 m | N/A |
| *11HR RETENTION FOR MEDIUM SILT* | | 12 HRS | 3.4 x 10.5 x 1 m | 4.8 x 16 x 1 m | 8 x 25.8 x 1 m | N/A |
| *24HR RETENTION FOR FINE SILT* | | 24 HRS | 4.5 x 16 x 1 m | 7 x 21.9 xl m | 11.5 x 36 x 1 m | 32.5 x 98 x 1 m* |

*OR 3 PONDS 18.5 x 58 x 1 m

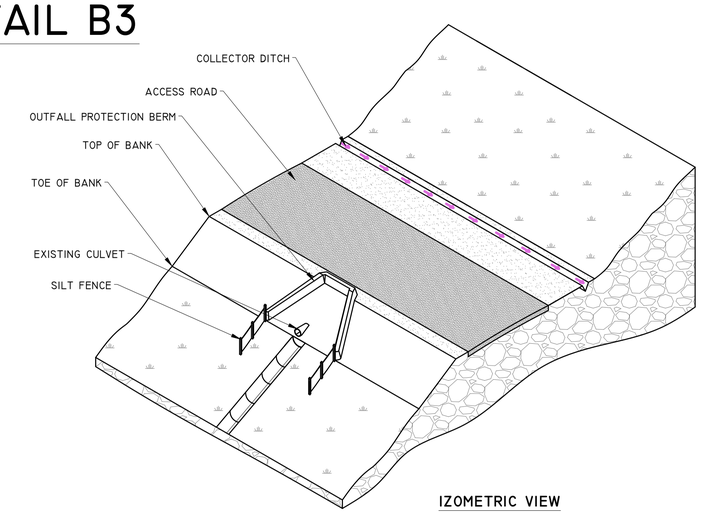
CULVET - OUTFALL PROTECTION DET
SCHEMATIC - NOT TO SCALE




PLAN

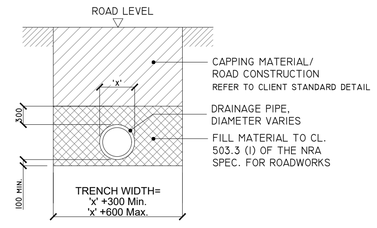


# DETAIL B3




IZOMETRIC VIEW

# DETAIL B2




'TYPE B' CULVERT - DRAINAGE CROSSING BENEATH EXCAVATED ROAD

SCALE 1:50

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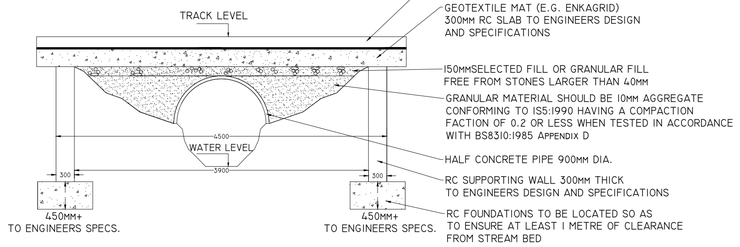
# DETAIL B1




'TYPE A' TYPICAL SECTION OF STREAM/DRAIN BOTTOMLESS CULVERT THRU' ROAD (WHERE APPLICABLE)

SCALE 1:50

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|---|---|---|---|
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Client: SESKIN RENEWABLE ENERGY LTD

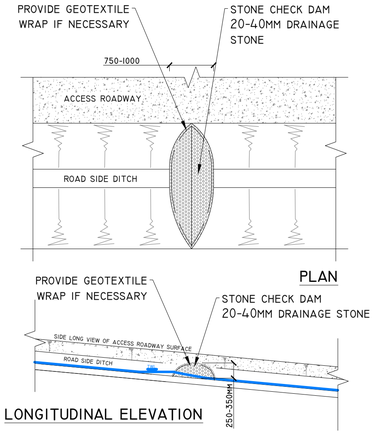
Job: SESKIN RENEWABLE ENERGY DEVELOPMENT, CO. KILKENNY/CO. LAOIS

Title: DRAINAGE DETAILS 1

Figure No: D501

| | |
|---|---|
| Drawing No: P1653-1-0625-A1-D501-00B | |
| Sheet Size: A1 | Project No.: P1653-1 |
| Scale: as shown (A1) | Drawn By: GA |
| Date: 24/06/2025 | Checked By: MG |

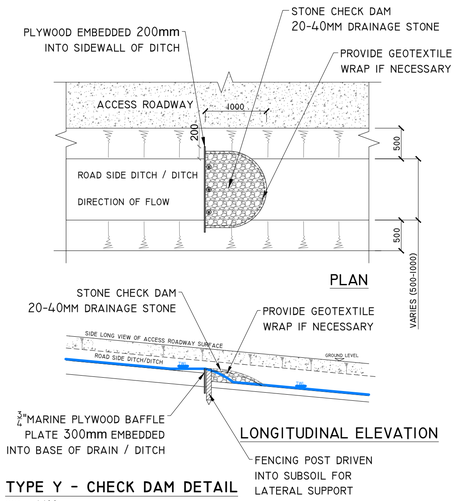
# DETAIL C




TYPE X - CHECK DAM DETAIL

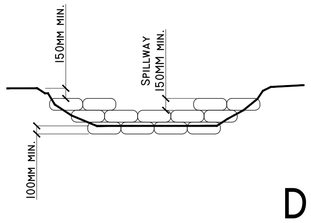
SCALE 1:50

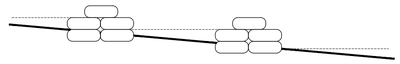
# DETAIL D




TYPE Y - CHECK DAM DETAIL

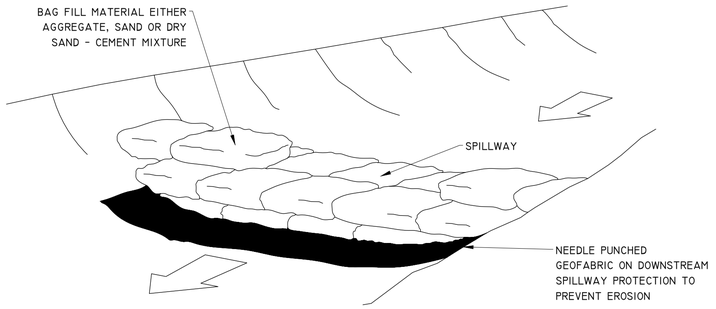
SCALE 1:100



NOTE: SPACING OF CHECK DAMS ALONG CENTRELINE AND SCOUR PROTECTION BELOW EACH CHECK DAM

# DETAIL CI




TEMPORARY CHECK DAM / SETTLEMENT POND OVERFLOW
SAND FILLED BAG CONSTRUCTION

SCHEMATIC - NOT TO SCALE

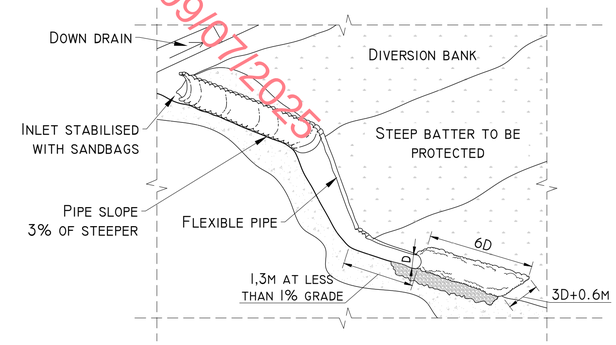




# DETAIL E

TYPICAL PIPE SPILLWAY DETAIL

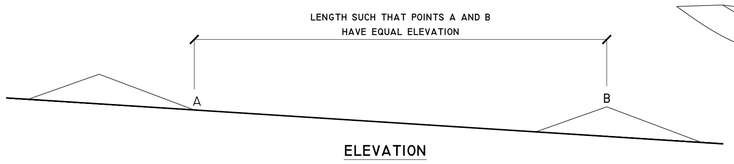
SCHEMATIC - NOT TO SCALE



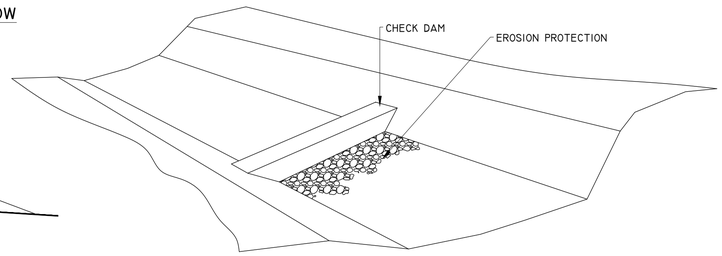

# DETAIL C2

TEMPORARY CHECK DAM / SETTLEMENT POND OVERFLOW

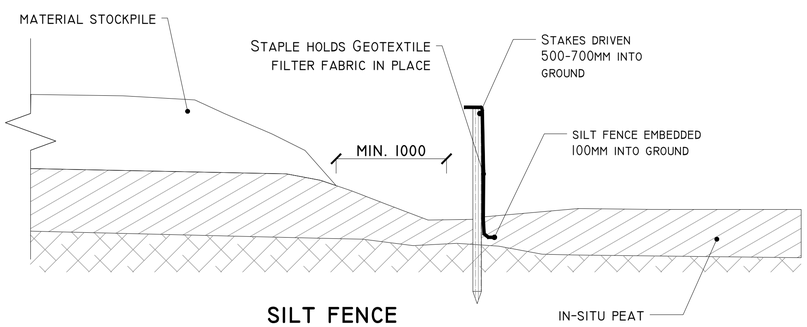
SCHEMATIC - NOT TO SCALE




ELEVATION



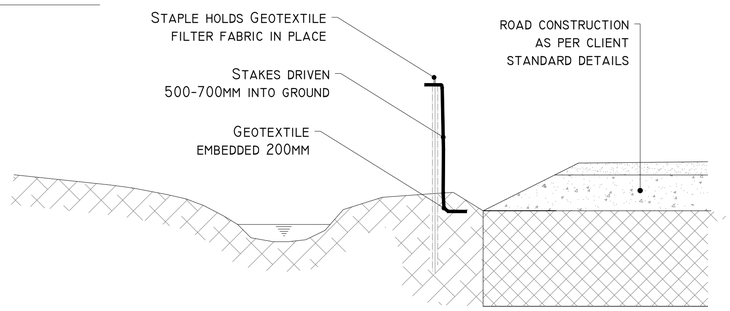

# DETAIL F-I




SILT FENCE

SCALE 1:25

# DETAIL F-II




SILT FENCE FOR WATERCOURSE PROTECTION

SCALE 1:25

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| | | | |
| | | | |
| | | | |

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Job: Seskin Renewable Energy Development, Co. Kilkenny/Co. Laois

Title: Drainage Details 2

Figure No: D502

| | |
|---|---|
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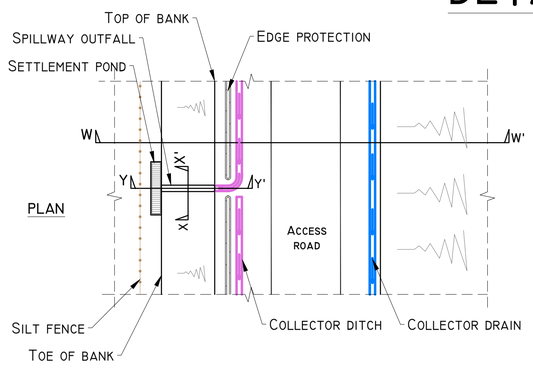
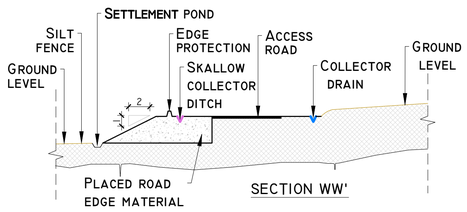
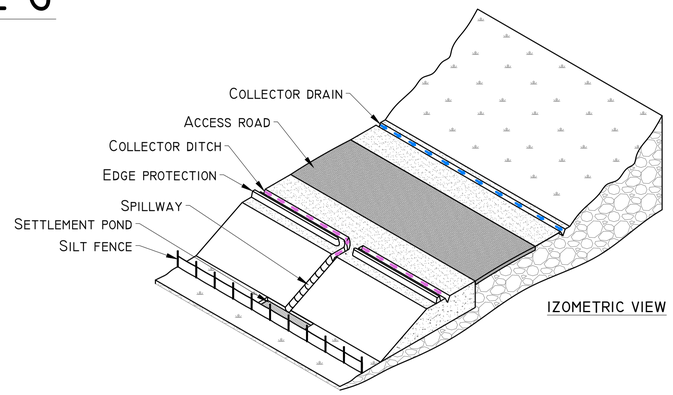
| Sheet Size: A1 | Project No.: P1653-1 |
| Scale: as shown (A1) | Drawn By: GA |
| Date: 24/06/2025 | Checked By: MG |

# DETAIL G



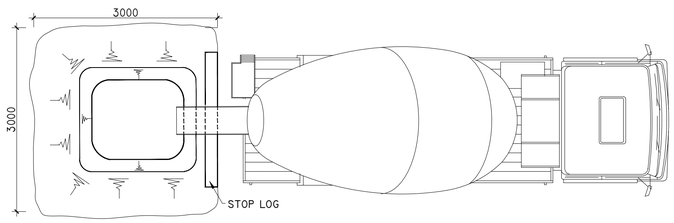

**SPILLWAY OUTFALL PLAN**
SCHEMATIC - NOT TO SCALE



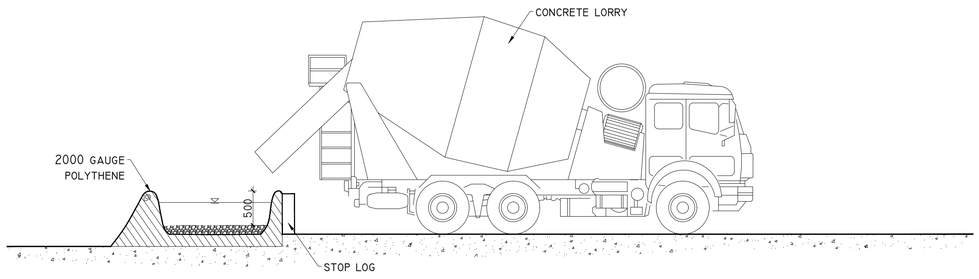


## TEMPORARY CONCRETE WASH OUT PIT
SCALE 1:50

PLAN



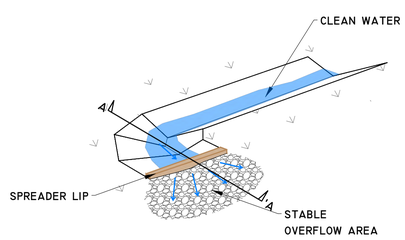

ELEVATION



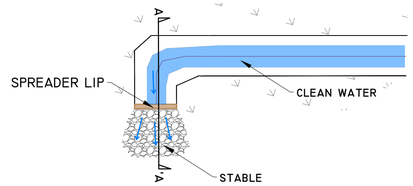

# DETAIL H

# DETAIL J-1

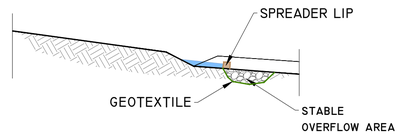
## LEVEL SPREADER DETAIL
SCHEMATIC - NOT TO SCALE




PLAN




SECTION AA'




# DETAIL J-2

## LEVEL SPREADER DETAIL
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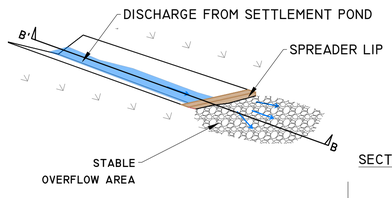
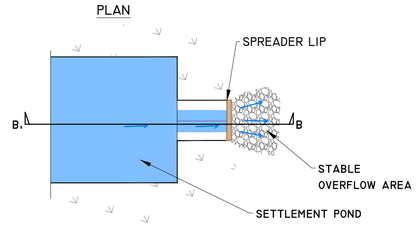
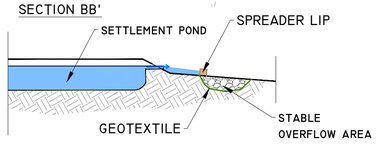



PLAN




SECTION BB'

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| Revisions | | | |

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Client: Seskin Renewable Energy Ltd

Job: Seskin Renewable Energy Development, Co. Kilkenny/Co. Laois

Title: Drainage Details 3

Figure No: D503

| | |
|---|---|
| Drawing No: P1653-1-0625-A1-D503-00B | |
| Sheet Size: A1 | Project No.: P1653-1 |
| Scale: as shown (A1) | Drawn By: GA |
| Date: 24/06/2025 | Checked By: MG |

# APPENDIX B

## *SCHEDULING OF WORKS OPERATING RECORD (SOWOR)*

| Work Item No. | Description | Estimated Duration of Works | Risk<br>Schedule 1: very high risk<br>Schedule 2: high risk<br>Schedule 3: intermediate risk | Pre-commencement Triggers<br>all four triggers should be met | | | | Works Abandonment Triggers<br>If any four triggers are met | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Trigger 1<br>Drainage treatment infrastructure installed prior to works commencing. All in good working order | Trigger 2<br>River/ watercourse turbidity | Trigger 3<br>Daily Visual Inspection procedure in place by ECoW | Trigger 4<br>Weather forecast: (a) during planned works period (b) observed on site | Trigger 1<br>Damage to silt fence/other drainage measure or drainage point close to capacity | Trigger 2<br>River/ Watercourse turbidity | Trigger 3<br>Deterioration of SW quality as reported by ECoW | Trigger 4:<br>Weather forecast (a) during the planned works period and (b) observed on site |
| 1 | Enabling works including felling, site compound establishment welfare facilities, site office and fencing | 2 months | Schedule 2 | Drainage measures to be installed as per EIAR & drainage management plan | Turbidity at baseline levels | Procedure for inspection must be in place with ECoW reporting satisfactory SW quality before works commence | Schedule 2 rainfall figures (see below) utilising reliable forecasting source | Works cease and emergency response procedure activated including the use and installation of additional pumping equipment, sedimats, siltbags and silt fencing | Turbidity 20% above baseline conditions or >15ntu – subject to baseline data analysis | Works cease and investigation conducted. | Schedule 2 rainfall figures (see below) |
| 2 | Preliminary enabling works and peat excavation operations | 6 months | Schedule 1 | Drainage measures to be installed as per EIAR & drainage management plan | Turbidity at baseline levels | Procedure for inspection must be in place with ECoW reporting satisfactory SW quality before works commence | Schedule 1 rainfall figures (see below) utilising reliable forecasting source | Works cease and emergency response procedure activated including the use and installation of additional | Turbidity 20% above baseline conditions or >15ntu – subject to baseline data analysis | Works cease and investigation conducted. | Schedule 1 rainfall figures (see below) |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | pumping equipment, sedimats, siltbags and silt fencing | | | |
| 3 | Roads Excavation Excavate new road alignment, upgrade/widen existing carriageway | 3-4 months | Schedule 1 | Drainage measures to be installed as per EIAR & drainage management plan | Turbidity at baseline levels | Procedure for inspection must be in place with ECoW reporting satisfactory SW quality before works commence | Schedule 1 rainfall figures (see below) utilising reliable forecasting source | Works cease and emergency response procedure activated including the use and installation of additional pumping equipment, sedimats, siltbags and silt fencing | Turbidity 20% above baseline conditions or >15ntu – subject to baseline data analysis | Works cease and investigation conducted. | Schedule 1 rainfall figures (see below) |
| 4 | Culvert Upgrade or replacement works | 4 months | Schedule 1 | Drainage measures to be installed as per EIAR & drainage management plan | Turbidity at baseline levels | Procedure for inspection must be in place with ECoW reporting satisfactory SW quality before works commence | Schedule 1 rainfall figures (see below) utilising reliable forecasting source | Works cease and emergency response procedure activated including the use and installation of additional pumping equipment, sedimats, siltbags and silt fencing | Turbidity 20% above baseline conditions or >15ntu – subject to baseline data analysis | Works cease and investigation conducted. | Schedule 1 rainfall figures (see below) |
| 5 | Carriage way resurfacing | 1 month | Schedule 3 | Activity not dependent on drainage treatment infrastructure | Activity not anticipated to effect turbidity | Activity not dependent on visual inspection of SW quality | Activity not weather dependent | Activity not dependent on drainage treatment infrastructure | Activity not anticipated to effect turbidity | Activity not dependent on visual inspection of SW quality | Activity not weather dependent |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | Commissioning and snagging | 2 months | Schedule 3 | Activity not dependent on drainage treatment infrastructure | Activity not anticipated to effect turbidity | Activity not dependent on visual inspection of SW quality | Activity not weather dependent | Activity not dependent on drainage treatment infrastructure | Activity not anticipated to effect turbidity | Activity not dependent on visual inspection of SW quality | Activity not weather dependent |

| | |
|---|---|
| Schedule 1 – Very high-risk activities | >10 mm/hr (i.e. high intensity local rainfall events) |
| | >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, |
| | >half monthly average rainfall in any 7 days. |
| | No overland flow or pathway for water movement |
| | Conditions on the ground match the forecast |
| Schedule 2 – High risk activities | >10 mm/hr (i.e. high intensity local rainfall events) |
| | >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, |
| | >half monthly average rainfall in any 7 days. |
| | Conditions on the ground match the forecast |
| Schedule 3 – Intermediate risk | >10 mm/hr (i.e. high intensity local rainfall events) |
| | >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, |
| | >half monthly average rainfall in any 7 days. |
| | Conditions on the ground match the forecast |

# APPENDIX C

## *DAILY VISUAL CHECK SHEET TEMPLATE*

| | Daily Visual Inspections | | | | |
|---|---|---|---|---|---|
| | | Project | Seskin Renewables Wind Farm | Draft Date | 01/07/2025 |
| | | Client | Seskin Renewable Energy Ltd. | Version | 1 |
| | | File Name | 231103 – Daily Visual Inspection – 2025.07.01 – V1 | | |



| | |
|---|---|
| **Date:** | |
| **Weather:** | |
| **Rainfall previous 24hr (mm):** | |
| **Completed by:** | |

| **Surface Water Sampling Locations** | | | |
|---|---|---|---|
| **SW Ref** | **Visual Inspection Result** | **Action Required** | **Photographs** |
| SW1 | | | |
| SW2 | | | |
| SW3 | | | |
| SW4 | | | |
| SW5 | | | |
| SW6 | | | |
| SW7 | | | |
| SW8 | | | |
| SW9 | | | |
| SW10 | | | |

| **Visual Inspection Locations** | | | |
|---|---|---|---|
| **VC Ref** | **Visual Inspection Result** | **Action Required** | **Photographs** |
| VI1 | | | |
| VI2 | | | |
| VI3 | | | |
| VI4 | | | |
| VI5 | | | |
| VI6 | | | |
| VI7 | | | |
| VI8 | | | |
| VI9 | | | |
| VI10 | | | |

Visual Inspection Results:

1. Water clear – no issues.
2. Water turbid with a peaty tinge.
3. Water silty as a result of works NOT associated with the Croagh Wind Farm.
4. Water silty as a result of works associated with the Croagh Wind Farm works. ACTION REQUIRED.

| | Daily Visual Inspections | | | | |
|---|---|---|---|---|---|
| | | Project | Seskin Renewables Wind Farm | Draft Date | 01/07/2025 |
| | | Client | Seskin Renewable Energy Ltd. | Version | 1 |
| | | File Name | 231103 – Daily Visual Inspection – 2025.07.01 – V1 | | |



**Action Items / Notes / Comments:**

Visual Inspection Results:

1. Water clear – no issues.
2. Water turbid with a peaty tinge.
3. Water silty as a result of works NOT associated with the Croagh Wind Farm.
4. Water silty as a result of works associated with the Croagh Wind Farm works. ACTION REQUIRED.

# APPENDIX 4-4

## *DECOMMISSIONING PLAN*

Planning and Environmental Consultants



# Decommissioning Plan

## Seskin Renewables Wind Farm

Appendix 4-4

# DOCUMENT DETAILS

| | |
|---|---|
| Client: | **Seskin Renewable Energy Ltd.** |
| Project Title: | **Seskin Renewables Wind Farm** |
| Project Number: | **231103** |
| Document Title: | **Decommissioning Plan** |
| Document File Name: | **Decommissioning Plan - F - 2025.06.30-231103** |
| Prepared By: | **MKO**<br>**Tuam Road**<br>**Galway**<br>**Ireland**<br>**H91 VW84** |

Planning and Environmental Consultants

| Rev | Status | Date | Author(s) | Approved By |
|---|---|---|---|---|
| 01 | Final | 30/06/2025 | ER | EM |
| | | | | |
| | | | | |
| | | | | |

# Table of Contents

# 1. INTRODUCTION

This Decommissioning Plan has been developed by MKO on behalf of Seskin Renewable Energy Ltd., to accompany an application for planning permission to Kilkenny County Council (KCC) and to Laois County Council (LCC) for the Proposed Development. The Proposed Development comprises the Proposed Wind Farm and the Proposed Grid Connection.

This document is being prepared alongside an Environmental Impact Assessment Report (EIAR) and the Natura Impact Statement ('NIS') which accompany this planning application for the Proposed Development to KCC and LCC.

For the purposes of this EIAR, the various project components are described and assessed using the following references: 'Proposed Development, 'the Site', 'Proposed Wind Farm', 'Proposed Wind Farm site' and 'Proposed Grid Connection'. Please see Section 1.1.1 of this EIAR for further details. A detailed description of the Proposed Development is provided in Chapter 4 of this EIAR.

Decommissioning of the Proposed Wind Farm will be scheduled to take place after the proposed 35-year lifespan. The Proposed Grid Connection infrastructure, including the onsite 38kV electricity substation, will remain in place as it will be part of the Electricity Grid under the ownership and control of the ESBN.

As noted in the Scottish Natural Heritage report (SNH) *Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms* (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the wind farm, technological advances and preferred approaches to reinstatement are likely to change. According to the SNH guidance, it is therefore:

> *"best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm".*

In this regard, this Decommissioning Plan will be reviewed and updated prior to commencement of decommissioning works to take account of the relevant conditions of the planning permission and current health and safety standards.

This report provides the environmental management framework to be adhered to during the decommissioning phase of the Proposed Wind Farm development and it incorporates the mitigating principles to ensure that the work is carried out in a way that minimises the potential for any environmental impacts to occur.

## 1.1 Scope of the Decommissioning Plan

This report is presented as a guidance document for the decommissioning of the Proposed Wind Farm. The Decommissioning Plan clearly outlines the mitigation measures and monitoring proposals that are required to be adhered to in order to complete the works in an appropriate manner.

The report is divided into eight sections, as outlined below:

**Section 1** provides a brief introduction as to the scope of the report.

**Section 2** outlines the Site and Proposed Development details, detailing the targets and objectives of this plan along with providing an overview of works methodologies that will be adopted throughout decommissioning.

**Section 3** sets out details of the environmental controls to be implemented on site including the mechanisms for implementation. A waste management plan is also included in this section.

**Section 4** outlines the general Health and Safety measures that will be implemented on site during the decommissioning-phase of the Proposed Development.

**Section 5** outlines the Emergency Response Procedure to be adopted in the event of an emergency in terms of site health and safety and environmental protection.

**Section 6** sets out a programme for the timing of the works.

**Section 7** consists of a summary table of all mitigation measures to be adhered to during the decommissioning-phase.

**Section 8** consists of a summary table of all monitoring requirements for the operational and decommissioning-phases.

**Section 9** outlines the proposals for reviewing compliance with the provisions of this report.

# 2. SITE AND PROJECT DETAILS

## 2.1 Site Location and Description

The core of the Proposed Wind Farm is located approximately 2.5 kilometres south of the small town of Durrow, Co. Laois, 3.2 kilometres northwest of the town of Ballyragget, Co Kilkenny and 5.9 kilometres west of the village of Cullahill, Co. Laois. The N77 National Secondary Road runs in a north-south orientation, east of the Site. It is proposed to access the Proposed Development via existing agricultural access off the L58333 local road, part of the old N77, on the eastern side of the Site. This existing access will be upgraded as part of the Proposed Development. The Site is served by a number of existing public and agricultural roads and tracks.

Current land-use within the Proposed Wind Farm comprises agricultural pastural land. Land-use in the wider vicinity of the Site comprises a mix of agriculture, low density residential, renewable energy and industrial and commercial.

## 2.2 Description of the Proposed Development

This section describes the Proposed Wind Farm and the Proposed Grid Connection, collectively referred to as the Proposed Development. A full description of the Proposed Wind Farm and the Proposed Grid Connection can be found in Chapter 4: Description of the Proposed Development.

This application seeks a ten-year planning permission and 35-year operational life from the date of commissioning of the Proposed Wind Farm.

The Proposed Development is illustrated on Figure 2-1 below.

Durrow

County Laois

County Kilkenny

T1

T2

T3

T4

T5

T6

T7

T8

RECEIVED: 09/07/2025

## Map Legend

- Proposed Turbine Locations
- Proposed Met Mast
- Proposed Hardstands
- Existing Roads to be Upgraded
- Proposed New Roads
- Proposed Borrow Pit
- Proposed Temporary Construction Compounds
- Proposed Hedgerow Planting and Enhancement Measures
- Proposed 38kV Substation
- Proposed 38kV Underground Gird Connection Cabling
- Proposed Horizontal Directional Drilling
- Existing Ballyragget 110kV Substation
- EIAR Site Boundary
- Kilkenny/Laois County Border



Drawing Title: Proposed Development

Project Title: Seskin Renewables Wind Farm

| Drawn By | Checked By |
|---|---|
| ER | EM |
| Project No. | Drawing No. |
| 231103 | Figure 2-1 |
| Scale | Date |
| 1:20,000 | 2025-06-26 |

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## 2.3 Targets and Objectives

The decommissioning phase works will be completed to the approved standards at the time of decommissioning, which include specified materials, standards, specifications and codes of practice. This Decommissioning Plan has considered environmental issues and this is enhanced by the works proposals as part of decommissioning.

The key site targets are as follows:

- Ensure decommissioning works and activities are completed in accordance with mitigation and best practice approach presented in the accompanying Environmental Impact Assessment Report (EIAR), Natura Impact Statement (NIS) and associated planning documentation.
- Ensure decommissioning works and activities have an imperceptible impact/disturbance to local landowners and the local community.
- Ensure decommissioning works and activities have an imperceptible impact on the natural environment.
- Adopt a sustainable approach to decommissioning; and,
- Provide adequate environmental training and awareness (to the approved standards at the time of decommissioning) for all project personnel.

The key site objectives are as follows:

- Using recycled materials if possible, e.g. soil and overburden material for backfilling and reinstatement. Ensure sustainable sources for materials supply where possible.
- Avoidance of any pollution incident or near miss as a result of working around or close to existing watercourses and have emergency measures in place.
- Avoidance of vandalism.
- Keeping all watercourses free from obstruction and debris.
- Correct implementation of the sustainable drainage system (SuDS) drainage design principles.
- Keep impact of decommissioning works to a minimum on the local environment, watercourses, and wildlife.
- Correct fuel storage and refuelling procedures to be followed.
- Good waste management and housekeeping to be implemented.
- Air and noise pollution prevention to be implemented.
- Monitoring of the works and any adverse effects that it may have on the environment.

## 2.4 Decommissioning Methodologies Overview

### 2.4.1 Introduction

An experienced main contractor will be appointed to undertake the decommissioning of the Proposed Wind Farm. The main contractors will comply with the Decommissioning Plan (DP) prepared for the decommissioning phase and any revisions made to this document throughout the phase in which it is adopted. An overview of the decommissioning methodologies is provided below.

## 2.4.2 Decommissioning Methodology

### 2.4.2.1 Proposed Wind Farm

As construction will be completed, elements of the project that will be developed as a temporary facilitator will either be removed, restored to its original condition, or will naturally revegetate. These include the temporary construction compounds and temporary accommodation works along the turbine delivery route. All access roads and hardstanding areas forming part of a site roadway network will be required by the ongoing farming operations, and therefore will be left in situ for future use.

It is intended that decommissioning process will remove all the remaining elements i.e., above ground components and underground cabling from the Proposed Wind Farm, and reinstate areas where infrastructure is removed. The following elements will be decommissioned:

- Wind turbines and Met Mast: dismantling and removal off site;
- Turbine and Met Mast foundation: Turbine and met mast foundation backfilling following dismantling and removal of wind turbines (foundations that protrude above ground level will be backfilled with soil and reseeded - underground reinforced concrete remaining in-situ);
- Internal Underground cabling: removal (ducting remaining);

#### 2.4.2.1.1 *Wind Turbines and Met Mast*

Prior to any works being undertaken on wind turbines or the met mast, they will be disconnected from the grid by the site operator in conjunction with ESB Networks. The dismantling and removal of wind turbines and met mast of this scale is a specialist operation which will be undertaken by the turbine supplier or competent subcontractor. Turbine dismantling will be undertaken in reverse order to methodology employed during their construction. Cranes will be brought back to the Proposed Wind Farm site utilising the hardstand areas adjacent to each turbine. The dismantling of turbines and met mast will be bound by the same safety considerations as will be the case during construction in terms of weather conditions. Works will not be undertaken during adverse weather conditions and in particular not during high winds.

The turbines and met mast will be removed from the Proposed Wind Farm site in a similar manner to how they will be transported to the site originally in extended articulated trucks. The details of transport to and from the Proposed Wind Farm site are assessed in Chapter 15.1 of the EIAR, which accompanies this application.

The transport of disassembled turbines from the Proposed Wind Farm site will be undertaken in accordance with a Transport Management Plan (TMP). The TMP will be issued to and agreed with the planning authority at that time as part of a permit application for the delivery of abnormal loads using the local roads under the Road Traffic (Special Permits for Particular Vehicles) Regulations 2007, or any subsequent amended regulations. The TMP will provide for all necessary safety measures, including a convoy and Garda escort as required, off-peak turning/reversing movements and any necessary safety controls. A Traffic Management Plan is included as Appendix 15-2 of this EIAR.

#### 2.4.2.1.2 *Turbine and Met Mast Foundations*

On the dismantling of turbines and met mast, it is not intended to remove the concrete foundation from the ground. It is considered that its removal will be the least preferred options in terms of potential effects on the environment. Therefore, the foundations of the 8 no. turbines and met mast will be covered with soil material. If there is usable soil or overburden material on the Proposed Wind Farm site after construction, this material will be used. Alternatively, where material is not readily available on site, soil will be sourced locally and imported to site on heavy good vehicles (HGVs). The imported soil will be spread and graded over the foundation using a tracked excavator and revegetation

enhanced by spreading of an appropriate seed mix to assist in revegetation and accelerate the resumption of the natural drainage management that will have existed prior to any construction.



#### 2.4.2.1.3 *Internal Underground Cabling*

The underground cabling within the site, connecting the turbines to the onsite substation, will be pulled from the cable duct using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at each of the pull pits along the cable. The ground above original pulling pits will be excavated using a mechanical excavator and will be fully re-instated once the cables are removed.

The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance for an underground element that is not visible with no environmental impact associated with leaving the ducting in-situ.

The Proposed Grid Connection underground electrical cabling route and onsite substation will remain in place as it will be under the ownership and control of the ESBN.

### 2.4.2.2 Proposed Grid Connection

As construction will be completed, the Proposed Grid Connection temporary construction compound that was developed as a temporary facilitator will either be removed and restored to its original condition or will naturally revegetate. The Proposed Grid Connection underground cabling and onsite substation will remain in place as it will be under the ownership and control of ESBN.

# 3. ENVIRONMENTAL MANAGEMENT

The following sections give an overview of the drainage, dust and noise control measures, a waste management plan for the Site and the implementation of the environmental management procedures for the Site.

## 3.1 Site Drainage

The site drainage features for this Proposed Wind Farm site during its construction and operation are outlined in the EIAR which accompany this application. As this Decommissioning Plan is a working document and is presented as an Appendix to the EIAR, the drainage measures are not included in this document. When the final Decommissioning Plan is prepared prior to decommissioning and presented as a standalone document, all drainage management measures, which will include maintenance of the operational drainage measures, will be included in that document, as required. The drainage proposals will be developed further prior to the commencement of decommissioning if deemed necessary. However, it should be noted that by the time decommissioning is undertaken after the planned 35-year lifespan of the Proposed Wind Farm, the areas within the Proposed Wind Farm site will have revegetated resulting in a resumption of the natural drainage management that will have existed prior to any construction. It is not anticipated that the decommissioning phase will interrupt this restored drainage regime in any way with the works proposed. As a minimum measure, areas where freshly placed soil material as part of turbine foundation reinstatement will be surrounded by silt fencing if deemed necessary until the area has naturally revegetated.

## 3.2 Refuelling, Fuel and Hazardous Material Storage

Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles. On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site. Heavy plant and machinery will be refuelled on-site by a fuel truck that will come to the Site as required on a scheduled and organised basis. All refuelling will be carried out outside designated watercourse buffer zones. Only designated trained competent operatives will be authorised to refuel plant onsite. Mobile measures such as drip trays and fuel absorbent mats will be used during refuelling operations as required. All plant and machinery will be equipped with fuel absorbent material and pads to deal with any event of accidental spillage.

The following mitigation measures are proposed to avoid release of hydrocarbons at the Site:

- Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles.
- On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site.
- Fuel volumes stored on site will be minimised.
- Heavy plant and machinery will be refuelled on-site by a fuel truck that will come to the Site as required on a scheduled and organised basis.
- All refuelling will be carried out outside designated watercourse buffer zones.
- Only designated trained and competent operatives will be authorised to refuel plant on-site
- Mobile measures such as drip trays and fuel absorbent mats will used during refuelling operations as required.
- All plant and machinery will be inspected for leaks and fitness for purpose daily.
- All plant and machinery will be equipped with fuel absorbent material and pads to deal with any event of accidental spillage

- An emergency plan for the decommissioning phase to deal with accidental spillages will be developed (refer to Section 5 of this Plan). Spill kits will be available to deal with an accidental spillage in and outside the refuelling area.
- A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the decommissioning phase

## 3.3 Dust Control

Dust can be generated from on-site activities during decommissioning such as reinstatement of foundations and travelling on site roads during prolonged periods of dry weather. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, i.e. soil, and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Site traffic movements also have the potential to generate dust as they travel along the haul route. If necessary, haul roads and other areas of hardstanding will be damped down by water spray or water misting to prevent the generation of dust.

Proposed measures to control dust, which are the same as those proposed for the construction phase, include:

- Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions. Silty or oily water will not be used for dust suppression;
- Traffic will be restricted to defined routes and a speed limit implemented.
- All related traffic will have speed restrictions on un-surfaced roads to 15 kph;
- The designated public roads outside the Proposed Wind Farm site and along the main transport routes to the Proposed Wind Farm site will be regularly inspected by the ECoW for cleanliness, and cleaned as necessary;
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind;
- Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods;
- Water misting or bowsers will operate on-site as required to mitigate dust in dry weather conditions. Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff;
- The transport of soils or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary;
- Daily inspection of construction sites to examine dust measures and their effectiveness.
- The Proposed Wind Farm site access roads will be checked weekly for damage/potholes and repaired as necessary.

## 3.4 Noise Control

The operation of plant and machinery, including site vehicles, is a source of potential impact that will require mitigation at all locations within the Site. To avoid unsociable hours where possible, decommissioning works will be restricted to occur between 07:00hrs and 19:00hrs Monday to Saturday, which are the same as those proposed during the construction phase. Proposed measures to control noise include:

- Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations.

- Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works.
- Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machines, which are used intermittently, will be shut down during those periods when they are not in use.
- Training will be provided by the Site Manager to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation; and,
- Local residents will be kept informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;
- Any extraordinary site work occurring outside of the core working hours will be programmed, when appropriate, so that haulage vehicles would not arrive at or leave the Proposed Wind Farm site between 19:00 and 07:00, with the exception of abnormal loads that would be scheduled to avoid anticipated periods of high traffic flows;
- All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers;
- Machines will be shut down between work periods (or when not in use) or throttled down to a minimum;
- All equipment used on site will be regularly maintained, including maintenance related to noise emissions;
- Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation;
- All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided; and
- Training will be provided to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation.

## 3.5 Invasive Species Management

Any soil material that will be imported to the Proposed Wind Farm site as part of the foundation reinstatement will be free of any invasive species (listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). The Site Manager will take steps to ensure the sourcing of suitably clean soil material and verify the quality of the material by having it inspected prior to bringing it to site by a suitably qualified ecologist. Prior to decommissioning, a suitably qualified ecologist will complete an invasive species survey of the Site to identify invasive species where any minor excavation will be required. If present in these areas, the ecologist will propose suitable management measures.

## 3.6 Traffic Management

A Traffic Management Plan will be prepared in advance of any decommissioning works. The removal of turbines from the Site will be undertaken for a specialist haulier. The traffic management arrangements although similar to those that will be implemented for turbine delivery as outlined in the EIAR will be agreed in advance of decommissioning with the competent authority.

# 3.7 Waste Management

This section of the DP provides a waste management plan (WMP) which outlines the best practice procedures during the decommissioning of the Proposed Wind Farm. The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of decommissioning. Disposal of waste will be a last resort.

## 3.7.1 Legislation

The Waste Management Act 1996 and its subsequent amendments provide for measures to improve performance in relation to waste management, recycling and recovery. The Act also provides a regulatory framework for meeting higher environmental standards set out by other national and EU legislation.

The Act requires that any waste related activity has to have all necessary licenses and authorisations. It will be the duty of the Waste Manager on the Site to ensure that all contractors hired to remove waste, have valid Waste Collection Permits. It will then be necessary to ensure that the waste is delivered to a licensed or permitted waste facility. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits and authorisations. Waste removal-related traffic volumes during the decommissioning phase, will be less than those anticipated and assessed for the construction phase.

The Department of the Environment provides a document entitled, *'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects'* (2006). It is important to emphasise that no demolition will take place at this site, however, this document was referred to throughout the process of completing this WMP.

## 3.7.2 Waste Management Hierarchy

The waste management hierarchy sets out the most efficient way of managing in the following order:

### Prevention and Minimisation:

The primary aim of the WMP will be to prevent and thereby reduce the amount of waste generated at each stage of the project.

### Reuse of Waste:

Reusing as much of the waste generated on site as possible will reduce the quantities of waste that will have to be transported off site to recovery facilities or landfill.

### Recycling of Waste:

There are several established markets available for the beneficial use of Construction and Demolition waste such as using waste concrete as fill for new roads.

At all times during the implementation of the WMP, disposal of waste to landfill will be considered only as a last resort.

### 3.7.3 Waste Arising from Decommissioning

The relevant components will be removed from the Proposed Wind Farm site for re-use, recycling or waste disposal. Any structural elements that are not suitable for recycling will be disposed of in an appropriate manner. All lubrication fluids will be drained down and put aside for appropriate collection, storage, transport and disposal. Any materials which cannot be re-used or recycled will be disposed of by an appropriately licenced contractor.

The waste types arising from the decommissioning of the Proposed Wind Farm site are outlined in Table 3-1 below.

*Table 3-1 Expected waste types arising during the Decommissioning Phase*

| Material Type | Example | EWC Code |
|---|---|---|
| Cables | Electrical wiring | 17 04 11 |
| Metals | Copper, aluminium, lead and iron | 17 04 07 |
| Fibreglass | Turbine blade component | 10 11 03 |
| Hydrocarbons | Oils and lubricants drained from the turbines | 13 01 01, 13 02 04 |

#### 3.7.3.1 Reuse

Many construction materials can be reused several times before they have to be disposed of:

- Electrical wiring can be reused on similar wind energy projects.
- Elements of the turbine components can be reused but this will be determined by the condition that they are in.

#### 3.7.3.2 Recycling

If a certain type of construction material cannot be reused onsite, then recycling is the most suitable option. The opportunity for recycling during decommissioning will be limited and restricted to components of the wind turbines.

All waste that is produced during the decommissioning phase including dry recyclables will be deposited in the on-site skip initially and sent for subsequent segregation at a remote facility. The anticipated volume of all waste material to be generated at the Site is low which provides the justification for adopting this method of waste management.

#### 3.7.3.3 Implementation

##### 3.7.3.3.1 *Roles and Responsibilities*

Prior to the commencement of the decommissioning, a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will oversee the implementation of the objectives of the plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the decommissioning adheres to the management plan.

#### 3.7.3.3.2 *Training*

It is important for the Construction Waste Manager to communicate effectively with colleagues in relation to the aims and objectives of the waste management plan. All employees working on site during the decommissioning phase of the project will be trained in materials management and thereby, should be able to:

- Distinguish reusable materials from those suitable for recycling.
- Ensure maximum segregation at source.
- Co-operate with site manager on the best locations for stockpiling reusable materials.
- Separate materials for recovery; and
- Identify and liaise with waste contractors and waste facility operators.

#### 3.7.3.3.3 *Record Keeping*

The WMP will provide systems that will enable all arisings, movements and treatments of construction waste to be recorded. This system will enable the contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The WMP can then be adapted with changes that are seen through record keeping.

The fully licensed waste contractor employed to remove waste from the Site will be required to provide documented records for all waste dispatches leaving the Site. Each record will contain the following:

- Consignment Reference Number
- Material Type(s) and EWC Code(s)/LOW Codes(s)
- Company Name and Address of Site of Origin
- Trade Name and Collection Permit Ref. of Waste Carrier
- Trade Name and Licence Ref. of Destination Facility
- Date and Time of Waste Dispatch
- Registration no. of Waste Carrier vehicle
- Weight of Material
- Signature of Confirmation of Dispatch detail
- Date and Time of Waste Arrival at Destination
- Site Address of Destination Facility

### 3.7.3.4 Waste Management Plan Conclusion

The WMP will be properly adhered to by all staff involved in the project which will be outlined within the induction process for all site personnel. The waste hierarchy should always be employed when designing the plan to ensure that the least possible amount of waste is produced during decommissioning. Reuse of certain types of construction wastes will cut down on the cost and requirement of raw materials therefore further minimising waste levels.

This WMP has been prepared to outline the main objectives that are to be adhered to and it will be updated as required prior to decommissioning.

## 3.8 Environmental Management Implementation

### 3.8.1 Roles and Responsibilities

The Site Manager and/or Environmental Clerk of Works (ECoW) are the project focal point relating to decommissioning-related environmental issues.

In general, the ECoW will maintain responsibility for monitoring the decommissioning works and Contractors/Sub-contractors from an environmental perspective. The ECoW will act as the regulatory interface on environmental matters. The Site Manager will be responsible for reporting to and liaising with Kilkenny County Council, Laois County Council and other statutory bodies as required.

The Site Manager in consultation with the ECoW will be responsible for employing the services of a suitably qualified ecologist and any other suitably qualified professionals as required throughout the decommissioning works.

# 4. HEALTH AND SAFETY



Decommissioning of the Proposed Wind Farm will necessitate the presence of a construction site and travel on the local public road network to and from the Site. Construction sites and the machinery used on them pose a potential health and safety hazard to construction workers if site rules are not properly implemented.

The Proposed Wind Farm will be decommissioned in accordance with all relevant Health and Safety Legislation, including:

- Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005);
- Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016);
- S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021 and
- Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006).

The following measures below are also detailed in Chapter 18 Schedule of Monitoring and Mitigation Measures.

- A Health and Safety Plan covering all aspects of the decommissioning process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed further at decommissioning stage.
- All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. The contractor will be obliged under the decommissioning contract and current health and safety legislation to adequately provide for all hazards and risks associated with the decommissioning phase of the Wind Farm. Safepass registration cards are required for all decommissioning, delivery and security staff. Decommissioning operatives will hold a valid Construction Skills Certificate Scheme card where required. The developer is required to ensure a competent contractor is appointed to carry out the decommissioning works. The contractor will be responsible for the implementation of procedures outlined in the Safety and Health Plan. Public safety will be addressed by restricting Site access during construction. Fencing will be erected in areas of the Site where uncontrolled access is not permitted.
- The suitability of machinery and equipment for use near power lines will be risk assessed.
- All staff will be trained on operating voltages of overhead electricity lines running the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Site are made aware of the location of lines before they come on to Site.
- Barriers will run parallel to the overhead line at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire.
- When activities must be carried out beneath overhead lines, e.g., turbine component removal, a site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required.
- Information on safe clearances will be provided to all staff and visitors.
- Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and onsite.
- All staff will be made aware of and adhere to the Health & Safety Authority's '*Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'.* This will encompass

the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan.

The scale and scope of the project necessitates that a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) are required to be appointed in accordance with the provisions of the Health & Safety Authority's '*Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013'*.

The PSDP appointed for the decommissioning stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):

- Identify hazards arising from the design or from the technical, organisational, planning or time related aspects of the project;
- Where possible, eliminate the hazards or reduce the risks;
- Communicate necessary control measures, design assumptions or remaining risks to the PSCS so they can be dealt with in the Safety and Health Plan;
- Ensure that the work of designers is coordinated to ensure safety;
- Organise co-operation between designers;
- Prepare a written Safety and Health Plan;
- Prepare a safety file for the completed structure and give it to the client; and
- Notify the Authority and the client of non-compliance with any written directions issued.

The PSCS appointed for the decommissioning stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):

- Development of the Safety and Health Plan for the decommissioning stage with updating where required as work progresses;
- Compile and develop safety file information.
- Reporting of accidents / incidents;
- Weekly Site meeting with PSDP;
- Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out:
- Induction of all Site staff including any new staff enlisted for the project from time to time;
- Toolbox talks as necessary;
- Maintenance of a file which lists personnel on Site, their name, nationality, current Safe Pass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date;
- Report on Site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance;
- Monitor the compliance of contractors and others and take corrective action where necessary; and
- Notify the Authority and the client of non-compliance with any written directions issued.
- An Emergency Response Plan (ERP) is presented in this section of the Decommissioning Plan. It provides details of procedures to be adopted in the event of an emergency in terms of Site Health, Safety and Environmental protection.

# 5. EMERGENCY RESPONSE PLAN

An Emergency Response Plan (ERP) is presented in this section of the Decommissioning Plan. It provides details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection.

## 5.1 Emergency Response Procedure

The Site ERP includes details on the response required and the responsibilities of all personnel in the event of an emergency. The ERP will require updating and submissions from the contractor/PSCS and sub-contractors as decommissioning progresses. Where sub-contractors that are contracted on site are governed by their own emergency response procedure a bridging arrangement will be adopted to allow for inclusion of the sub-contractor's ERP within this document.

This is a working document that requires updating throughout the various stages of the project.

### 5.1.1 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Supervisor/Decommissioning Manager will lead the emergency response which makes him responsible for activating and coordinating the emergency response procedure. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 5-1. In a situation where the Site Supervisor/Decommissioning Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command outlined in Figure 5-1. This will be updated throughout the various stages of the decommissioning process.

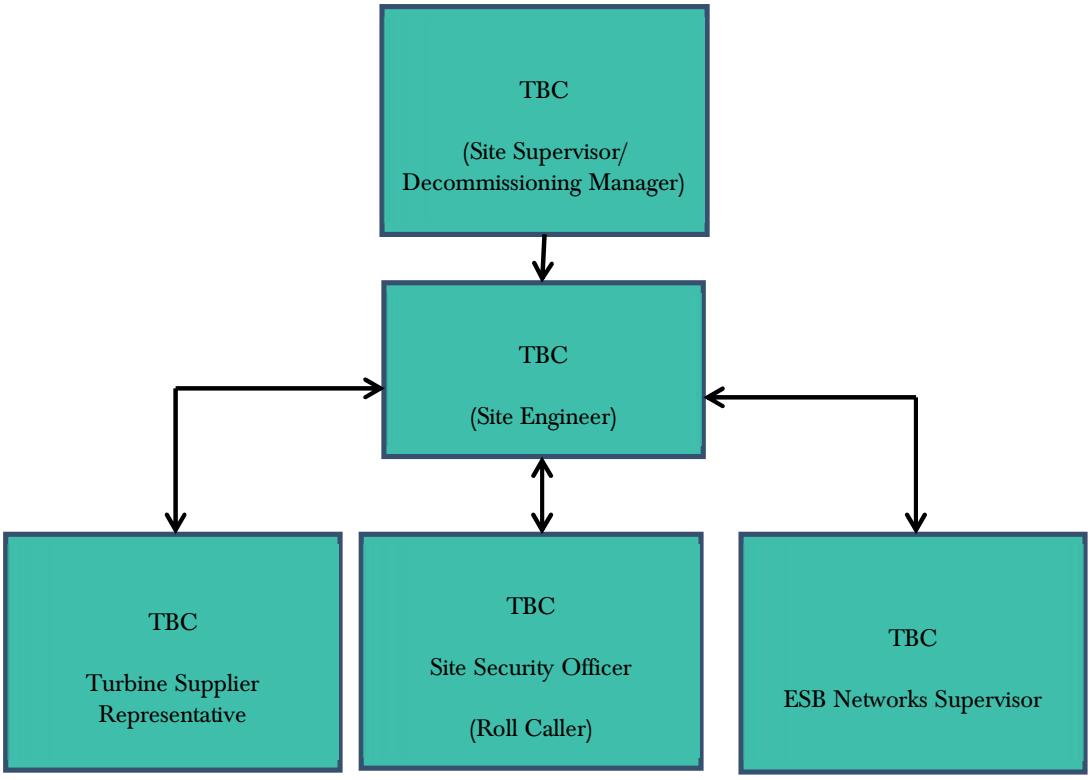


*Figure 5-1 Emergency Response Procedure Chain of Command*

### 5.1.2 Initial Steps

To establish the type and scale of potential emergencies that may occur, the following hazards have been identified as being potential situations that may require an emergency response in the event of an occurrence.

*Table 5-1 Hazards associated with potential emergency situations*

| Hazard | Emergency Situation |
|---|---|
| Construction Vehicles: Dump trucks, tractors, excavators, cranes etc. | Collision or overturn which has resulted in operator or third-party injury. |
| Abrasive wheels/Portable Tools | Entanglement, amputation or electrical shock associated with portable tools |
| Contact with services | Electrical shock or gas leak associated with an accidental breach of underground services |
| Fire | Injury to operative through exposure to fire |
| Falls from heights including falls from scaffold towers, scissor lifts, ladders, roofs and turbines. | Injury to operative after a fall from a height |
| Sickness | Illness unrelated to site activities of an operative e.g. heart attack, loss of consciousness, seizure |
| Turbine Specific Incident | This will be included the turbine manufacturers' emergency response plan. |

In the event of an emergency situation associated with, but not restricted to, the hazards outlined in Table 5-1 the Site Supervisor/Decommissioning Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, have been injured or are at risk of injury.
- Where necessary, sound the emergency siren/foghorn that activates an emergency evacuation. The Site Supervisor/Decommissioning Manager must proceed to the assembly point if the emergency poses any significant threat to their welfare and if there are no injured personnel at the scene that require assistance. The Site Supervisor/ Decommissioning Manager will be required to use their own discretion at that point. In the case of fire, the emergency evacuation should proceed, without exception. The evacuation procedure is outlined in Section 5.1.3.
- Make safe the area if possible and ensure that there is no identifiable risk exists with regard to dealing with the situation e.g. if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone. If delegating the task, ensure that the procedures for contacting the emergency services as set out in Section 5.2 is followed.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g. cordon off an area where an incident associated with electrical issues has occurred.
- Contact any regulatory body or service provider as required e.g. ESB Networks the numbers for which as provided in Section 5.2.
- Contact the next of kin of any injured personnel where appropriate.

### 5.1.3 Site Evacuation/Fire Drill

A site evacuation/fire drill procedure will provide basis for carrying out the immediate evacuation of all site personnel in the event of an emergency. The following steps will be taken:

- Notification of the emergency situation. Provision of a siren or foghorn to notify all personnel of an emergency situation.
- An assembly point will be designated in the construction compound area and will be marked with a sign. All site personnel will assemble at this point.
- A roll call will be carried out by the Site Security Officer to account for all personnel on site.
- The Site Security Officer will inform the Site Supervisor/Decommissioning Manager when all personnel have been accounted for. The Supervisor/Decommissioning Manager will decide the next course of action, which be determined by the situation that exists at that time and will advise all personnel accordingly.

All personnel will be made aware of the evacuation procedure during site induction. The Fire Services Acts of 1981 and 2003 require the holding of fire safety evacuation drills at specified intervals and the keeping of records of such drills.

### 5.1.4 Spill Control Measures

Every effort will be made to prevent an environmental incident during the decommissioning phase of the project. Oil/fuel spillages are one of the main environmental risks that will exist on the Site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. The following steps provide the procedure to be followed in the event of such an incident:

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident.
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the ECoW immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- The ECoW will inspect the Site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The ECoW will notify the appropriate regulatory body such as Kilkenny County Council, Laois County Council and the Environmental Protection Agency (EPA), if deemed necessary.

The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps.

- The ECoW must be immediately notified.
- If necessary, the ECoW will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.

- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident.
- A record of all environmental incidents will be kept on file by the ECoW and the Main Contractor. These records will be made available to the relevant authorities such as Kilkenny County Council, Laois County Council, or the EPA if required.

The ECoW will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative works methodologies or environmental sampling, and will advise the Main Contractor as appropriate.

## 5.2 Contact the Emergency Services

### 5.2.1 Emergency Communications Procedure

In the event of requiring the assistance of the emergency services the following steps will be taken:

**Stay calm.** It is important to take a deep breath and not get excited. Any situation that requires 999/112 is, by definition, an emergency. The dispatcher or call-taker knows that and will try to move things along quickly, but under control.

**Know the location of the emergency and the number you are calling from.** This may be asked and answered a couple of times but do not get frustrated. Even though many emergency call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for some reason you are disconnected, at least emergency crews will know where to go and how to call you back.

**Wait for the call-taker to ask questions, then answer clearly and calmly.** If you are in danger of assault, the dispatcher or call-taker will still need you to answer quietly, mostly "yes" and "no" questions.

**If you reach a recording, listen to what it says.** If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.

**Let the call-taker guide the conversation.** He or she is typing the information into a computer and may seem to be taking forever. There is a good chance, however, that emergency services are already being sent while you are still on the line.

**Follow all directions.** In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly, and ask for clarification if you do not understand.

**Keep your eyes open.** You may be asked to describe victims, suspects, vehicles, or other parts of the scene.

**Do not hang up the call** until directed to do so by the call taker.

Due to the location of the Site it may be necessary to liaise with the emergency services on the ground in terms of locating the Site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This should form part of the site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable.

## 5.3 Contact Details

A list of emergency contacts is presented in Table 5-2. A copy of these contacts will be included in the Site Safety Manual and in the site offices and the various site welfare facilities.

*Table 5-2 Emergency Contacts*

| Contact | Telephone no. |
|---|---|
| Emergency Services – Ambulance, Fire, Gardaí | 999/112 |
| Doctor – Ballyragget Medical Centre | 056 883 3105 |
| Hospital – St. Luke's General Hospital – Kilkenny City | 056 7785000 |
| ESB Emergency Services | 1850 372 999 |
| Gardaí – Abbeyleix Garda Station | 057 873 0580 |
| Health and Safety Co-ordinator - Health & Safety Services | TBC |
| Health and Safety Authority | 1890 289 389 |
| Inland Fisheries Ireland (IFI) | 1890 347 424 |
| Project Supervisor Construction Stage (PSCS): TBC | TBC |
| Project Supervisor Design Stage (PSDS): TBC | TBC |
| Client: Seskin Renewable Energy Ltd. | TBC |

## 5.4 Procedure for Personnel Tracking

All operatives on site without any exception will have to undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.

In the event of a site operative becoming in an emergency situation where serious injury has occurred and hospitalisation has taken place, it will be the responsibility of the Site Manager or next in command if unavailable to contact the next of kin to inform them of the situation that exists.

## 5.5 Induction Checklist

Table 5-3 provides a list of items highlighted in this ERP which must be included or obtained during the mandatory site induction of all personnel that will work on the site. This will be updated throughout the various stages of the Proposed Development.

*Table 5-3 Emergency Response Plan Items Applicable to the Site Induction Process*

| ERP Items to be included in Site Induction | Status |
|---|---|
| All personnel will be made aware of the evacuation procedure during site induction | |

| ERP Items to be included in Site Induction | Status |
|---|---|
| It may be necessary to liaise with and assist the emergency services on the ground in terms of locating the Site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This should form part of the site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable. | |
| All operatives on site without any exception will have undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin. | |



# 6. PROGRAMME OF WORKS

## 6.1 Decommissioning Schedule

The decommissioning phase will take approximately 3 – 6 months to complete from commencing the removal of turbines to the final reinstatement of the Proposed Wind Farm site.

At this time, it is not possible to determine when decommissioning will take place. The phasing and scheduling of the main decommissioning task items are outlined in Figure 6-1 below.

| ID | Task Name | Task Description | Month 1-3 | Month 3-6 |
|---|---|---|---|---|
| 1 | Site Health and Safty | | | |
| 2 | Turbine Decommissioning | Disconnect Power Output | | |
| 3 | Turbine & Met Mast Dismantling | Disassemble Turbine Components | | |
| 4 | Turbine Removal | Tranpsort of all Turbine Componetns off Site | | |
| 5 | Cable Removal | Remove Undeground Cables from Ducting | | |
| 6 | Turbine & Met Mast Foundations Backfill | Reinstate Foundation Areas by Covering with Soil Material | | |
| 7 | Accommodation Areas Reinstatement | Reinstate Temporary Abnormal Load Entrance and any necessary Boundary Treatments | | |

*Figure 6-1 Indicative Decommissioning Schedule*

# 7. MITIGATION PROPOSALS



All mitigation measures relating to the pre-commencement, construction and operational phases of the Proposed Development are set out in the various sections of the Environmental Impact Assessment Report (EIAR) and NIS prepared as part of the planning permission application to KCC and LCC.

This section of the Decommissioning Plan groups together all of the mitigation measures presented in the above documents. The Mitigation Measures are presented in the following pages.

By presenting the mitigation proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the decommissioning phase of the Proposed Wind Farm.

*Table 7-1 Proposed Mitigation Measures*

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| **EIAR Chapter 4 – Description of the Proposed Development** | | | | | |
| **Decommissioning Phase** | | | | | |
| MM43 | Decommissioning Plan | EIAR Chapter 4 | Prior to the end of the operational period the Decommissioning Plan (Appendix 4-4 of the EIAR) will be updated in line with decommissioning methodologies that may exist at the time and will agree with the competent authority at that time. | | |
| MM44 | Decommissioning Works | EIAR Chapter 4<br><br>DP Section 2 | › Turbine foundations would remain in place underground and would be covered with earth and reseeded as appropriate. Leaving the turbine foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in unnecessary environment emissions such as noise, dust and/or vibration.<br>› Site roadways could be in use for purposes other than the operation of the Proposed Development by the time the decommissioning of the Proposed Development is to be considered, and therefore it may be more appropriate to leave the Site roads in situ for future use. | | |
| MM45 | Refuelling | EIAR Chapter 4, 8, 9.<br><br>DP Section 3 | The following mitigation measures are proposed to avoid release of hydrocarbons during the Decommissioning Phase:<br><br>› Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles.<br>› On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site.<br>› Fuel volumes stored on site will be minimised.<br>› Heavy plant and machinery will be refuelled on-site by a fuel truck that will come to the Site as required on a scheduled and organised basis.<br>› All refuelling will be carried out outside designated watercourse buffer zones.<br>› Only designated trained and competent operatives will be authorised to refuel plant on-site<br>› Mobile measures such as drip trays and fuel absorbent mats will used during refuelling operations as required.<br>› All plant and machinery will be inspected for leaks and fitness for purpose daily.<br>› All plant and machinery will be equipped with fuel absorbent material and pads to deal with any event of accidental spillage | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › An emergency plan for the decommissioning phase to deal with accidental spillages will be developed (refer to Section 5 of this Plan). Spill kits will be available to deal with an accidental spillage in and outside the refuelling area.<br>› A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the decommissioning phase. | | |
| MM46 | Noise and Vibration | DP section 3<br><br>EIAR Chapter 12 | › Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations.<br>› Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers.<br>› All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works.<br>› Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.<br>› Machines, which are used intermittently, will be shut down during those periods when they are not in use.<br>› Training will be provided by the Site Manager to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation; and,<br>› Local residents will be kept informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;<br>› Any extraordinary site work occurring outside of the core working hours will be programmed, when appropriate, so that haulage vehicles would not arrive at or leave the Proposed Wind Farm site between 19:00 and 07:00, with the exception of abnormal loads that would be scheduled to avoid anticipated periods of high traffic flows;<br>› All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers;<br>› Machines will be shut down between work periods (or when not in use) or throttled down to a minimum;<br>› All equipment used on site will be regularly maintained, including maintenance related to noise emissions;<br>› Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation;<br>› All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided; and<br>› Training will be provided to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation. | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| **Chapter 7 Birds** | | | | | |
| **Decommissioning Phase** | | | | | |
| MM65 | Birds | EIAR Chapter 7 | It is proposed that decommissioning works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the site and its environs. Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Development to identify sensitive sites (e.g. roosts). Any requirement for construction works to run into the subsequent breeding and winter seasons following commencement will be subject to a repeat of the pre-commencement bird surveys to confirm the absence of breeding birds of conservation concern once per month during the breeding season (April to July) and once during the winter season (October). The survey will aim to identify sensitive sites e.g., nests or roosts depending on the season in question.<br><br>› The surveys will be undertaken by a suitably qualified ornithologist<br>› If the roost/nest is found to be active during works, works will cease within a species-specific buffer of its location in line with best practice guidance (e.g. Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.<br>› All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked to alert all personnel on site to the suspension of works within that area. | | |
| **EIAR Chapter 8 Land Soils & Geology** | | | | | |
| **Decommissioning Phase** | | | | | |
| MM69 | Decommissioning Phase | EIAR Chapter 8 | Mitigation measures applied during decommissioning activities will be similar to those applied during the construction phase. Some of the impacts will be avoided by leaving elements of the Proposed Development in place where appropriate. The substation will be permanent infrastructure under the control of ESBN. The turbine foundations will be rehabilitated by covering with local topsoil in order to regenerate vegetation, which will reduce runoff and sedimentation effects. Internal roads will remain as access roads for farmers and forestry operations. Mitigation measures to avoid contamination by | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | accidental fuel leakage and erosion of soil by on-site plant will be implemented as per the construction phase mitigation measures. | | |
| **EIAR Chapter 9 Water** | | | | | |
| **Decommissioning Phase** | | | | | |
| MM88 | Decommissioning | EIAR Chapter 9 | Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures. | | |
| **Chapter 10 Air Quality** | | | | | |
| **Decommissioning Phase** | | | | | |
| MM92 | Decommissioning Phase | EIAR Chapter 10 | Any impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, be it of less effect. The mitigation measures prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential impacts. | | |
| **Chapter 11 Climate** | | | | | |
| **Decommissioning Phase** | | | | | |
| MM95 | Decommissioning Phase | EIAR Chapter 11 | The mitigation measures prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential impacts. | | |
| **EIAR Chapter 12 Noise** | | | | | |
| **Decommissioning Phase** | | | | | |
| MM98 | Noise | EIAR Chapter 12 | During the decommissioning phase of the Proposed Wind Farm there will be noise emissions from site traffic and other on-site activities. A conservative assessment assuming similar overall noise levels as those calculated for the construction phase can be considered for elements that are proposed to be decommissioned. The noise and vibration impacts associated with any decommissioning of the site are considered to be less than those outlined in relation to the construction of the Proposed Development. The mitigation measures prescribed for the construction phase of the Proposed Development will be implemented during the decommissioning phase thereby minimising any potential impacts. | | |
| **Chapter 15 Material Assets - Traffic** | | | | | |
| **Decommissioning Phase** | | | | | |

| Ref. MM no. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| MM107 | Decommissioning | EIAR Chapter 15 | › In the event that the Proposed Development is decommissioned after the 35 years of operation, a decommissioning plan, will be prepared for agreement with the local authority, as described in Chapter 4 and Appendix 4-4 Decommissioning Plan. This plan will include a material recycling / disposal and traffic management plan will be prepared for agreement with the local authority prior to decommissioning, in accordance with Scottish Natural Heritage report (SNH) Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms (SNH, 2013). | | |
| **Chapter 15 Other Material Assets** | | | | | |
| **Decommissioning** | | | | | |
| MM113 | Decommissioning | EIAR Chapter 15 | The measures outlined for the construction phase are considered the same for the decommissioning phase. | | |

# 8. MONITORING PROPOSALS



All monitoring proposals relating to the pre-commencement, construction and operational phases of the Proposed Development were set out in various sections of the EIAR and NIS prepared as part of the planning permission application to KCC and LCC.

This section of the Decommissioning Plan groups together all of the monitoring proposals presented in the planning documentation. The monitoring proposals are presented in the following pages.

By presenting the monitoring proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the decommissioning phase of the Proposed Wind Farm.

*Table 8-1 Proposed Monitoring Measures*

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| **Decommissioning Phase** | | | | | | |
| MX21 | Decommissioning | DP Section 1 | In accordance with SNH guidance, "best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm". A Decommissioning Plan will be reviewed and updated prior to commencement of decommissioning works to take account of the relevant conditions of the planning permission and current health and safety standards | End of operational life | As required | Developer/ Appointed Contractor |
| MX22 | Decommissioning | DP Section 3 | In general, the ECoW will maintain responsibility for monitoring the decommissioning works and Contractors/Sub-contractors from an environmental perspective. The ECoW will act as the regulatory interface on environmental matters. The Site Manager will be responsible for reporting to and liaising with Kilkenny County Council and other statutory bodies as required.<br><br>The Site Manager in consultation with the ECoW will be responsible for employing the services of a suitably qualified ecologist and any other suitably qualified professionals as required throughout the decommissioning works. | As required | As required | Site Manager |
| MX23 | Decommissioning | DP Section 3 | Prior to decommissioning, a suitably qualified ecologist will complete an invasive species survey of the Site to identify invasive species where any minor excavation will be required. If present in these areas, the ecologist will propose suitable management measures. | As required | As required | Project Ecologist |
| MX24 | Decommissioning | EIAR Chapter 7 | Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Development to identify sensitive sites (e.g. roosts). Any requirement for construction works to run into the subsequent breeding and winter seasons following commencement will be subject to a repeat of the pre-commencement bird surveys to confirm the absence of breeding birds of conservation concern once per month during the | Prior to Decommissioning | As required | Project Ornithologist |

| Ref. No. | Reference Heading | Reference Location | Monitoring Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | breeding season (April to July) and once during the winter season (October). The survey will aim to identify sensitive sites e.g., nests or roosts depending on the season in question.<br><br>The surveys will be undertaken by a suitably qualified ornithologist. The surveys will comprise a thorough walkover survey of the development footprint and/or all works areas to a 500m radius, where access allows. If winter roosts or nests of birds of high conservation concern are identified, the roost/nest will be earmarked for continued monitoring during works. If the roost/nest is found to be active during works, works will cease within a species-specific buffer of its location in line with best practice guidance (e.g. Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.<br><br>All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked to alert all personnel on site to the suspension of works within that area. | | | |

# 9. COMPLIANCE AND REVIEW

## 9.1 Site inspections and Environmental Audits

Routine inspections of decommissioning activities will be carried out on a daily and weekly basis by the ECoW and the Site Supervisor/Decommissioning Manager to ensure all controls to prevent environmental impacts, relevant to the decommissioning activities taking place at the time, are in place.

Environmental inspections will ensure that the works are undertaken in compliance with this Decommissioning Plan and all other planning application documents. Only suitably trained staff will undertake environmental site inspections.

## 9.2 Auditing

Environmental audits will be conducted at planned intervals to determine whether the Decommissioning Plan is being properly implemented and maintained. The results of environmental audits will be provided to project management personnel. In contrast to monitoring and inspection activities, audits are designed to shed light on the underlying causes of non-compliance, and not merely detect the non-compliance itself. In addition, audits are the main means by which system and performance improvement opportunities may be identified. Environmental audits will be carried out by the ECoW on behalf of the appointed contractor. It is important that an impartial and objective approach is adopted.

Once the Proposed Wind Farm has been decommissioned and all identified infrastructure removed from the Site, a report of compliance with decommissioning works mitigation measures will be prepared.

## 9.3 Environmental Compliance

The following definitions shall apply in relation to the classification of Environmental Occurrences during decommissioning of the Proposed Wind Farm:

**Environmental Near Miss:** An occurrence which if not controlled or due to its nature could lead to an Environmental Incident.

**Environmental Incident:** Any occurrence which has potential, due to its scale and nature, to migrate from source and have an environmental impact beyond the Site.

**Environmental Exceedance Event:** An environmental exceedance event occurs when monitoring results indicate that limits for a particular environmental parameter (as indicated in the Environmental Monitoring Programme) has been exceeded.

An exceedance will immediately trigger an investigation into the reason for the exceedance occurring and the application of suitable mitigation where necessary.

Exceedance events can be closed out on achieving a monitoring result below the assigned limit for a particular environmental parameter.

**Environmental Non-Compliance:** Non-fulfilment of a requirement and includes any deviations from established procedures, programs and other arrangements related to the EMP.

## 9.4 Corrective Action Procedure

A corrective action is implemented to rectify an environmental problem on-site. Corrective actions will be implemented by the Site Supervisor/Decommissioning Manager, as advised by the Site Environmental Clerk of Works. Corrective actions may be required as a result of the following:

- Environmental Audits.
- Environmental Inspections and Reviews.
- Environmental Monitoring.
- Environmental Incidents; and,
- Environmental Complaints.

A Corrective Action Notice will be used to communicate the details of the action required to the main contractor. A Corrective Action Notice is a form that describes the cause and effect of an environmental problem on site and the recommended corrective action that is required. The Corrective Action Notice, when completed, will include details of close out and follow up actions.

If an environmental problem occurs on site that requires immediate attention direct communications between the Site Supervisor/Decommissioning Manager and the ECoW will be conducted. This in turn will be passed down to the Site staff involved. A Corrective Action Notice will be completed at a later date.

## 9.5 Decommissioning Plan Review

This Decommissioning Plan will be reviewed and updated prior to commencement of any decommissioning works. In accordance with the guidelines set out in the SNH Research and Guidance 2013 document pertaining to *restoration and decommissioning of onshore wind farms*, further updates will be completed to the plan during decommissioning works to adapt to specific situations or site conditions which may be encountered and consequently need to be considered by the plan.

This report provides the environmental management framework to be adhered to during the decommissioning phase of the Proposed Wind Farm and it incorporates the mitigating principles to ensure that the work is carried out in a way that minimises the potential for any environmental impacts to occur.