

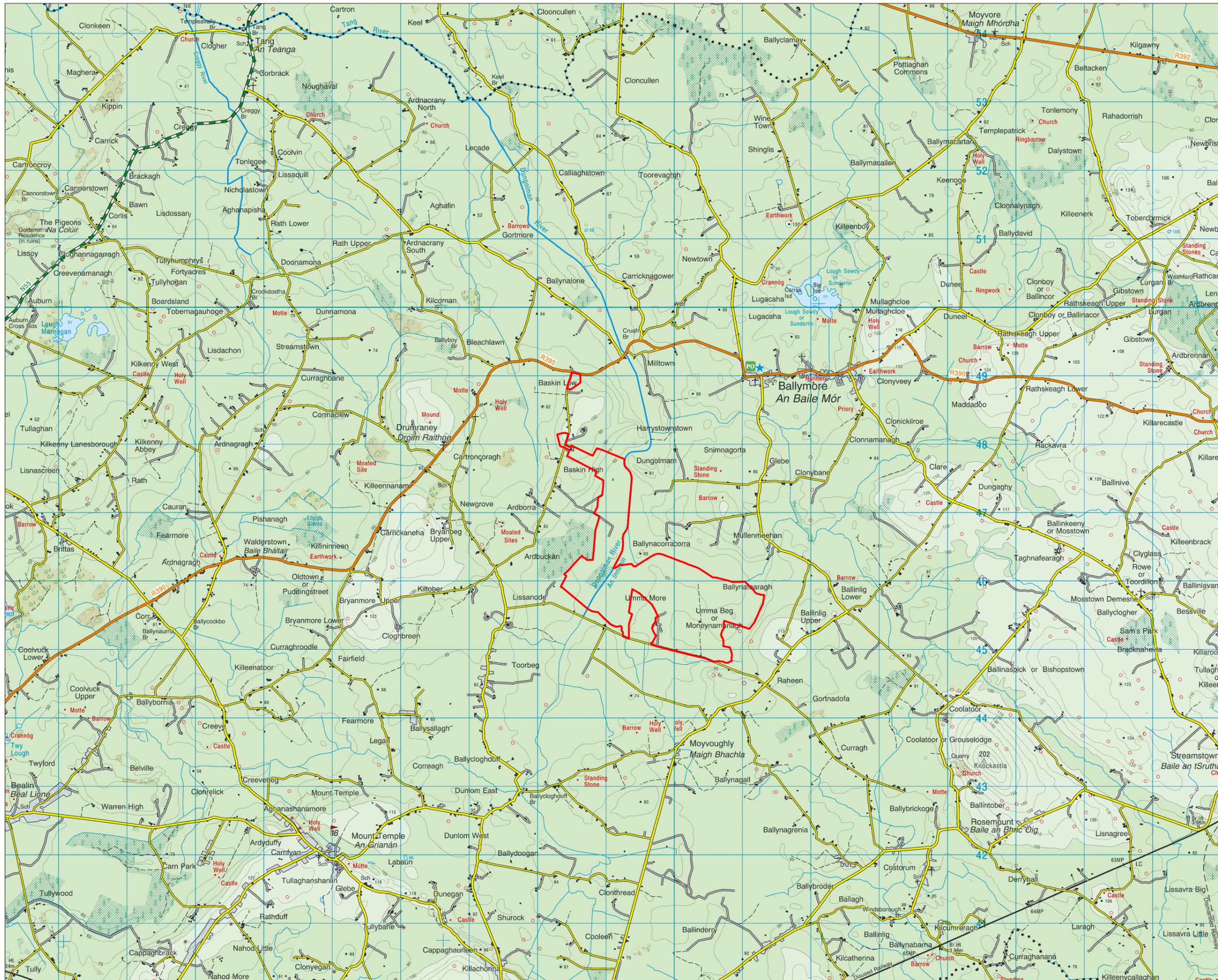
**Umma More Renewable Energy Development,  
Co. Westmeath  
Planning Permission Application Drawings**





# Schedule of Drawings

Drawing No.	Drawing Title	Scale	Page Size
201050 – 01	Location Context Map	1: 50,000	A3
201050 – 02	Site Location Map	1: 20,000	A3
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201050 – 02B	Site Notice Location Map B	1:2,500	A3
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201050 – 02E	Site Notice Location Map E	1:2,500	A3
201050 – 02F	Site Notice Location Map F	1:2,500	A3
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201050 – 05	Site Layout 1:5,000 Sheet 2 of 2	1: 5,000	A1
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201050 – 14	Turbine 2 Layout	1:500	A3
201050 – 15	Turbine 3 Layout	1:500	A3
201050 – 16	Turbine 4 Layout	1:500	A3
201050 – 17	Turbine 5 Layout	1:500	A3
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201050 – 20	Turbine 8 Layout	1:500	A3
201050 – 21	Turbine 9 Layout	1:500	A3
201050 – 22	Temporary Construction Compound	1:500	A3
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201050 – 27	Excavated road section in Site-Specific Flood Modelled Zones	1:50	A3
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Drawing No.	HES Drawings	Scale	Page Size
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D102	Proposed Drainage Layout	1: 2,000	A1
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D104	Proposed Drainage Layout	1: 2,000	A1
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D501	Drainage Details 1	As Shown	A1
D502	Drainage Details 2	As Shown	A1
D503	Drainage Details 3	As Shown	A1



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

**Drawing Legend**

— Planning Application Boundary

**Location Context Map**

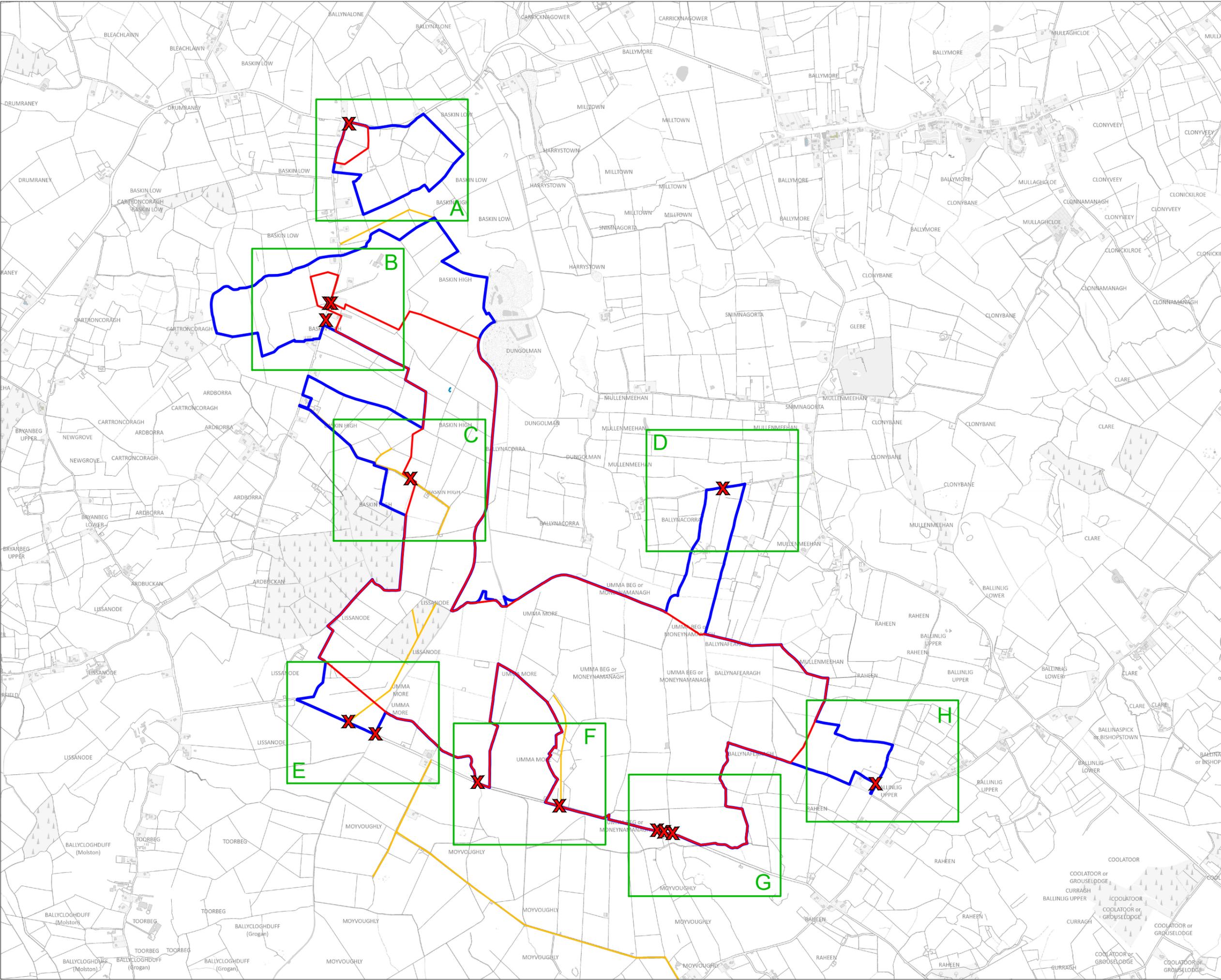
PROJECT TITLE: <b>Umma More Renewable Energy Development, Co. Westmeath</b>	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 01</b>
SCALE: <b>1:50,000 @ A3</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: <b>OS2024, OS2224</b>	



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

**Drawing Legend**

- Planning Application Boundary
- Landowners Boundary
- X Site Notice
- Wayleave

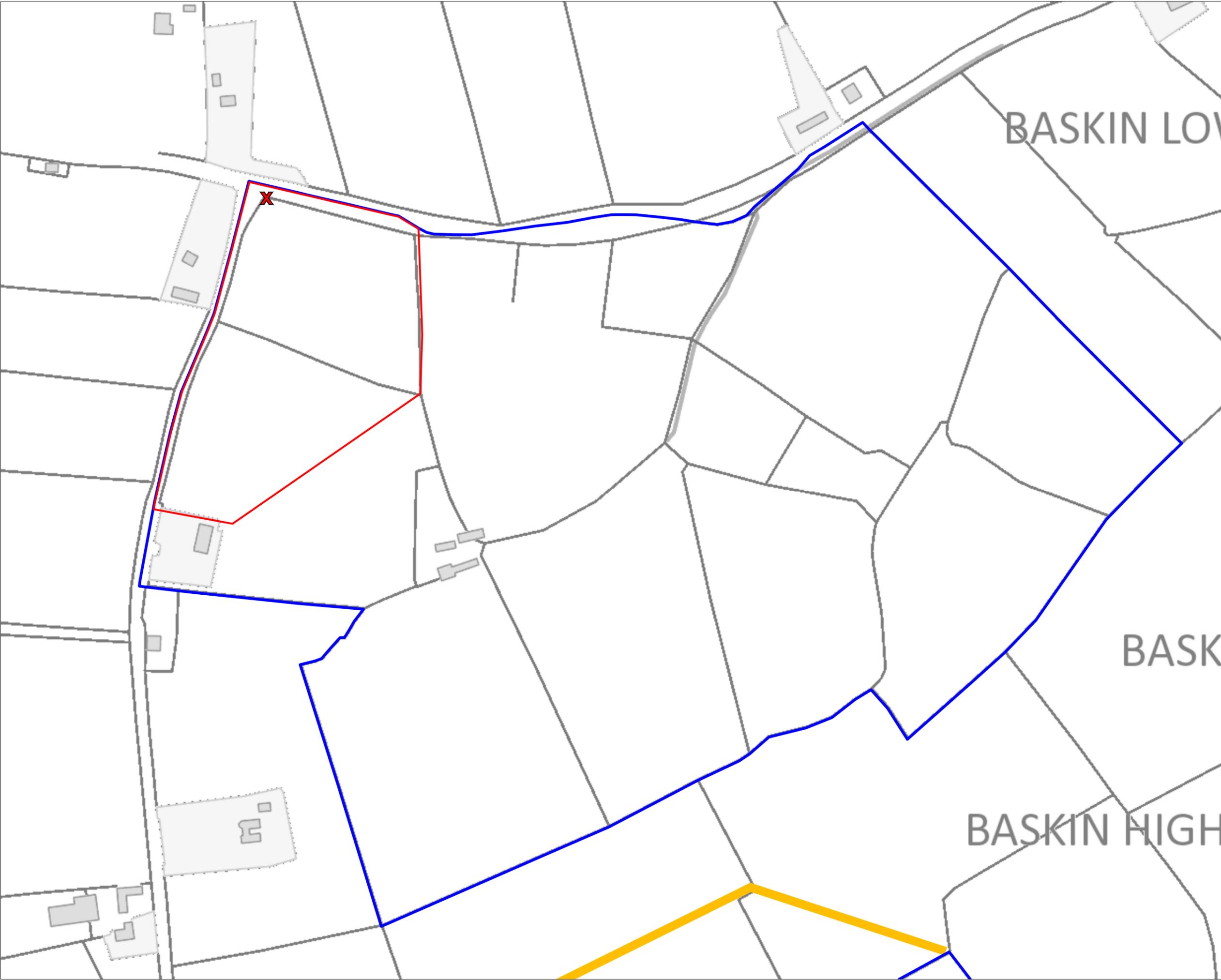


**Site Location Map**

PROJECT TITLE: <b>Umma More Renewable Energy Development, Co. Westmeath</b>	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 02</b>
SCALE: <b>1:20,000 @ A3</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	

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

**Drawing Legend**

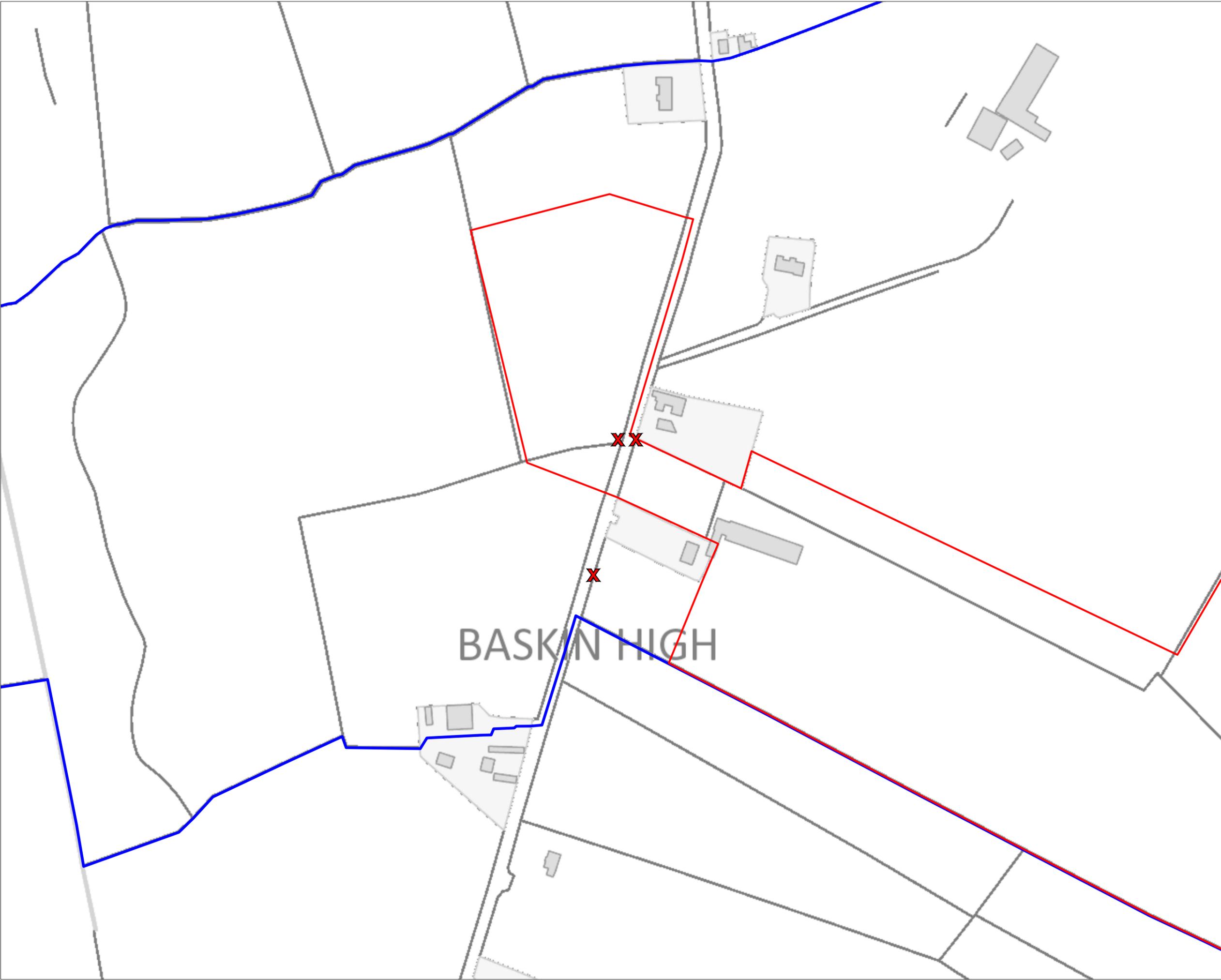
- Planning Application Boundary
- Landowners Boundary
- X Site Notice
- Wayleave



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<b>Site Location Map Sheet A</b>	
<b>Umma More Renewable Energy Development, Co. Westmeath</b>	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 02A</b>
SCALE: <b>1:2,500 @ A3</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	

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

- Drawing Legend**
- Planning Application Boundary
  - Landowners Boundary
  - X Site Notice

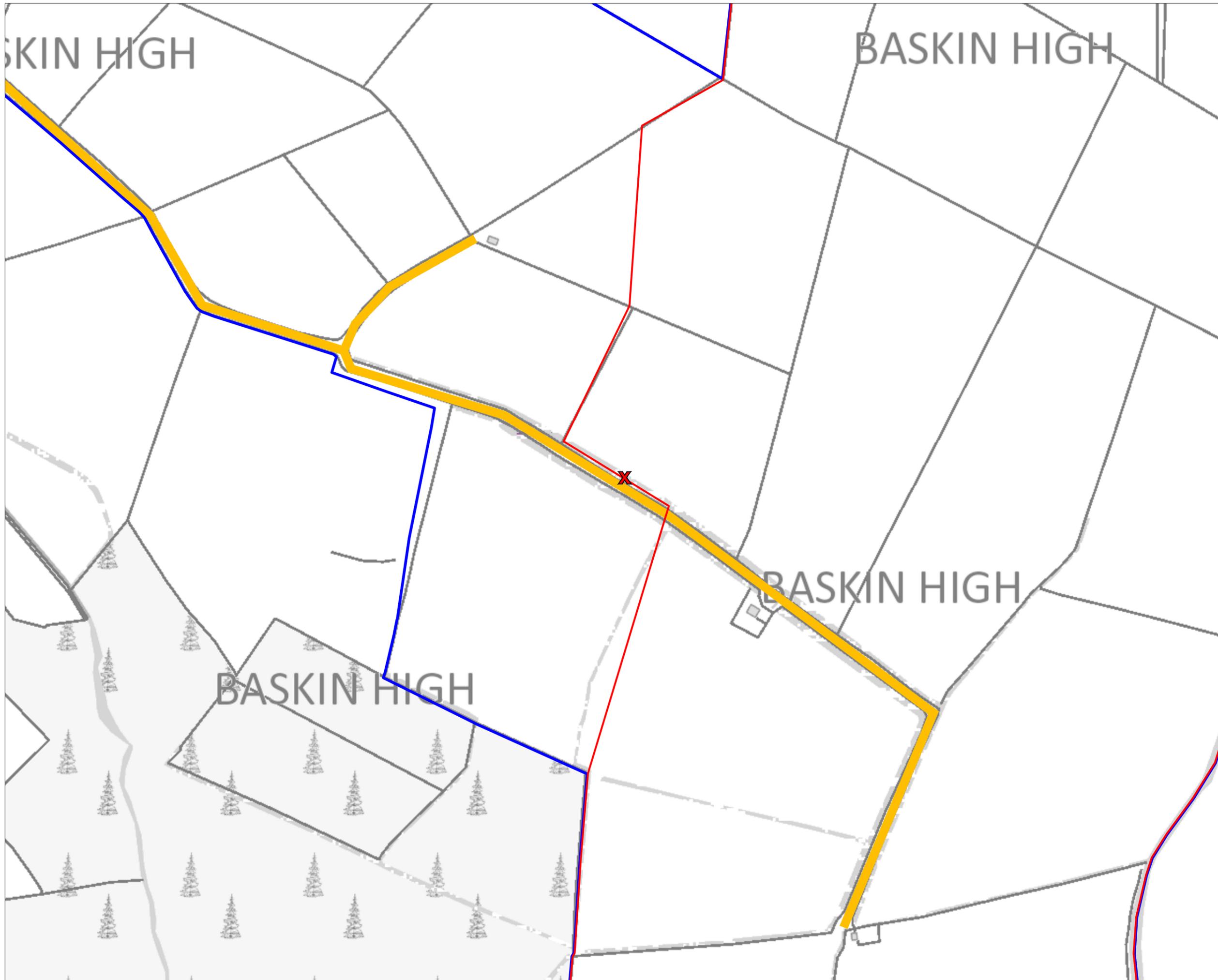


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<b>DRAWING TITLE:</b> <b>Site Location Map Sheet B</b>	
<b>PROJECT TITLE:</b> <b>Umma More Renewable Energy Development, Co. Westmeath</b>	
<b>DRAWING BY:</b> <b>Joseph O'Brien</b>	<b>CHECKED BY:</b> <b>Ellen Costello</b>
<b>PROJECT No.:</b> <b>201050</b>	<b>DRAWING No.:</b> <b>201050 - 02B</b>
<b>SCALE:</b> <b>1:2,500 @ A3</b>	<b>DATE:</b> <b>02.03.2023</b>
<b>OS SHEET No.:</b> 2900, 2901, 2969, 2970	



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

**Drawing Legend**

- Planning Application Boundary
- Landowners Boundary
- X Site Notice
- Wayleave

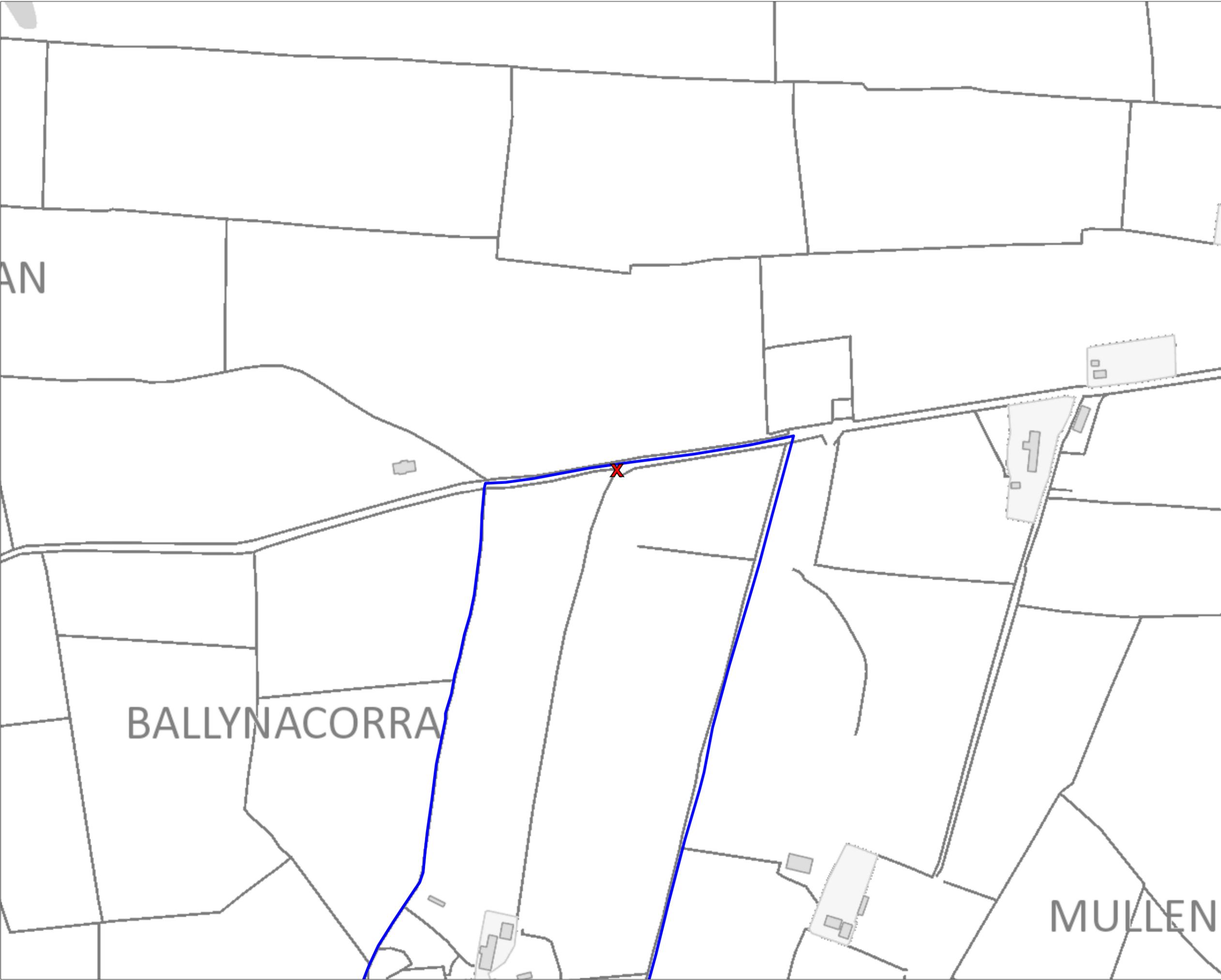
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**Site Location Map Sheet C**

**PROJECT TITLE:**  
Umma More Renewable Energy Development, Co. Westmeath

<b>DRAWING BY:</b> Joseph O'Brien	<b>CHECKED BY:</b> Ellen Costello
<b>PROJECT No.:</b> 201050	<b>DRAWING No.:</b> 201050 - 02C
<b>SCALE:</b> 1:2,500 @ A3	<b>DATE:</b> 02.03.2023
<b>OS SHEET No.:</b> 2900, 2901, 2969, 2970	

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

- Drawing Legend**
-  Landowners Boundary
  -  Site Notice



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**Site Location Map Sheet D**

**Umma More Renewable Energy Development, Co. Westmeath**

DRAWING BY: **Joseph O'Brien** CHECKED BY: **Ellen Costello**

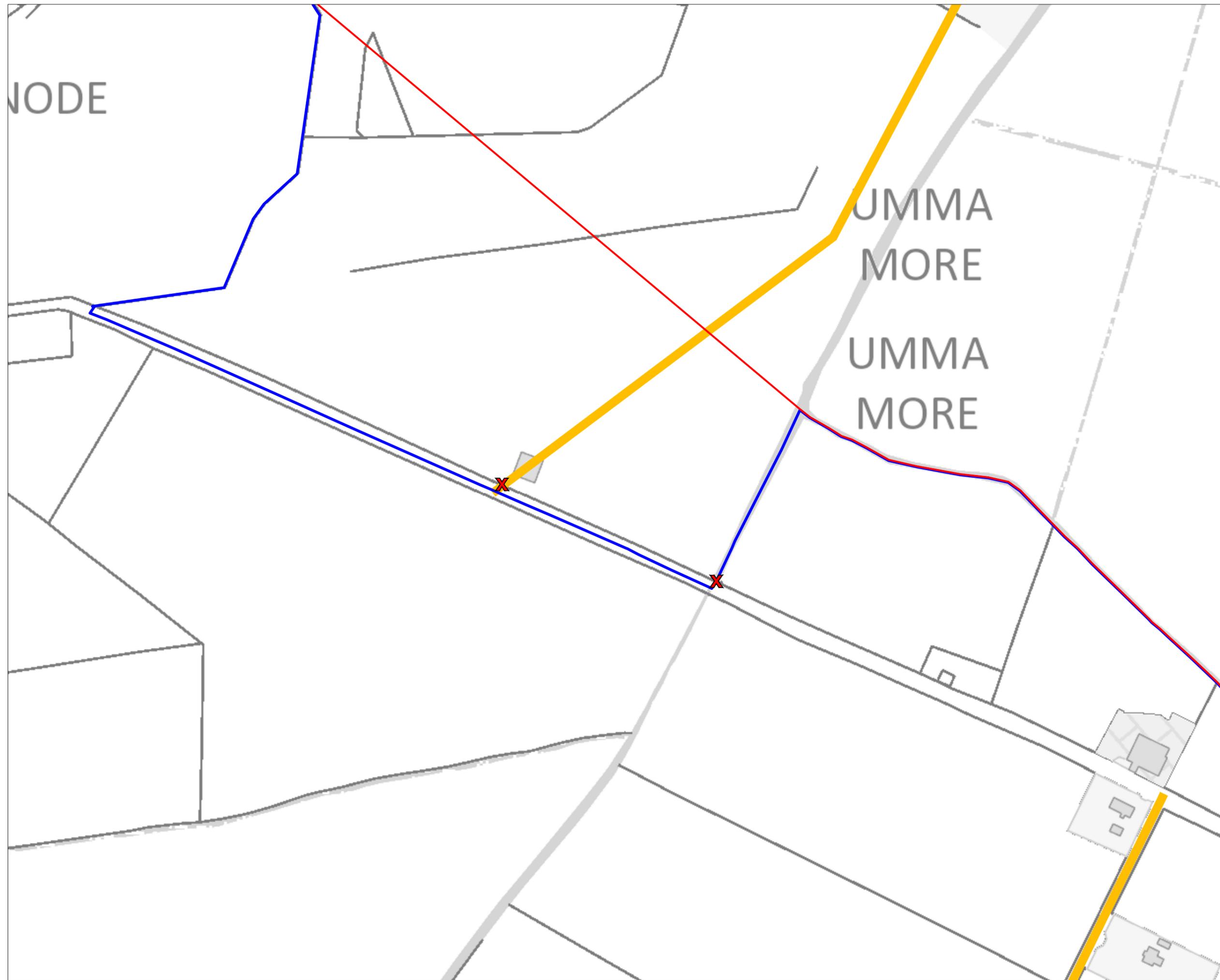
PROJECT No.: **201050** DRAWING No.: **201050 - 02D**

SCALE: **1:2,500 @ A3** DATE: **02.03.2023**

OS SHEET No.: **2900, 2901, 2969, 2970**



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NODE

UMMA  
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UMMA  
MORE

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

**Drawing Legend**

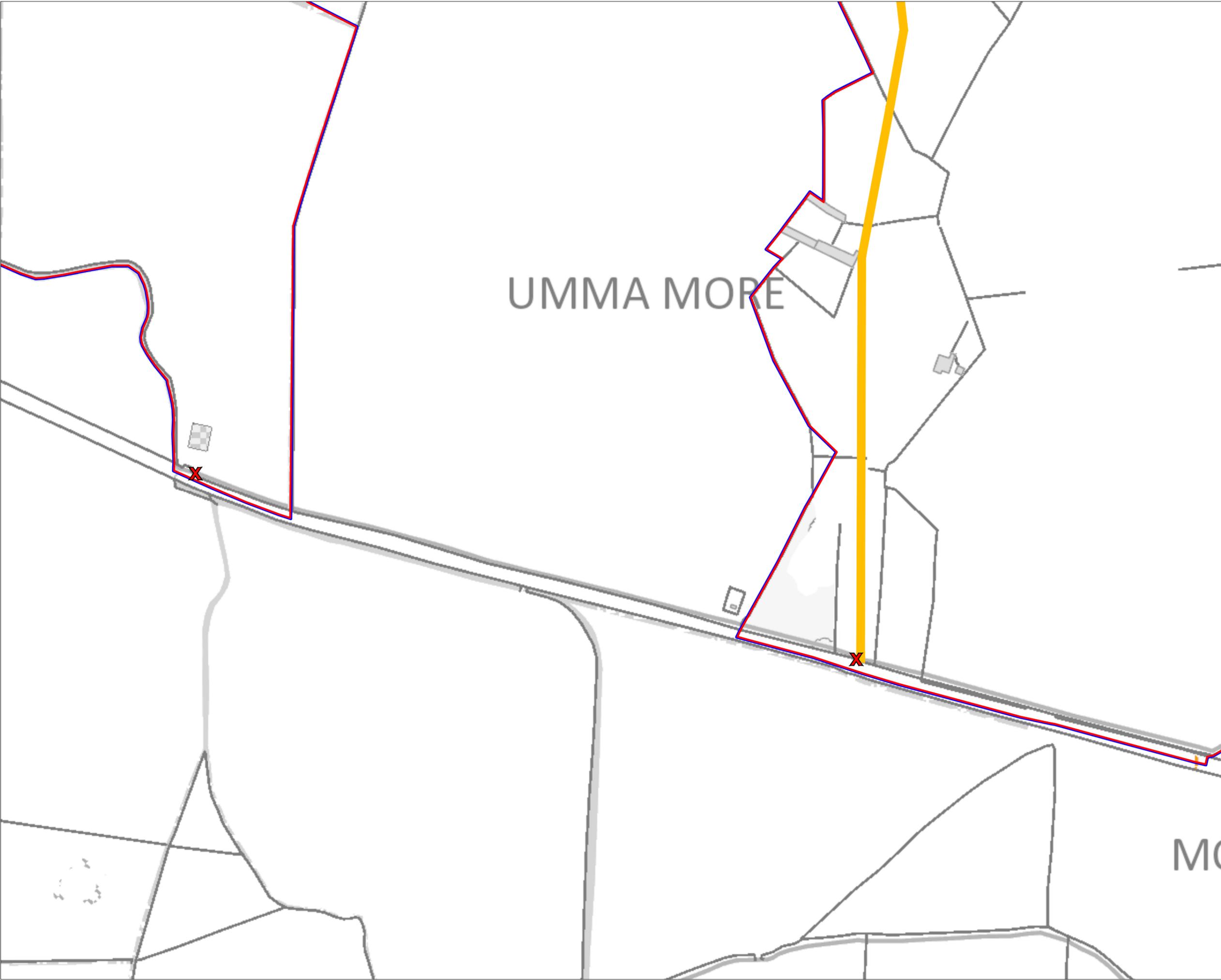
- Planning Application Boundary
- Landowners Boundary
- X Site Notice
- Wayleave



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<b>Site Location Map Sheet E</b>	
<b>Umma More Renewable Energy Development, Co. Westmeath</b>	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 02E</b>
SCALE: <b>1:2,500 @ A3</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	

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**Drawing Legend**

- Planning Application Boundary
- Landowners Boundary
- X Site Notice
- Wayleave



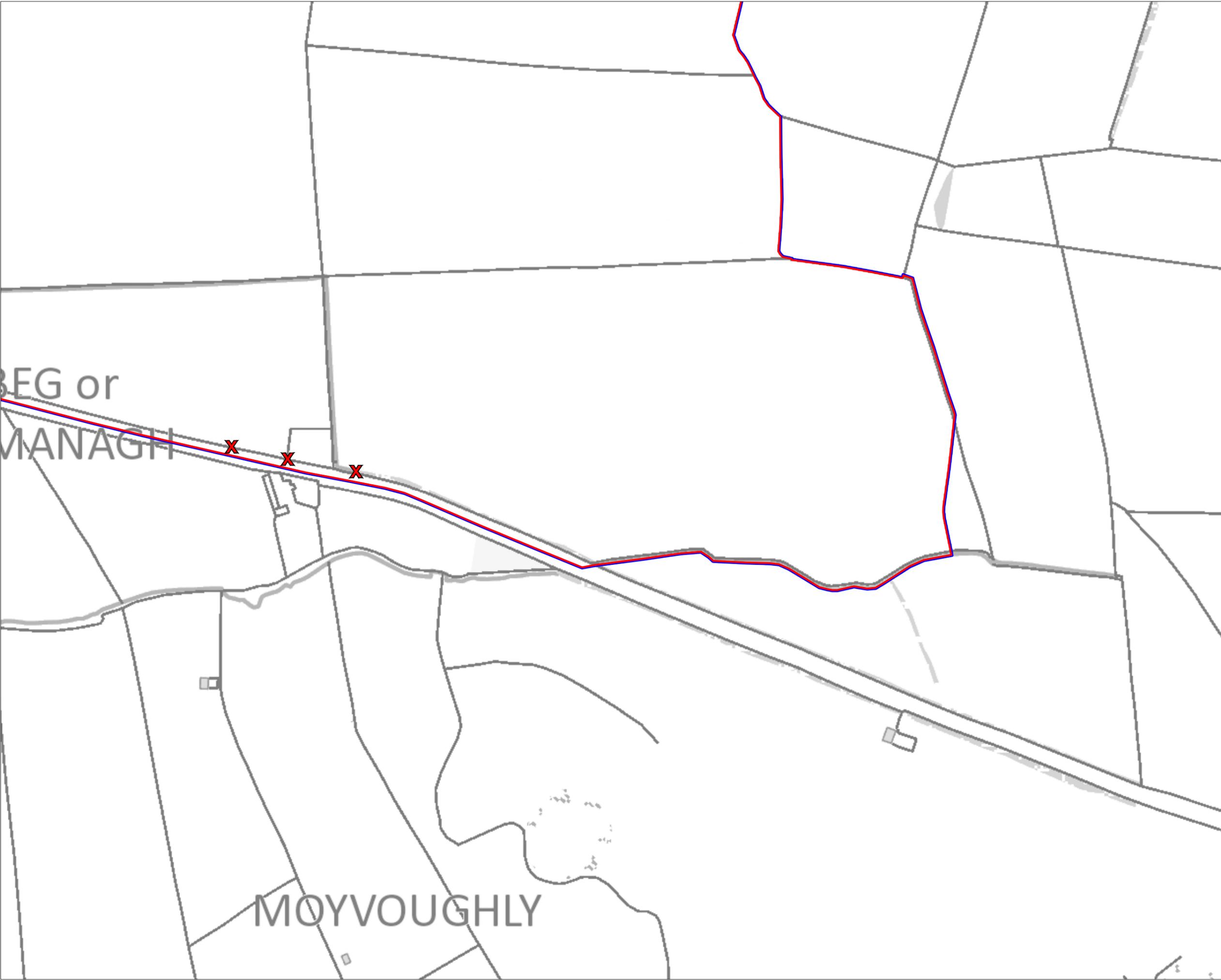
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**Site Location Map Sheet F**

**Umma More Renewable Energy Development, Co. Westmeath**

DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 02F</b>
SCALE: <b>1:2,500 @ A3</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	

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- Drawing Legend**
- Planning Application Boundary
  - Landowners Boundary
  - X Site Notice

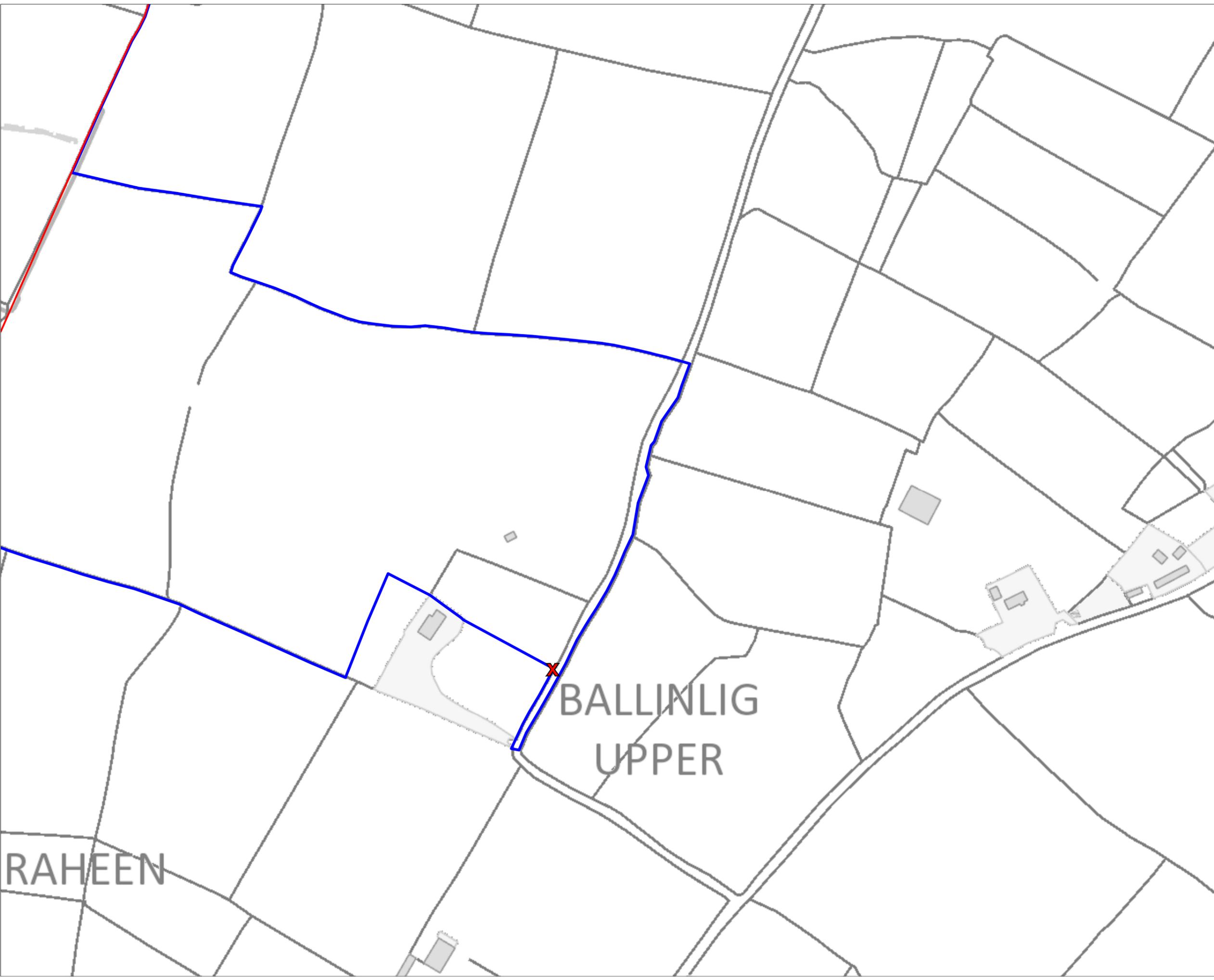


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<b>DRAWING TITLE:</b> Site Location Map Sheet G	
<b>PROJECT TITLE:</b> Umma More Renewable Energy Development, Co. Westmeath	
<b>DRAWING BY:</b> Joseph O'Brien	<b>CHECKED BY:</b> Ellen Costello
<b>PROJECT No.:</b> 201050	<b>DRAWING No.:</b> 201050 - 02G
<b>SCALE:</b> 1:2,500 @ A3	<b>DATE:</b> 02.03.2023
<b>OS SHEET No.:</b> 2900, 2901, 2969, 2970	



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**Drawing Legend**

- Planning Application Boundary
- Landowners Boundary
- X Site Notice



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**Site Location Map Sheet H**

**Umma More Renewable Energy Development, Co. Westmeath**

DRAWING BY: **Joseph O Brien** CHECKED BY: **Ellen Costello**

PROJECT No.: **201050** DRAWING No.: **201050 - 02H**

SCALE: **1:2,500 @ A3** DATE: **02.03.2023**

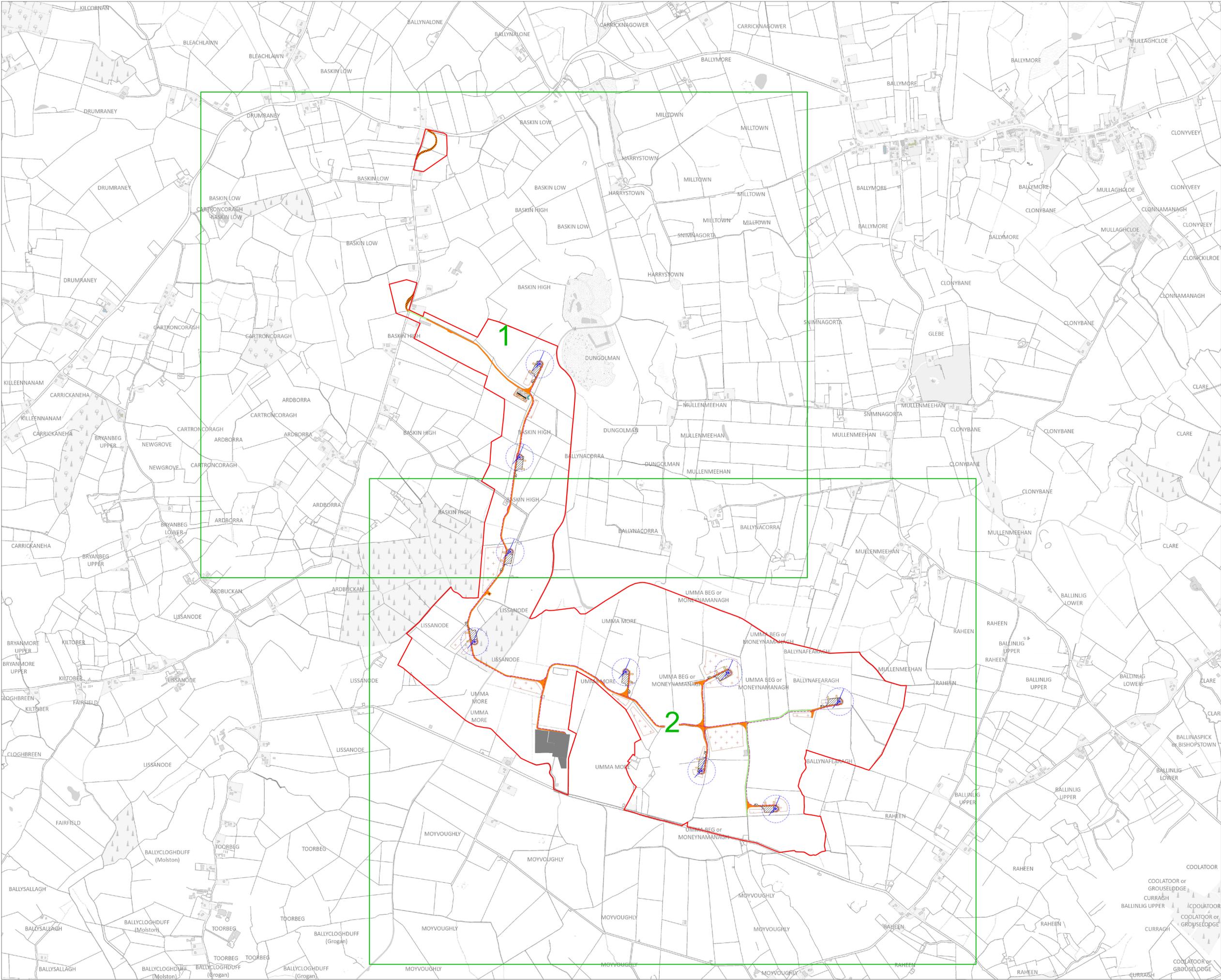
OS SHEET No.: **2900, 2901, 2969, 2970**



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BALLINLIG  
UPPER



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

- Drawing Legend**
- Planning Application Boundary
  - Existing Road to be Upgraded
  - Proposed New Road
  - Temporary New Road (to facilitate delivery of abnormal loads)
  - Internal Electrical Cabling Trench
  - Assembly Areas
  - Crane Pad Hardstanding Area
  - Turbine Foundation
  - Proposed Max. Turbine Sweep Area
  - Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
  - Cut
  - Fill



**DRAWING TITLE:**  
**Site Layout Key Plan (1:5,000)**

**PROJECT TITLE:**  
**Umma More Renewable Energy Development, Co. Westmeath**

**DRAWING BY:** Joseph O'Brien      **CHECKED BY:** Ellen Costello

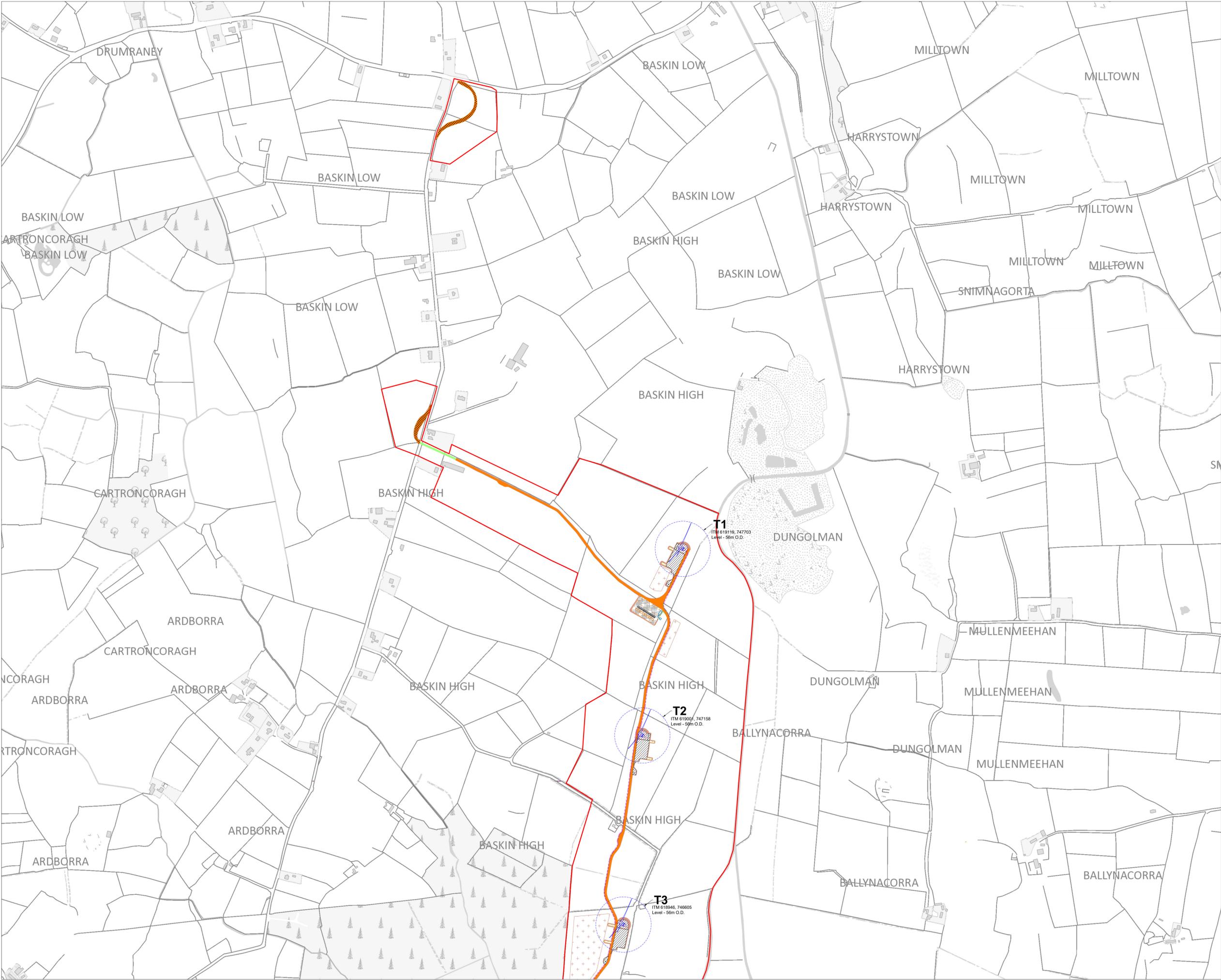
**PROJECT No.:** 201050      **DRAWING No.:** 201050 - 03

**SCALE:** 1:10,000 @ A1      **DATE:** 02.03.2023

**OS SHEET No.:** 2900, 2901, 2969, 2970

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**Drawing Legend**

- Planning Application Boundary
- Existing Road to be Upgraded
- Proposed New Road
- Temporary New Road (to facilitate delivery of abnormal loads)
- Internal Electrical Cabling Trench
- Assembly Areas
- Crane Pad Hardstanding Area
- Turbine Foundation
- Proposed Max. Turbine Sweep Area
- + Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
- Cut
- Fill



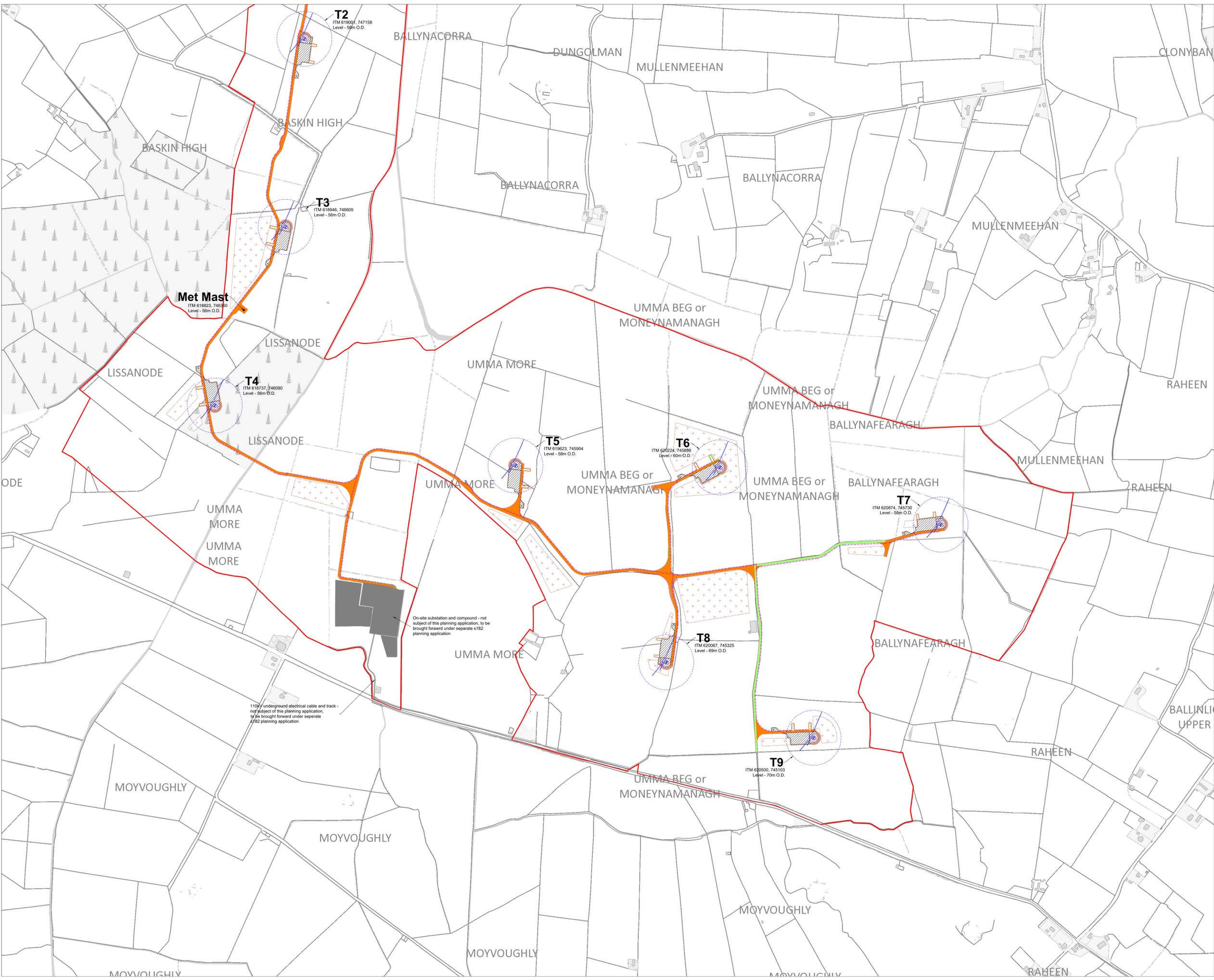
DRAWING TITLE:  
**Site Layout 1:5,000  
Sheet 1 of 2**

PROJECT TITLE:  
**Umma More Renewable Energy  
Development, Co. Westmeath**

DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 04</b>
SCALE: <b>1:5,000 @ A1</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	

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

**Drawing Legend**

	Planning Application Boundary
	Existing Road to be Upgraded
	Proposed New Road
	Internal Electrical Cabling Trench
	Assembly Areas
	Crane Pad Hardstanding Area
	Turbine Foundation
	Proposed Max. Turbine Sweep Area
	Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
	Cut
	Fill

On-site substation and compound - not subject of this planning application, to be brought forward under separate s182 planning application

110kV underground electrical cable and track - not subject of this planning application, to be brought forward under separate s182 planning application



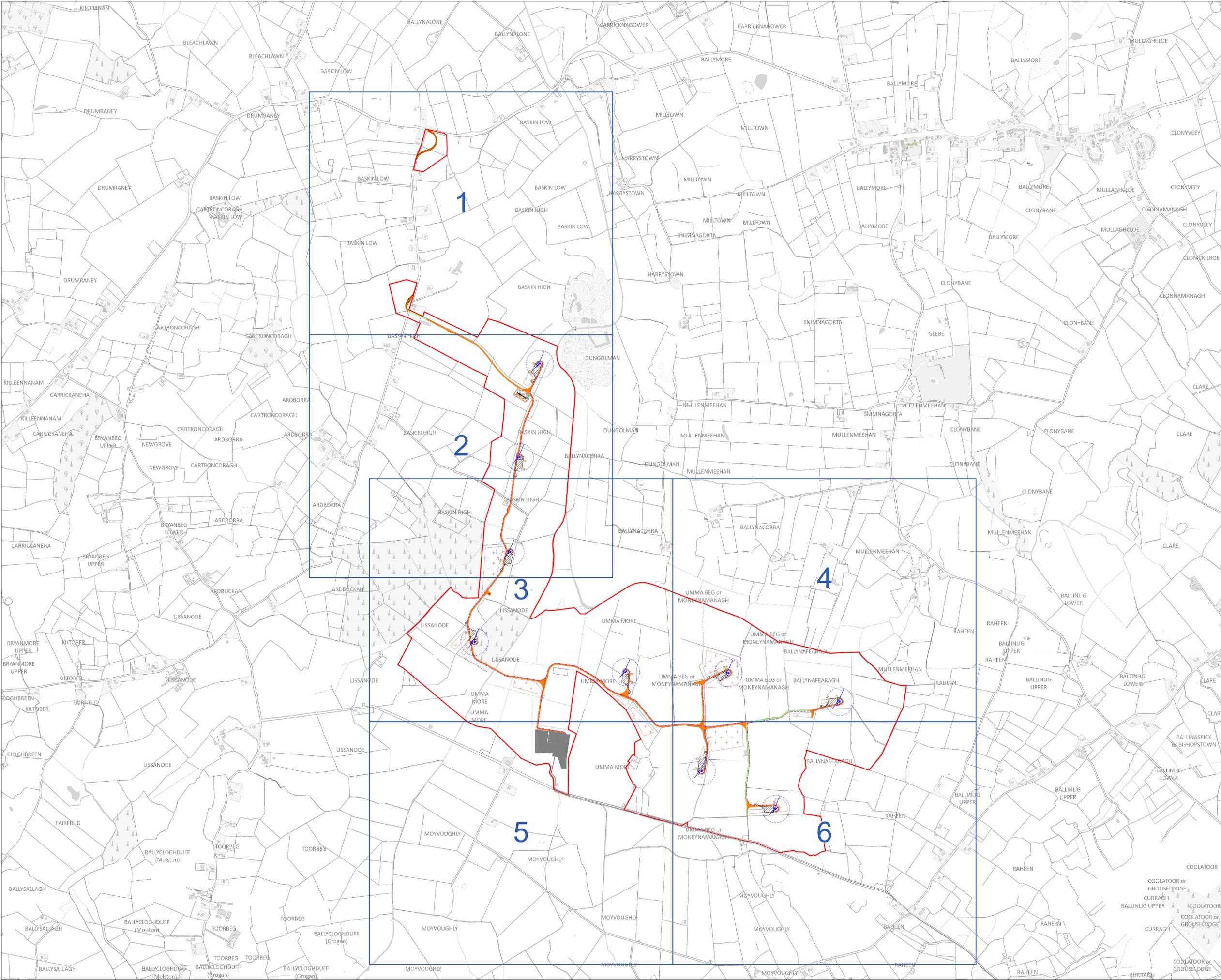
DRAWING TITLE:  
**Site Layout 1:5,000  
Sheet 2 of 2**

PROJECT TITLE:  
**Umma More Renewable Energy  
Development, Co. Westmeath**

DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 05</b>
SCALE: <b>1:5,000 @ A1</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	

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

- Drawing Legend**
- Planning Application Boundary
  - Existing Road to be Upgraded
  - Proposed New Road
  - Temporary New Road (to facilitate delivery of abnormal loads)
  - Internal Electrical Cabling Trench
  - Assembly Areas
  - Crane Pad Hardstanding Area
  - Turbine Foundation
  - Proposed Max. Turbine Sweep Area
  - Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
  - Cut
  - Fill



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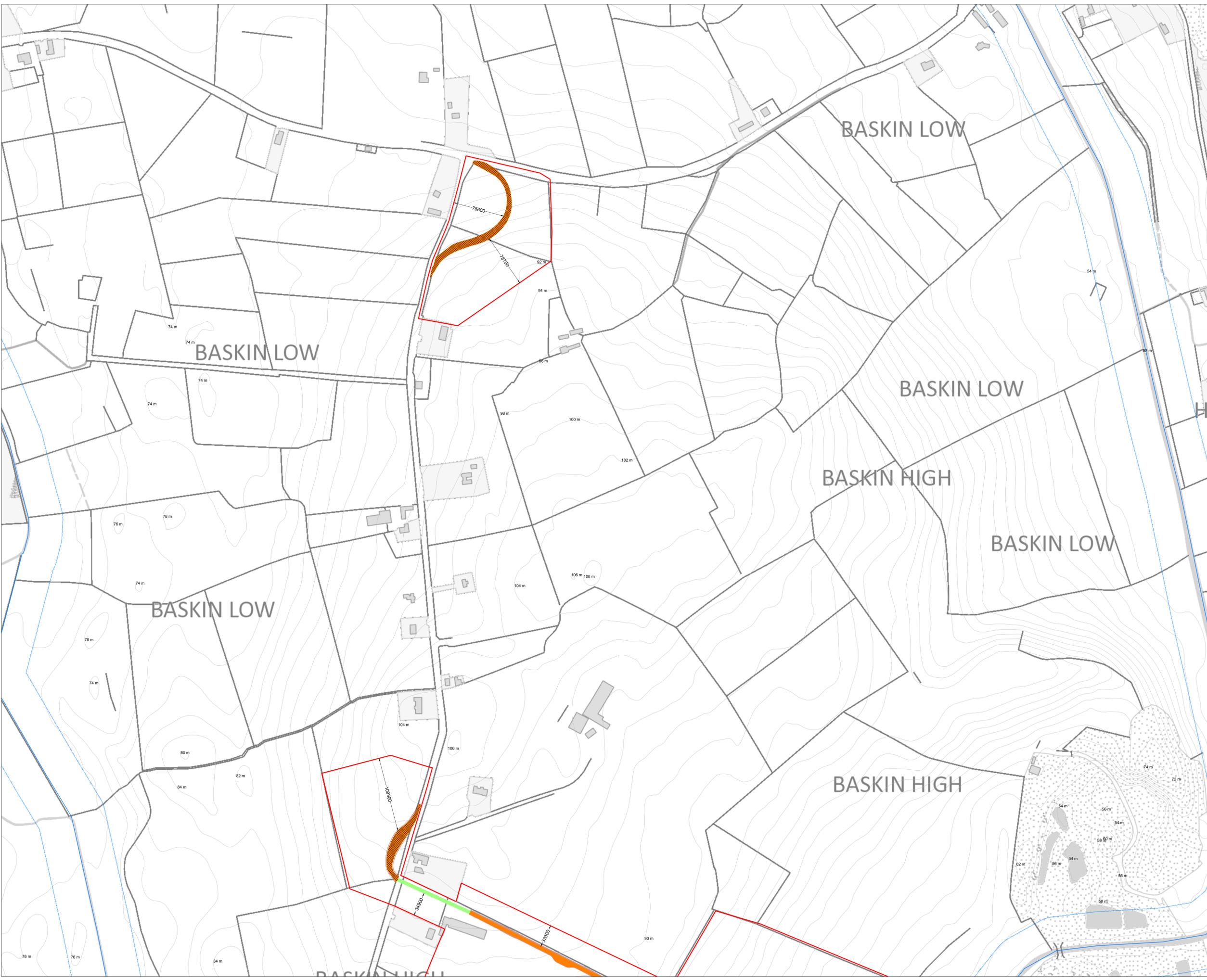
**DRAWING TITLE:**  
**Site Layout Key Plan**  
**(1:2,500)**

**PROJECT TITLE:**  
**Umma More Renewable Energy Development, Co. Westmeath**

<b>DRAWING BY:</b> Joseph O'Brien	<b>CHECKED BY:</b> Ellen Costello
<b>PROJECT No.:</b> 201050	<b>DRAWING No.:</b> 201050 - 06
<b>SCALE:</b> 1:10,000 @ A1	<b>DATE:</b> 02.03.2023
<b>OS SHEET No.:</b> 2900, 2901, 2969, 2970	

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



- Drawing Legend**
- Planning Application Boundary
  - Existing Road to be Upgraded
  - Proposed New Road
  - Temporary New Road (to facilitate delivery of abnormal loads)
  - Watercourse
  - Watercourse 50m Buffer
  - Cut
  - Fill

DRAWING TITLE:  
**Site Layout 1:2,500  
Sheet 1 of 6**

PROJECT TITLE:  
**Umma More Renewable Energy  
Development, Co. Westmeath**

DRAWING BY: **Joseph O'Brien**      CHECKED BY: **Ellen Costello**

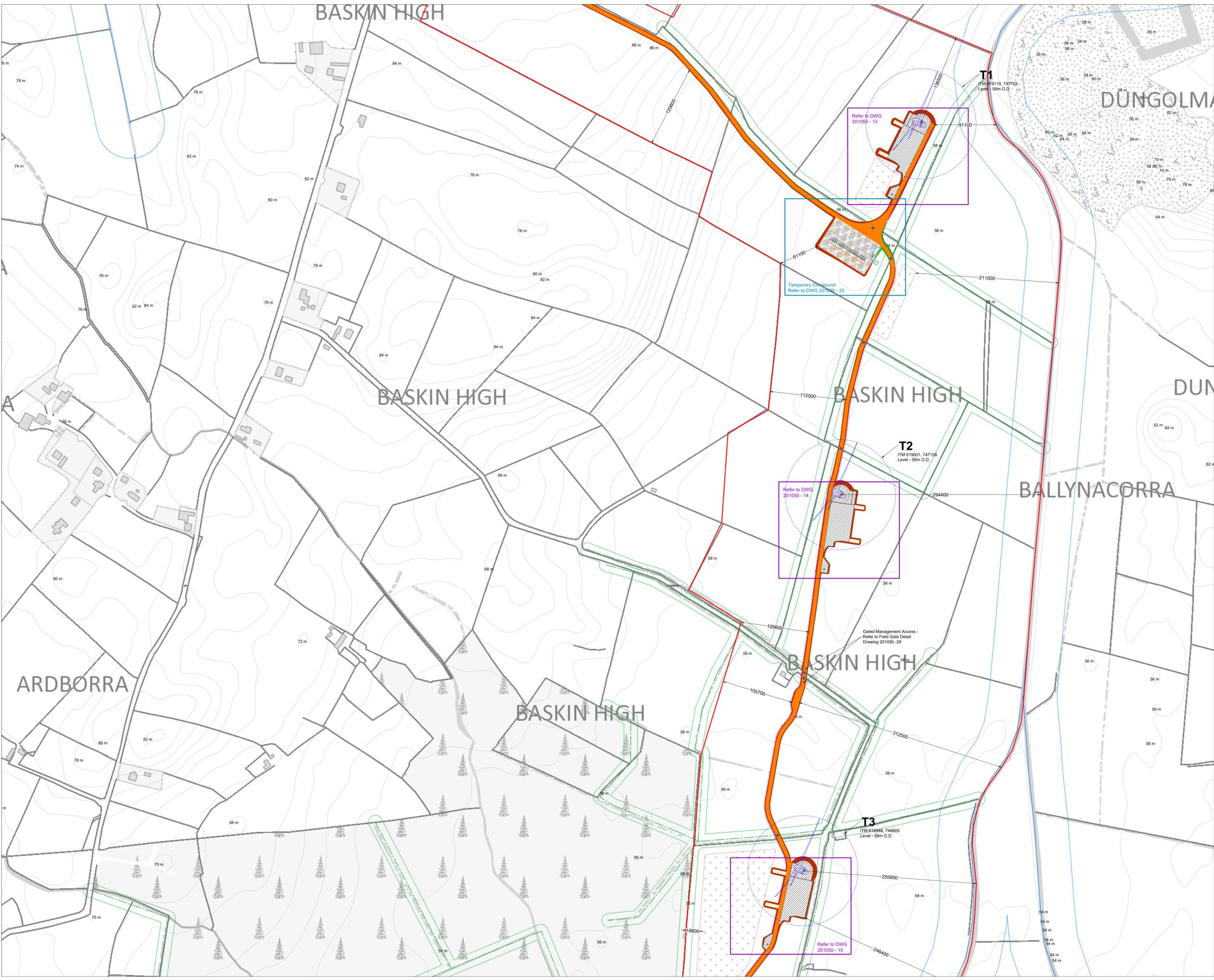
PROJECT No.: **201050**      DRAWING No.: **201050 - 07**

SCALE: **1:2,500 @ A1**      DATE: **02.03.2023**

OS SHEET No.: 2900, 2901, 2969, 2970

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

**Drawing Legend**

	Planning Application Boundary
	Proposed New Road
	Internal Electrical Cabling Trench
	Crane Pad Hardstanding Area
	Turbine Foundation
	Proposed Max. Turbine Sweep Area
	Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIA)
	Culvert Crossing (Refer to HES Drawings)
	Watercourse
	Watercourse 50m Buffer
	Drains
	Drain 10m Buffer
	Cut
	Fill

DRAWING TITLE:  
**Site Layout 1:2,500**  
**Sheet 2 of 6**

PROJECT TITLE:  
**Umma More Renewable Energy Development, Co. Westmeath**

DRAWING BY: **Joseph O'Brien**      CHECKED BY: **Ellen Costello**

PROJECT No.: **201050**      DRAWING No.: **201050 - 08**

SCALE: **1:2,500 @ A1**      DATE: **02.03.2023**

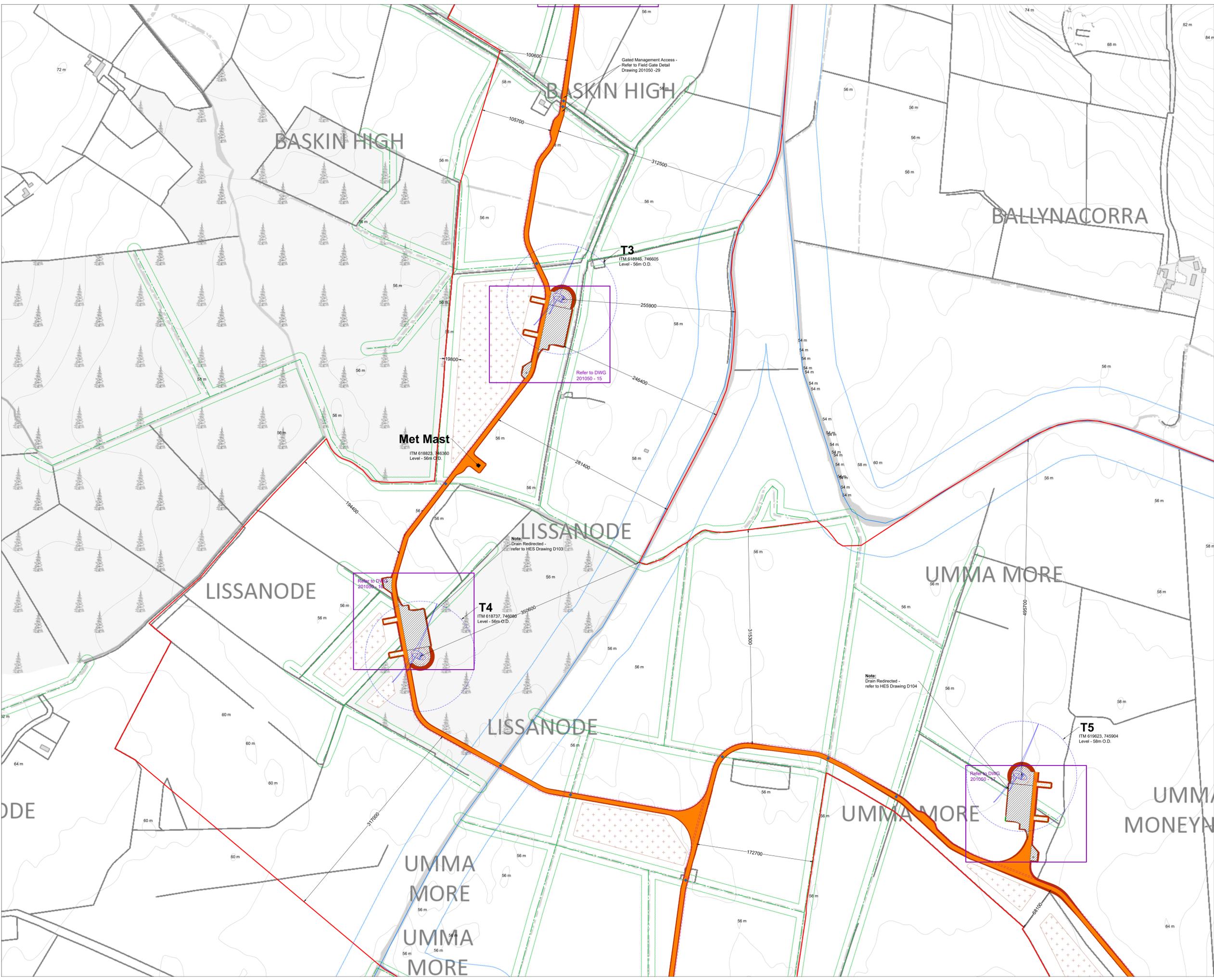
OS SHEET No.: 2900, 2901, 2969, 2970



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

**Drawing Legend**

	Planning Application Boundary
	Proposed New Road
	Internal Electrical Cabling Trench
	Assembly Areas
	Crane Pad Hardstanding Area
	Turbine Foundation
	Proposed Max. Turbine Sweep Area
	Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
	Culvert Crossing (Refer to HES Drawings)
	Watercourse
	Watercourse 50m Buffer
	Drains
	Drain 10m Buffer
	Cut
	Fill

N

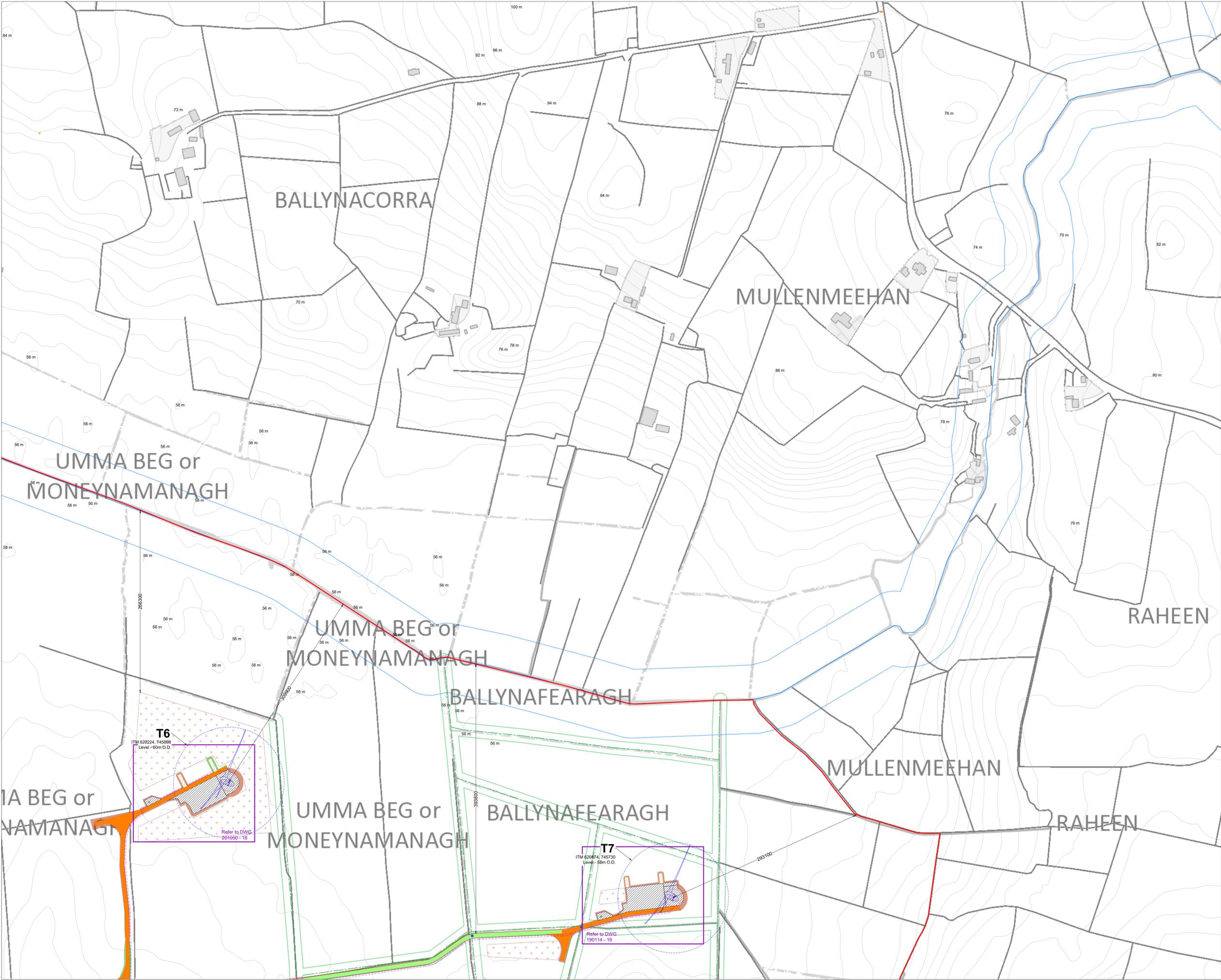
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DRAWING TITLE:  
**Site Layout 1:2,500**  
**Sheet 3 of 6**

PROJECT TITLE:  
**Umma More Renewable Energy Development, Co. Westmeath**

DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 09</b>
SCALE: <b>1:2,500 @ A1</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	

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

- Drawing Legend**
- Planning Application Boundary
  - Proposed New Road
  - - - Internal Electrical Cabling Trench
  - ▨ Assembly Areas
  - ▨ Crane Pad Hardstanding Area
  - Turbine Foundation
  - Proposed Max. Turbine Sweep Area
  - + + Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
  - ◆ Culvert Crossing (Refer to HES Drawings)
  - Watercourse
  - Watercourse 50m Buffer
  - Drains
  - Drain 10m Buffer
  - Cut
  - Fill



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DRAWING TITLE:  
**Site Layout 1:2,500**  
**Sheet 4 of 6**

PROJECT TITLE:  
**Umma More Renewable Energy Development, Co. Westmeath**

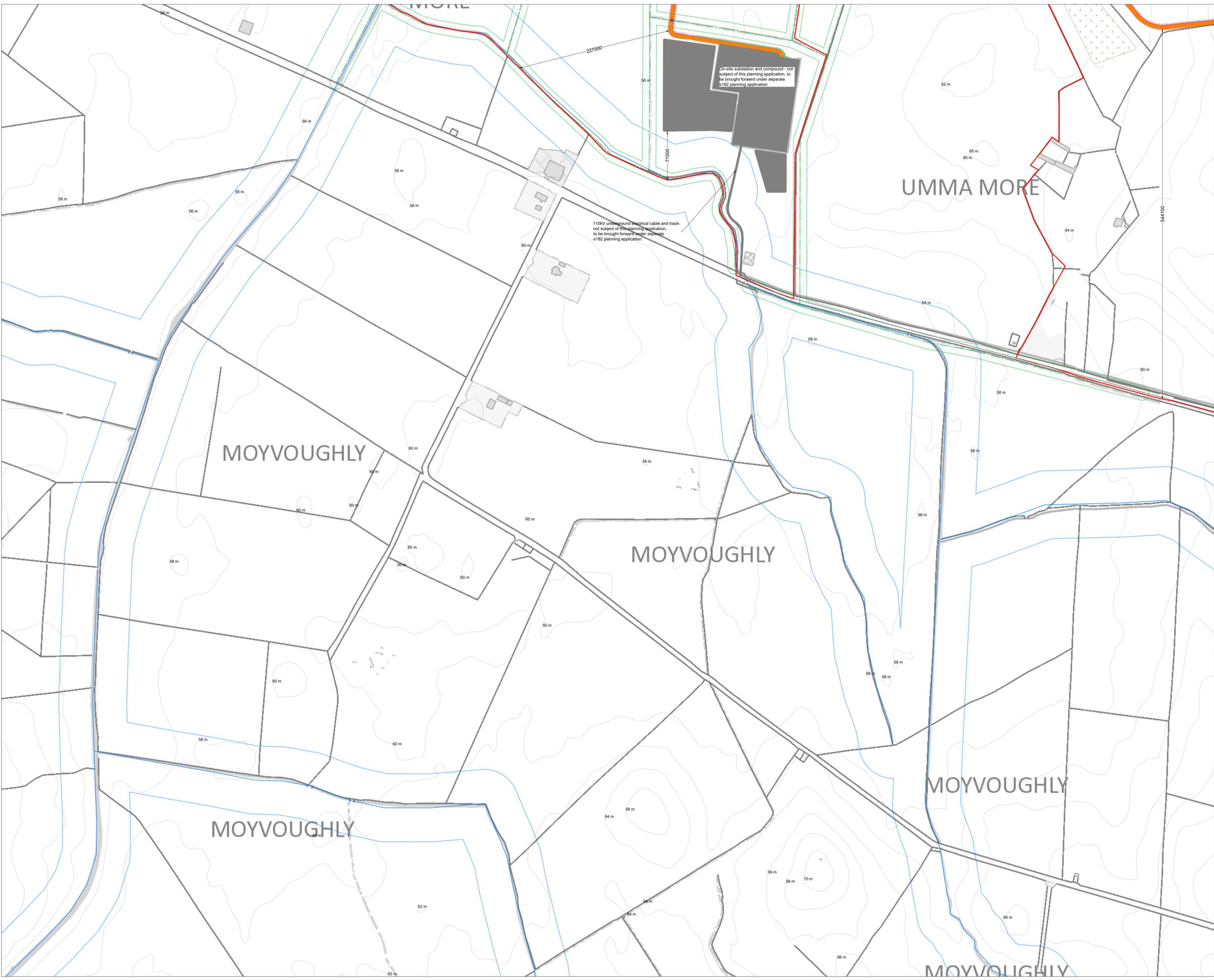
DRAWING BY: **Joseph O'Brien** CHECKED BY: **Ellen Costello**

PROJECT No.: **201050** DRAWING No.: **201050 - 10**

SCALE: **1:2,500 @ A1** DATE: **02.03.2023**

OS SHEET No.: 2900, 2901, 2969, 2970

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

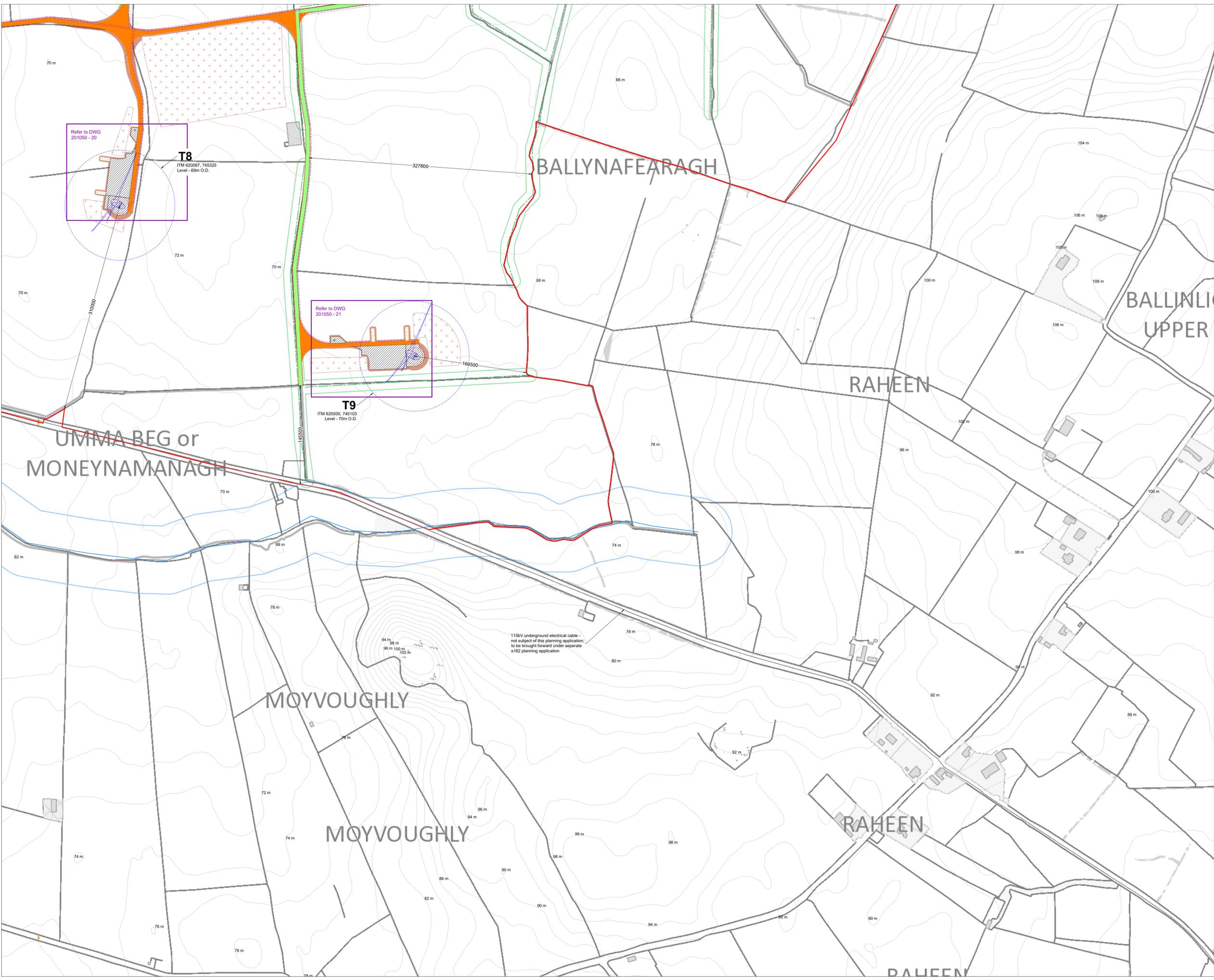
- Drawing Legend**
- Planning Application Boundary
  - Proposed New Road
  - Internal Electrical Cabling Trench
  - + Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
  - ◆ Culvert Crossing (Refer to HES Drawings)
  - Watercourse
  - Watercourse 50m Buffer
  - Drains
  - Drain 10m Buffer
  - Cut
  - Fill



DRAWING TITLE: <b>Site Layout 1:2,500 Sheet 5 of 6</b>	
PROJECT TITLE: <b>Umma More Renewable Energy Development, Co. Westmeath</b>	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Eileen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 11</b>
SCALE: <b>1:2,500 @ A1</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	

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

- Drawing Legend**
- Planning Application Boundary
  - Existing Road to be Upgraded
  - Proposed New Road
  - Internal Electrical Cabling Trench
  - Assembly Areas
  - Crane Pad Hardstanding Area
  - Turbine Foundation
  - Proposed Max. Turbine Sweep Area
  - Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
  - Watercourse
  - Watercourse 50m Buffer
  - Drains
  - Drain 10m Buffer
  - Cut
  - Fill



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<b>DRAWING TITLE:</b> <b>Site Layout 1:2,500</b> <b>Sheet 6 of 6</b>	
<b>PROJECT TITLE:</b> <b>Umma More Renewable Energy Development, Co. Westmeath</b>	
<b>DRAWING BY:</b> <b>Joseph O'Brien</b>	<b>CHECKED BY:</b> <b>Ellen Costello</b>
<b>PROJECT No.:</b> <b>201050</b>	<b>DRAWING No.:</b> <b>201050 - 12</b>
<b>SCALE:</b> <b>1:2,500 @ A1</b>	<b>DATE:</b> <b>02.03.2023</b>
<b>OS SHEET No.:</b> 2900, 2901, 2969, 2970	

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



**T1**  
 ITM 619119, 747703  
 Level - 56m O.D.

**Drawing Legend**

	Proposed New Road
	Assembly Areas
	Crane Pad Hardstanding Area
	Turbine Foundation
	Proposed Max. Turbine Sweep Area
	Internal Electrical Cabling Trench
	Spill Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
	Watercourse 50m Buffer
	Drains
	Drain 10m Buffer
	Cut
	Fill



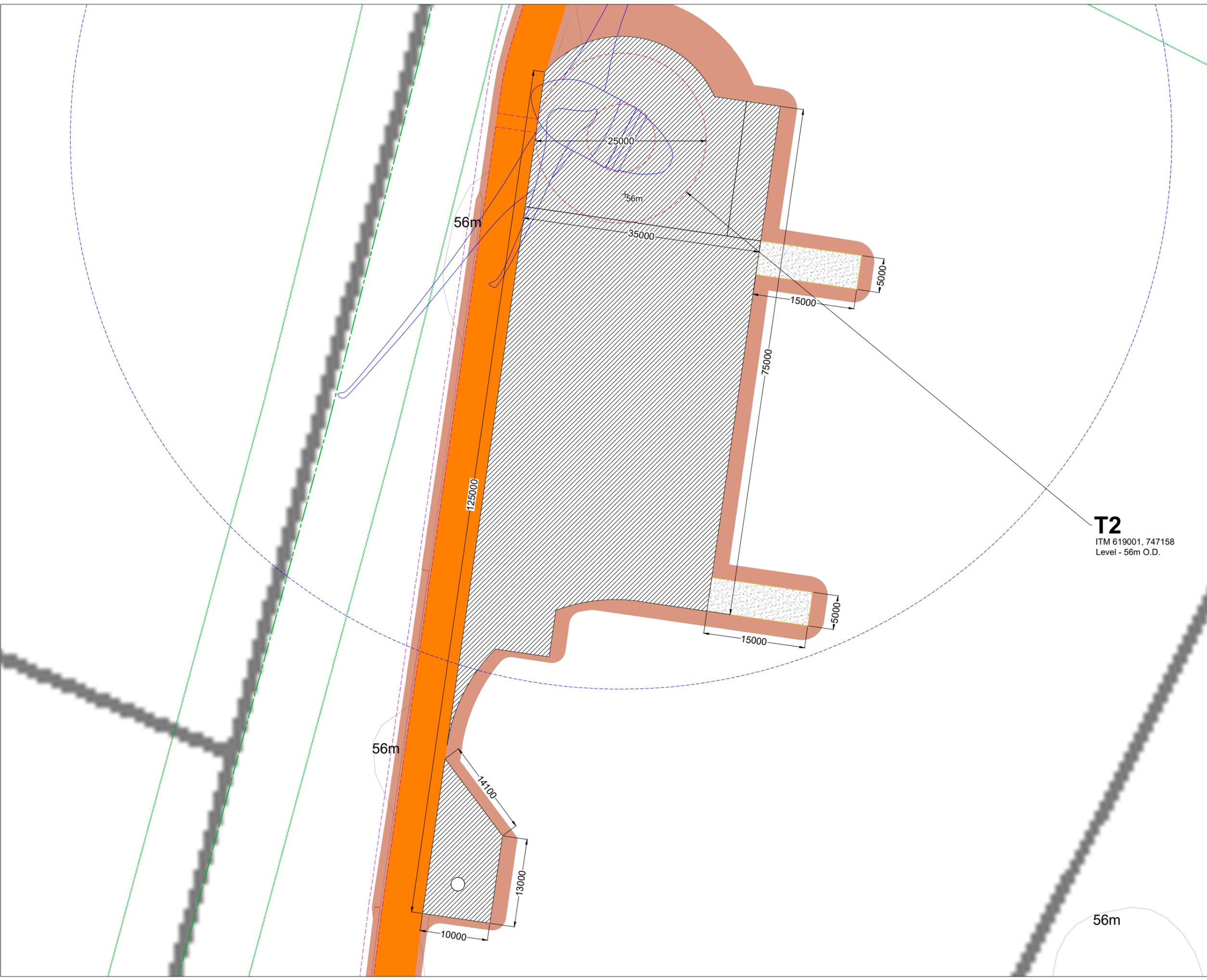
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**DRAWING TITLE:**  
**Turbine 1 Layout**

**PROJECT TITLE:**  
**Umma More Renewable Energy Development, Co. Westmeath**

<b>DRAWING BY:</b> Joseph O'Brien	<b>CHECKED BY:</b> Ellen Costello
<b>PROJECT No.:</b> 201050	<b>DRAWING No.:</b> 201050 - 13
<b>SCALE:</b> 1:500 @ A3	<b>DATE:</b> 02.03.2023
<b>OS SHEET No.:</b> 2900, 2901, 2969, 2970	

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

- Drawing Legend**
- Proposed New Road
  - Assembly Areas
  - Crane Pad Hardstanding Area
  - Turbine Foundation
  - Proposed Max. Turbine Sweep Area
  - Internal Electrical Cabling Trench
  - Drains
  - Drain 10m Buffer
  - Cut
  - Fill

**T2**  
ITM 619001, 747158  
Level - 56m O.D.



**DRAWING TITLE:**  
**Turbine 2 Layout**

**PROJECT TITLE:**  
**Umma More Renewable Energy Development, Co. Westmeath**

<b>DRAWING BY:</b> Joseph O'Brien	<b>CHECKED BY:</b> Ellen Costello
<b>PROJECT No.:</b> 201050	<b>DRAWING No.:</b> 201050 - 14
<b>SCALE:</b> 1:500 @ A3	<b>DATE:</b> 02.03.2023
<b>OS SHEET No.:</b> 2900, 2901, 2969, 2970	

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**T3**  
 ITM 618946, 746605  
 Level - 56m O.D.

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

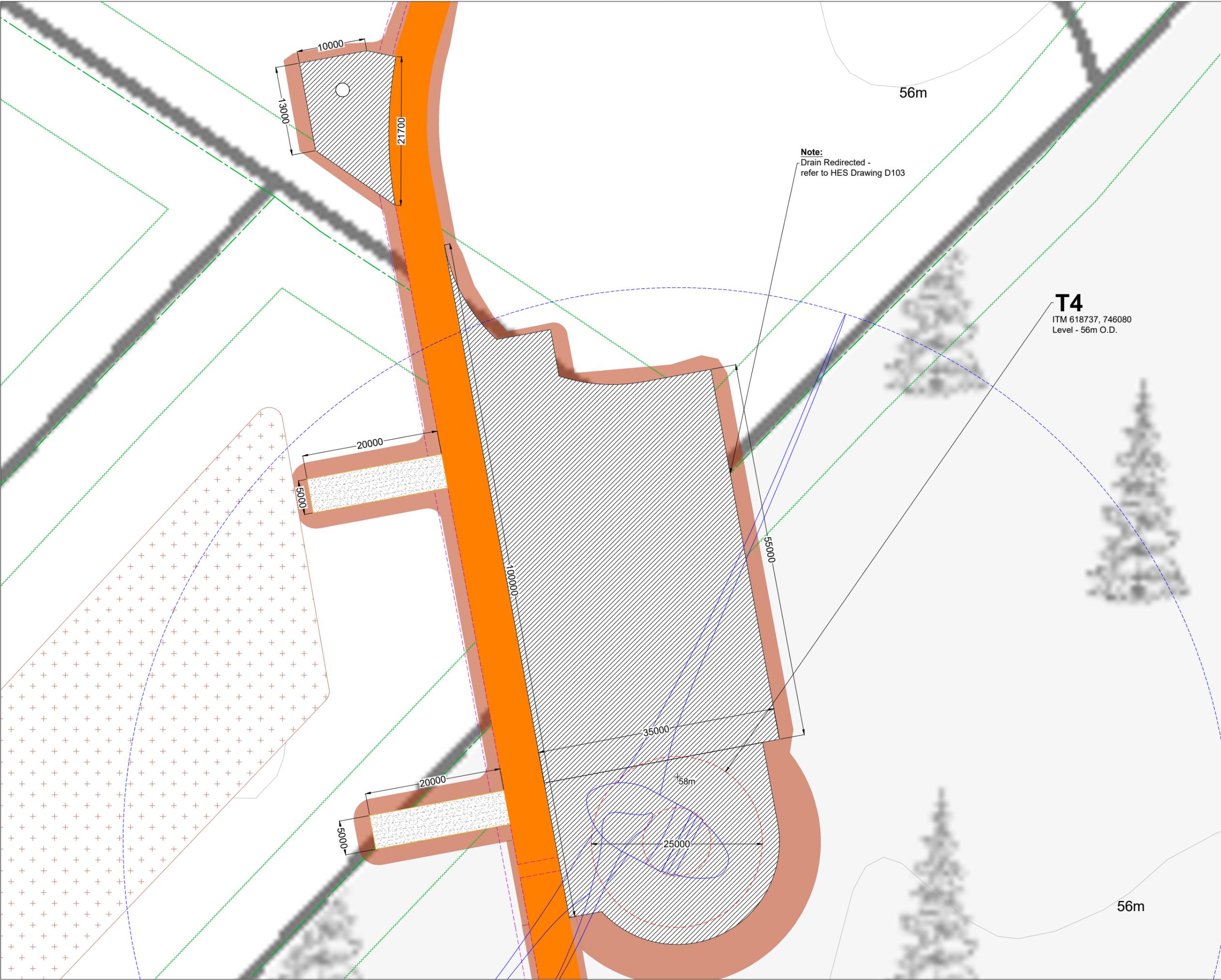
- Drawing Legend**
- Proposed New Road
  - Assembly Areas
  - Crane Pad Hardstanding Area
  - Turbine Foundation
  - Proposed Max. Turbine Sweep Area
  - Internal Electrical Cabling Trench
  - Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
  - Drains
  - Drain 10m Buffer
  - Cut
  - Fill



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<b>DRAWING TITLE:</b>	
<b>Turbine 3 Layout</b>	
<b>PROJECT TITLE:</b>	
<b>Umma More Renewable Energy Development, Co. Westmeath</b>	
<b>DRAWING BY:</b>	<b>CHECKED BY:</b>
Joseph O'Brien	Ellen Costello
<b>PROJECT No.:</b>	<b>DRAWING No.:</b>
201050	201050 - 15
<b>SCALE:</b>	<b>DATE:</b>
1:500 @ A3	02.03.2023
<b>OS SHEET No.:</b>	
2900, 2901, 2969, 2970	

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

**Note:**  
Drain Redirected -  
refer to HES Drawing D103

**T4**  
ITM 618737, 746080  
Level - 56m O.D.

**Drawing Legend**

	Proposed New Road
	Assembly Areas
	Crane Pad Hardstanding Area
	Turbine Foundation
	Proposed Max. Turbine Sweep Area
	Internal Electrical Cabling Trench
	Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
	Drains
	Drain 10m Buffer
	Cut
	Fill



**Turbine 4 Layout**

PROJECT TITLE: <b>Umma More Renewable Energy Development, Co. Westmeath</b>	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 16</b>
SCALE: <b>1:500 @ A3</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	

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Website: www.mkofireland.ie

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  6. The use of or reliance upon this drawing shall be deemed to be acceptance of these conditions of use unless otherwise agreed in writing, such written agreement to be sought from and issued by the copyright holder to the use or reliance upon this drawing.
  7. Layout plans show Turbine rotor diameter as per turbine drawing.
  8. Final levels may vary depending on local ground conditions.

- Drawing Legend**
-  Proposed New Road
  -  Assembly Areas
  -  Crane Pad Hardstanding Area
  -  Turbine Foundation
  -  Proposed Max. Turbine Sweep Area
  -  Internal Electrical Cabling Trench
  -  Drains
  -  Drain 10m Buffer
  -  Cut
  -  Fill

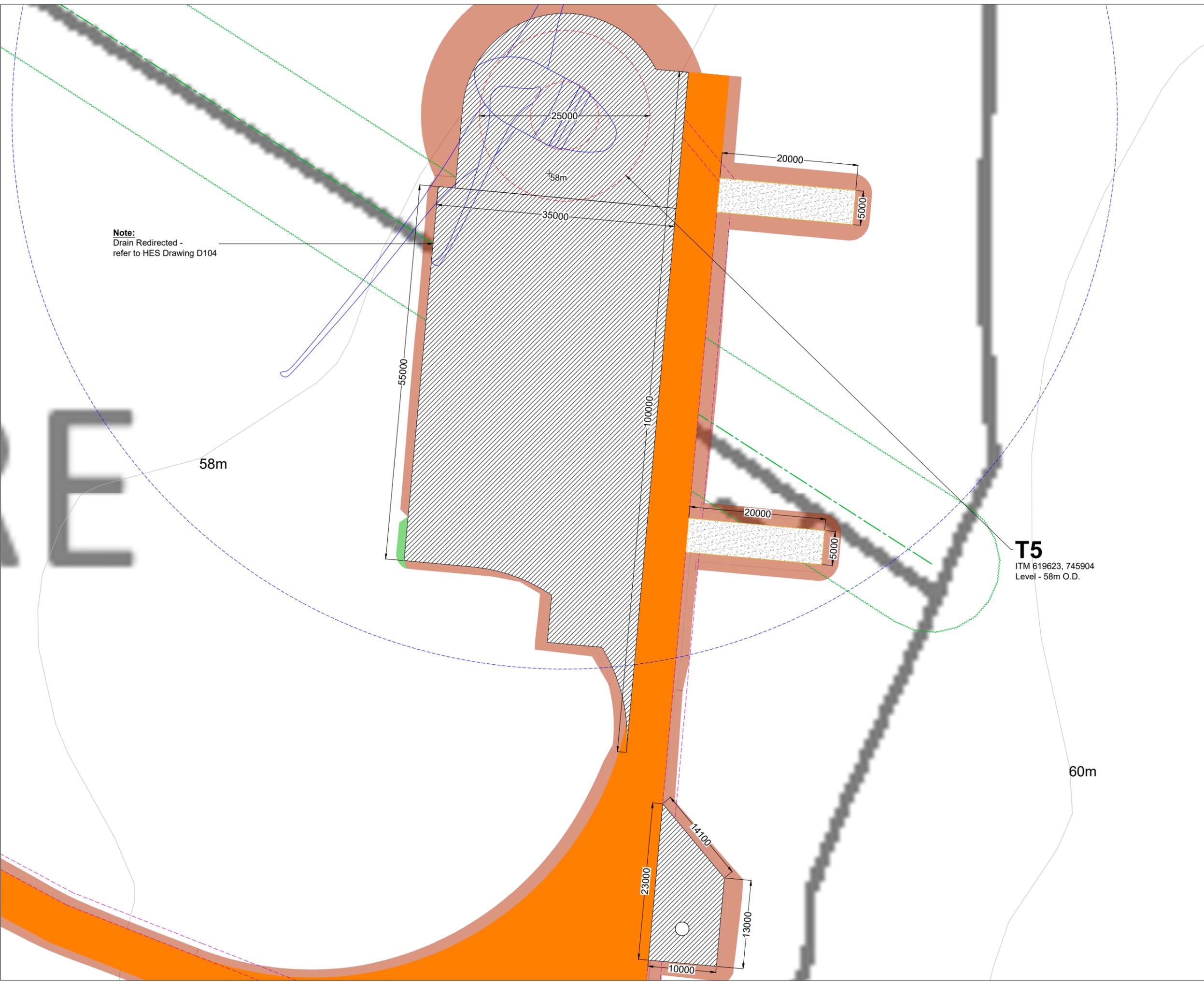


**Turbine 5 Layout**

PROJECT TITLE: <b>Umma More Renewable Energy Development, Co. Westmeath</b>	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 17</b>
SCALE: <b>1:500 @ A3</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	



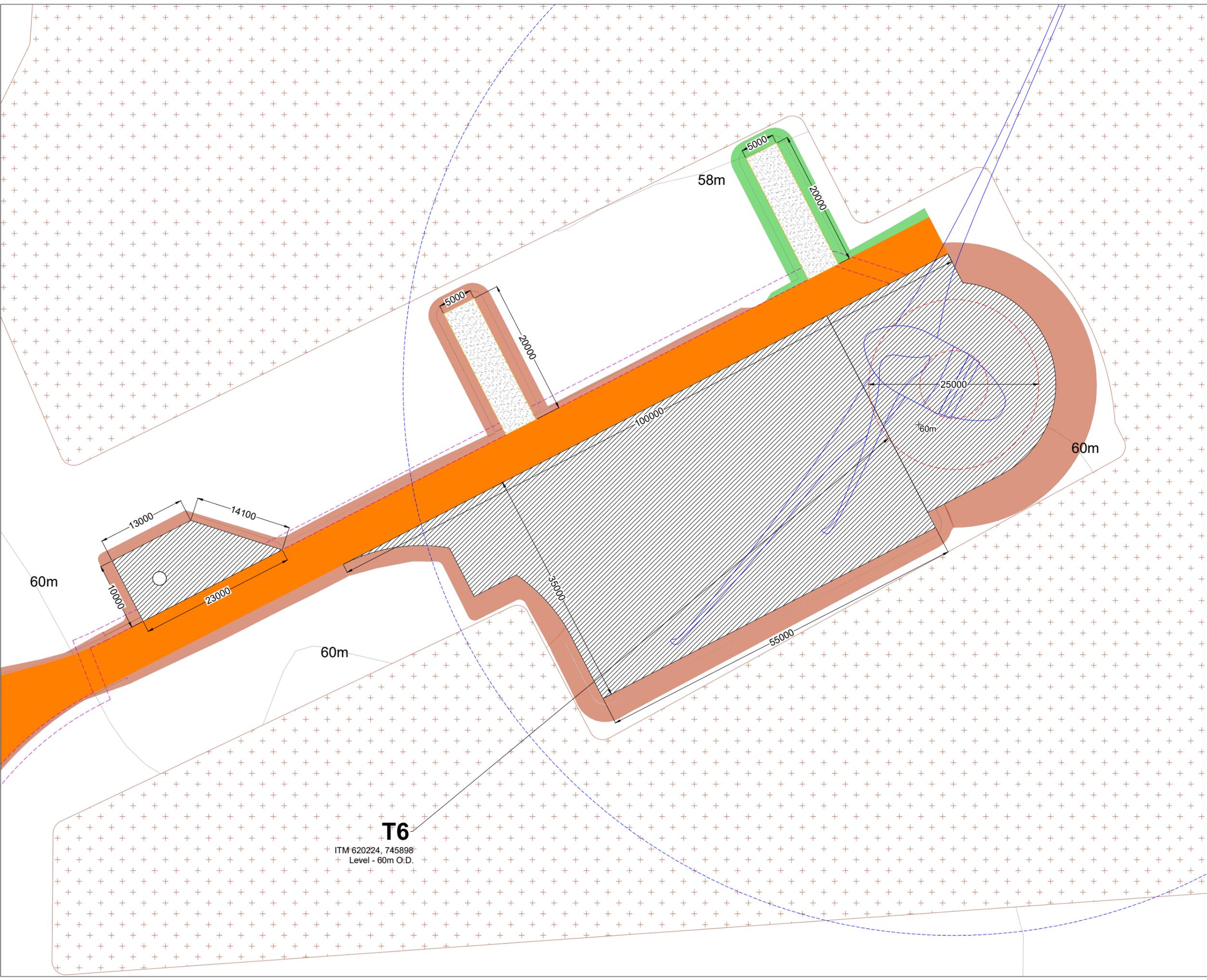
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7. Layout plans show Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.



**Drawing Legend**

- Proposed New Road
- Assembly Areas
- Crane Pad Hardstanding Area
- Turbine Foundation
- Proposed Max. Turbine Sweep Area
- Internal Electrical Cabling Trench
- Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
- Cut
- Fill



**Turbine 6 Layout**

PROJECT TITLE: **Umma More Renewable Energy Development, Co. Westmeath**

DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 18</b>
SCALE: <b>1:500 @ A3</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: <b>2900, 2901, 2969, 2970</b>	

**T6**  
ITM 620224, 745898  
Level - 60m O.D.

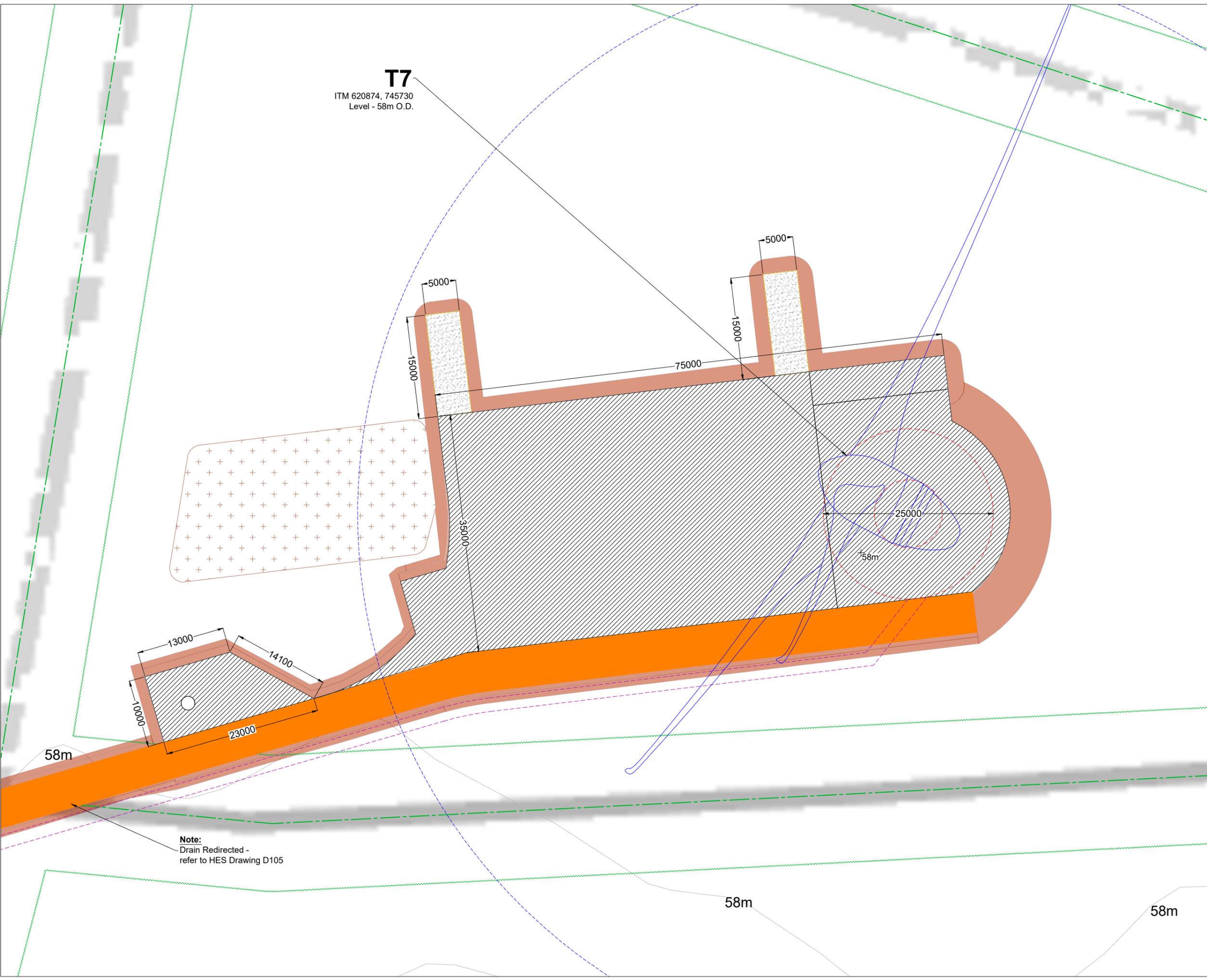
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7. Layout plans show Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

**T7**  
ITM 620874, 745730  
Level - 58m O.D.



**Note:**  
Drain Redirected -  
refer to HES Drawing D105

**Drawing Legend**

	Proposed New Road
	Assembly Areas
	Crane Pad Hardstanding Area
	Turbine Foundation
	Proposed Max. Turbine Sweep Area
	Internal Electrical Cabling Trench
	Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
	Drains
	Drain 10m Buffer
	Cut
	Fill



**Turbine 7 Layout**

PROJECT TITLE: **Umma More Renewable Energy Development, Co. Westmeath**

DRAWING BY: **Joseph O'Brien**      CHECKED BY: **Ellen Costello**

PROJECT No.: **201050**      DRAWING No.: **201050 - 19**

SCALE: **1:500 @ A3**      DATE: **02.03.2023**

OS SHEET No.: 2900, 2901, 2969, 2970

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



**T8**  
 ITM 620067, 745325  
 Level - 69m O.D.

**Drawing Legend**

	Proposed New Road
	Assembly Areas
	Crane Pad Hardstanding Area
	Turbine Foundation
	Proposed Max. Turbine Sweep Area
	Internal Electrical Cabling Trench
	Spill Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
	Cut
	Fill



DRAWING TITLE:  
**Turbine 8 Layout**

PROJECT TITLE:  
**Umma More Renewable Energy Development, Co. Westmeath**

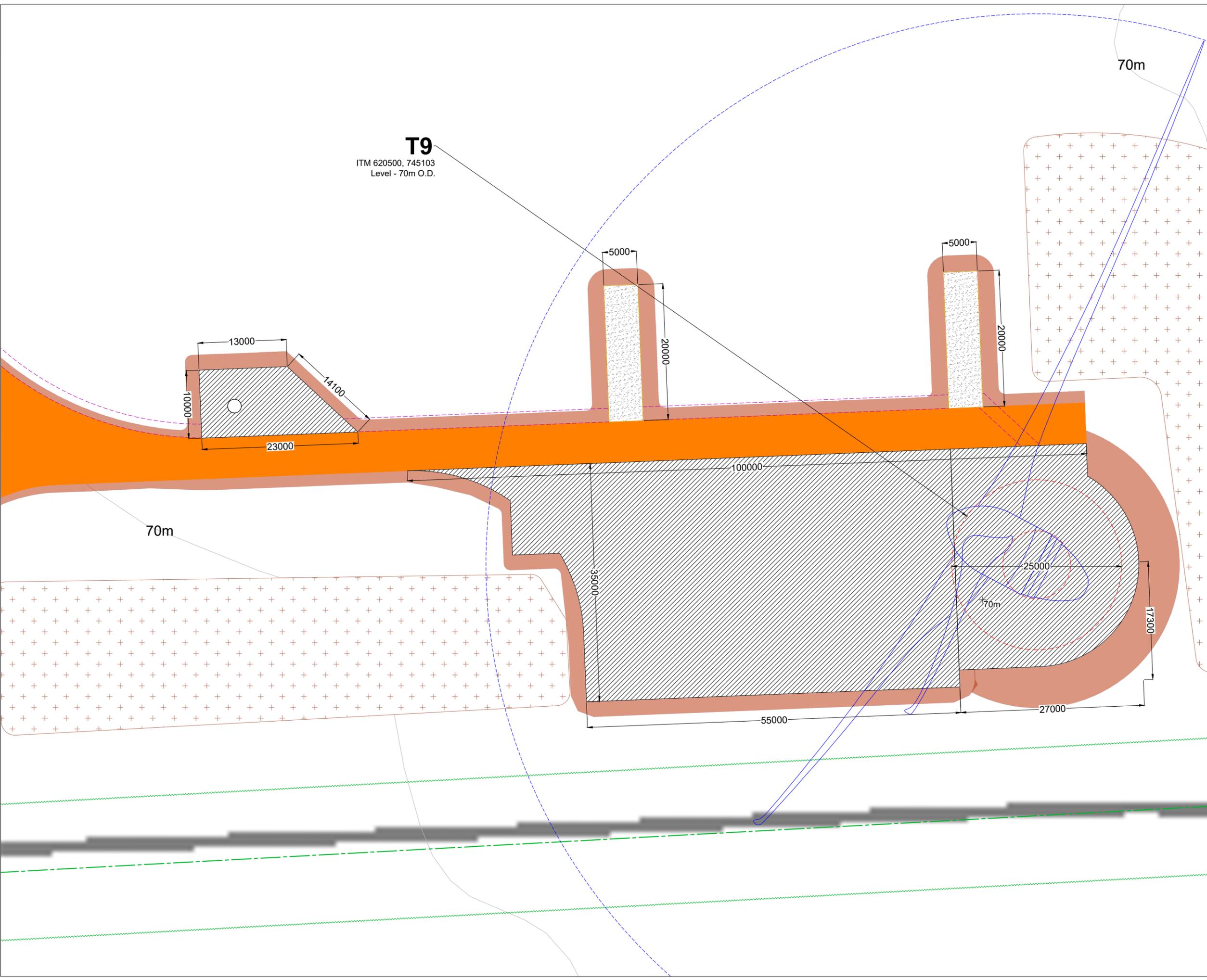
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 20</b>
SCALE: <b>1:500 @ A3</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	

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



**T9**  
ITM 620500, 745103  
Level - 70m O.D.

**Drawing Legend**

	Proposed New Road
	Assembly Areas
	Crane Pad Hardstanding Area
	Turbine Foundation
	Proposed Max. Turbine Sweep Area
	Internal Electrical Cabling Trench
	Spill Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
	Drains
	Drain 10m Buffer
	Cut
	Fill



**Turbine 9 Layout**

PROJECT TITLE:  
**Umma More Renewable Energy Development, Co. Westmeath**

DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 21</b>
SCALE: <b>1:500 @ A3</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	

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Note:  
Refer to DWG 201050 -30  
for Site Office & Staff  
Facilities Details

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



**Drawing Legend**

- Proposed New Road
- Internal Electrical Cabling Trench
- Drains
- Drain 10m Buffer
- Spoil Management Areas (refer to Section 4.3.3.2 of Chapter 4 of EIAR)
- Cut
- Fill



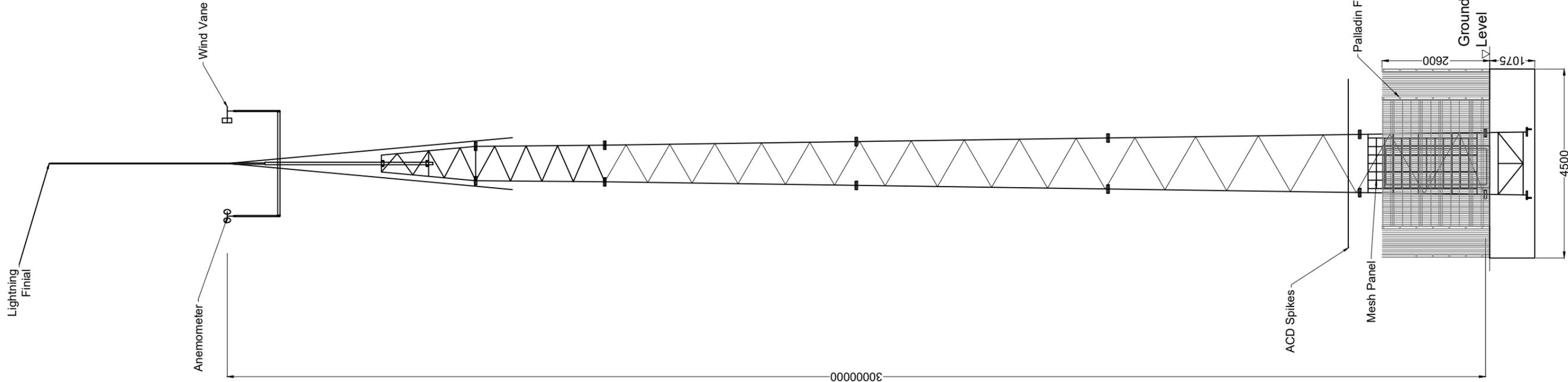
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**Temporary Construction Compound**

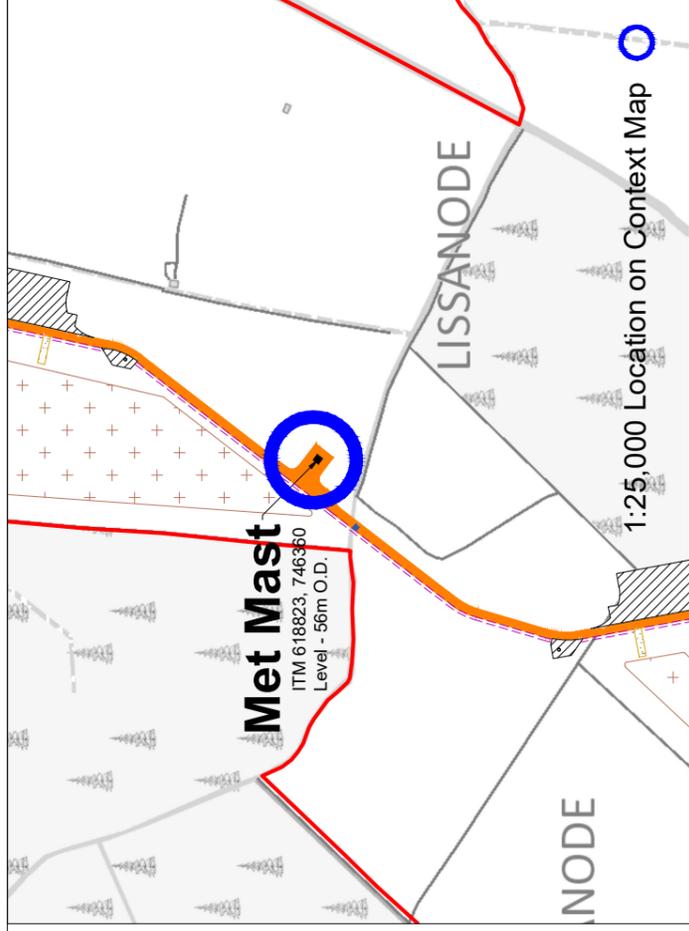
PROJECT TITLE: <b>Umma More Renewable Energy Development, Co. Westmeath</b>	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 22</b>
SCALE: <b>1:500 @ A3</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	

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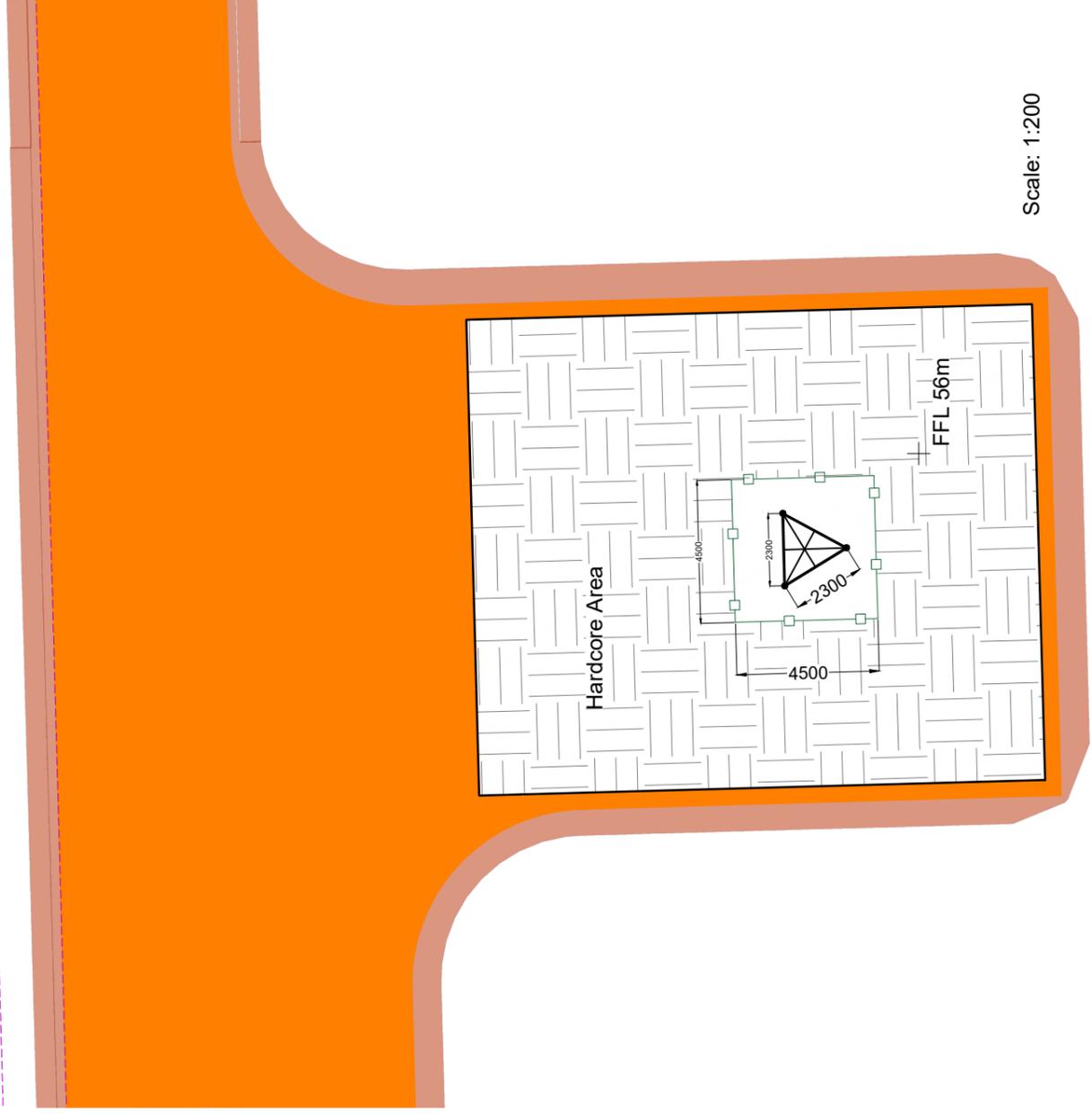
Scale: 1:100



Mast Elevation



1:25,000 Location on Context Map



Scale: 1:200



**Note:**

1. Met Mast exact detail may differ depending on the selected manufacturer.
2. Finished level of the mast to match ground conditions.
3. Mast/foundation orientation to be confirmed with met mast supplier.
4. Earthing and ducting requirements to be confirmed with met mast supplier and forwarded to foundation designer

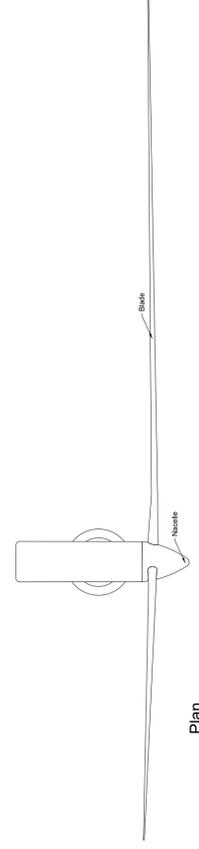
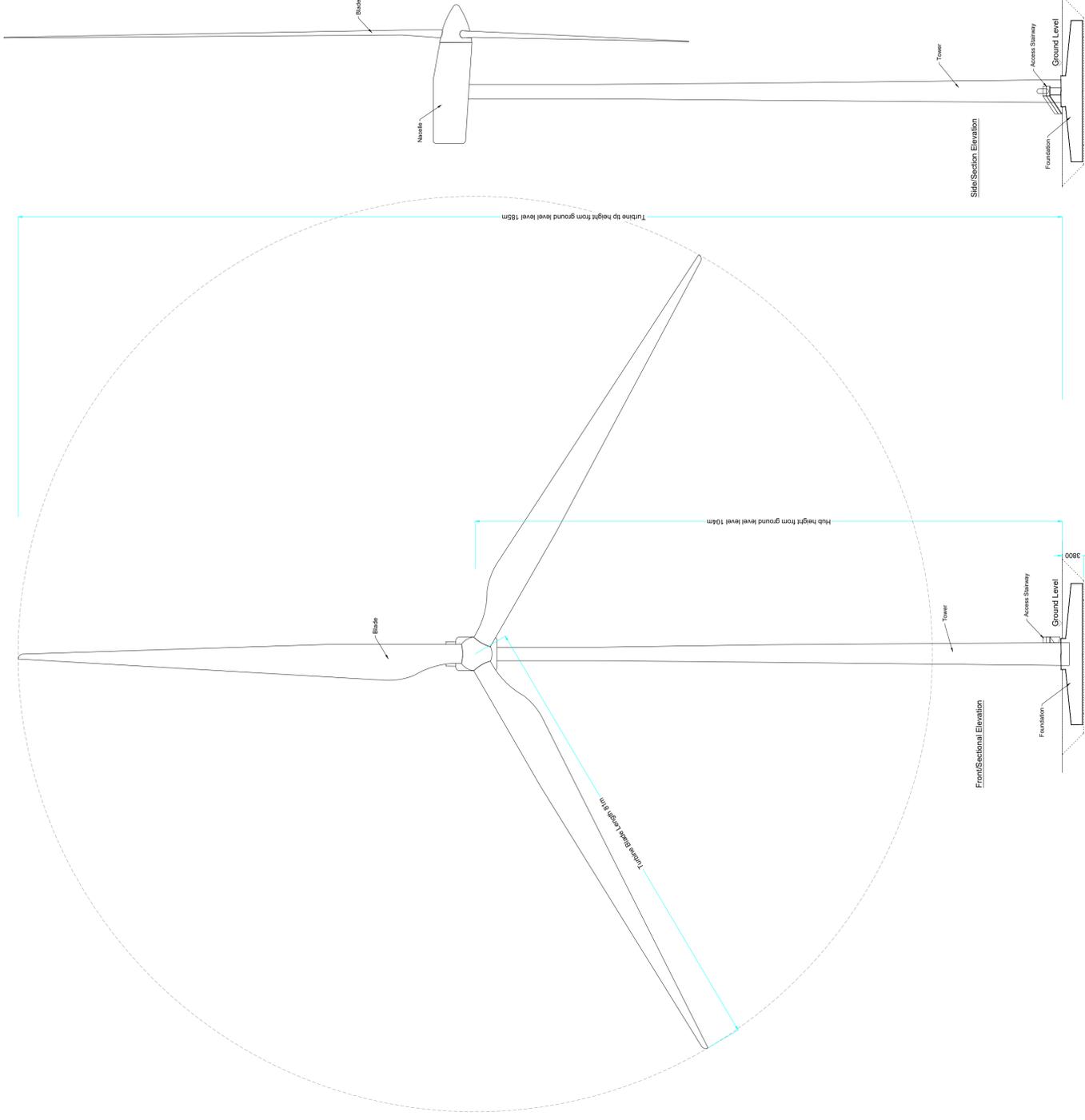
DRAWING TITLE:

### Met Mast

PROJECT TITLE	Umma More Renewable Energy Development, Co. Westmeath
DRAWING BY	Joseph O'Brien
CHECKED BY	Eileen Costello
PROJECT NO.	201050
DRAWING NO.	201050 - 23
SCALE	As shown @ A3
DATE	02.03.2023



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Plan

DRAWING TITLE:

# Wind Turbine Elevations & Plan

PROJECT TITLE: **Uimma More Renewable Energy Development, Co. Westmeath**

DRAWING BY: **Joseph O Brien** CHECKED BY: **Eileen Costello**

PROJECT NO: **201050** DRAWING NO: **201050 - 24**

SCALE: **1:500 @A1** DATE: **02.03.2023**

**Drawing Notes**

- Proposed wind turbines to have a maximum ground to blade tip height of 185m, blade length of 81m and hub height of 104m
- Ground level represents the top of turbine foundation.

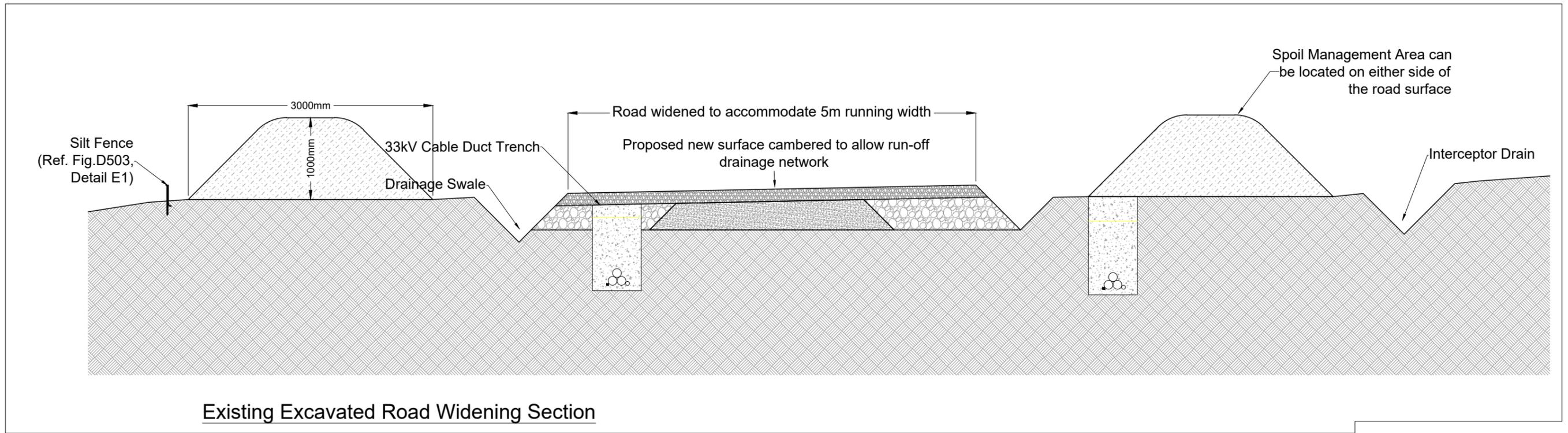


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email: info@www.mkoreland.ie  
Website: www.mkoreland.ie

**Drawing Notes**

1. Widening can occur to either side of existing roads dependent on site conditions.
2. Depths of road fill to vary dependent on site conditions.

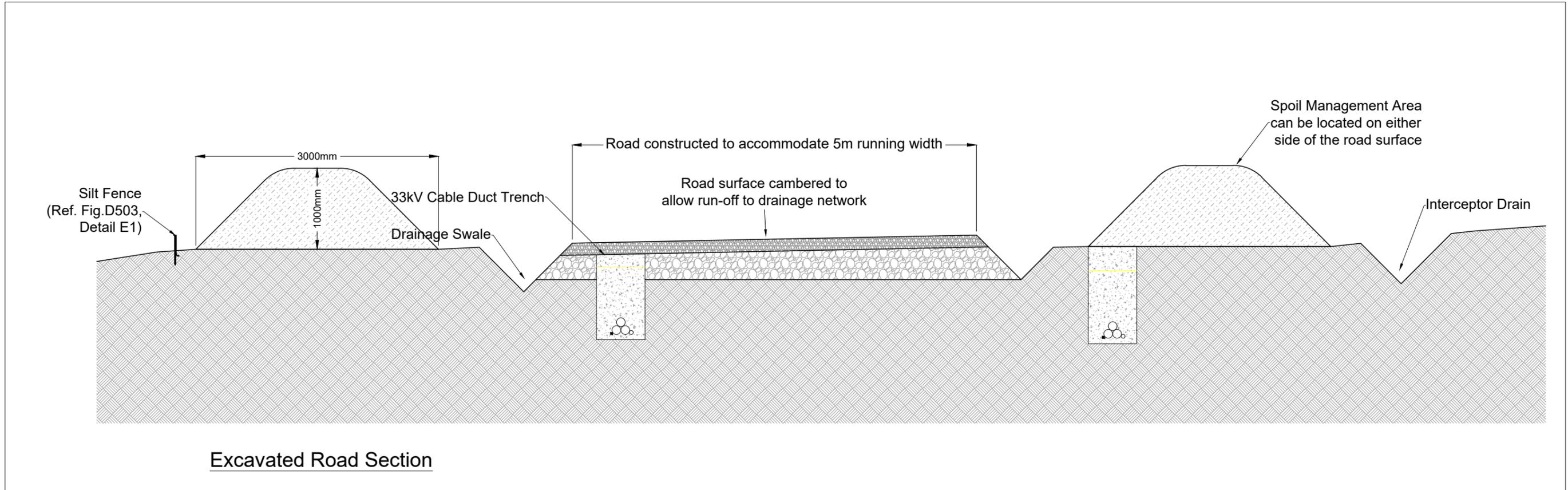


The cabling may be placed on either side of the roads, on both sides of the road or within the road. The exact configuration of the underground cabling will be set by the requirements of the electrical designers at detailed design stage.

<b>Existing Road for Upgrade Excavated Road Section</b>	
PROJECT TITLE: Umma More Renewable Energy Development, Co. Westmeath	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 25</b>
SCALE: <b>1:50@A3</b>	DATE: <b>02.03.2023</b>
<b>MKO</b> Planning and Environmental Consultants Tuam Road, Galway Ireland, H91 VW84 +353 (0) 91 735611 email: info@www.mkofireland.ie Website: www.mkofireland.ie	

**Drawing Notes**

1. Widening can occur to either side of existing roads dependent on site conditions.
2. Depths of road fill to vary dependent on site conditions.

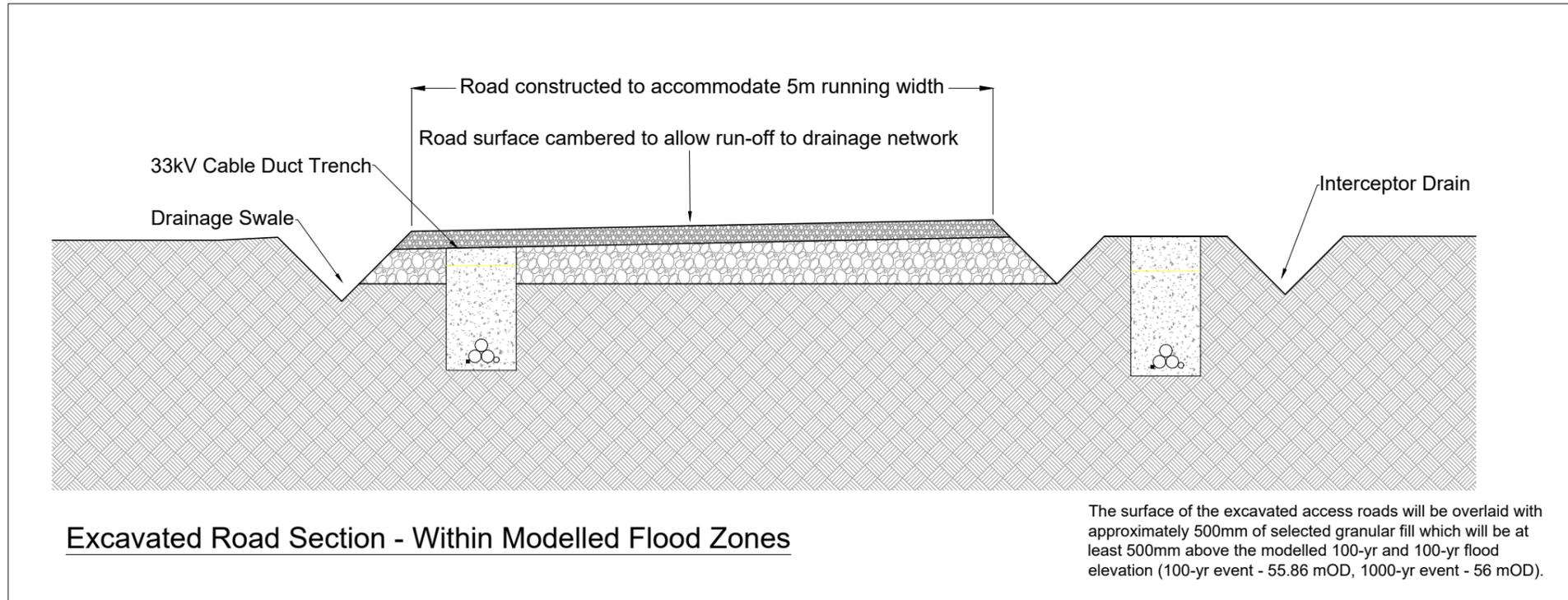


The cabling may be placed on either side of the roads, on both sides of the road or within the road. The exact configuration of the underground cabling will be set by the requirements of the electrical designers at detailed design stage.

DRAWING TITLE: <b>Proposed New Excavated Road Section</b>	
PROJECT TITLE: Umma More Renewable Energy Development, Co. Westmeath	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 26</b>
SCALE: <b>1:50@A3</b>	DATE: <b>02.03.2023</b>
	
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**Drawing Notes**

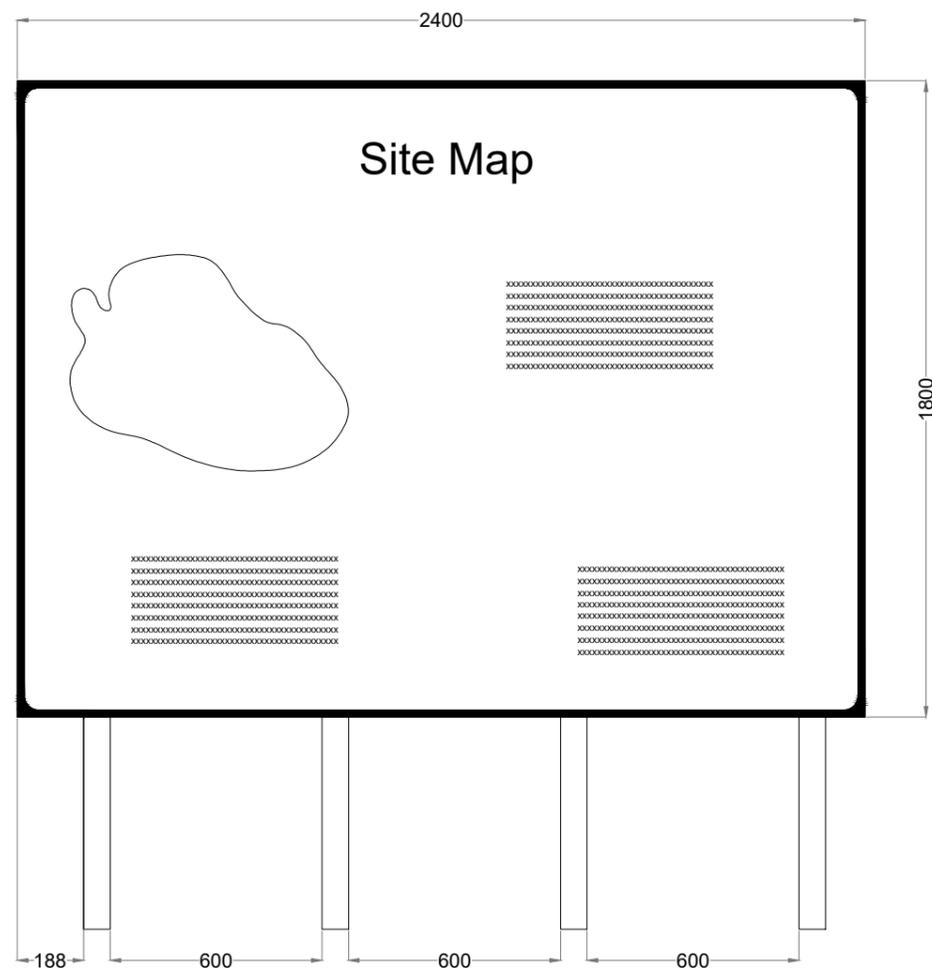
1. Widening can occur to either side of existing roads dependent on site conditions.
2. Depths of road fill to vary dependent on site conditions.



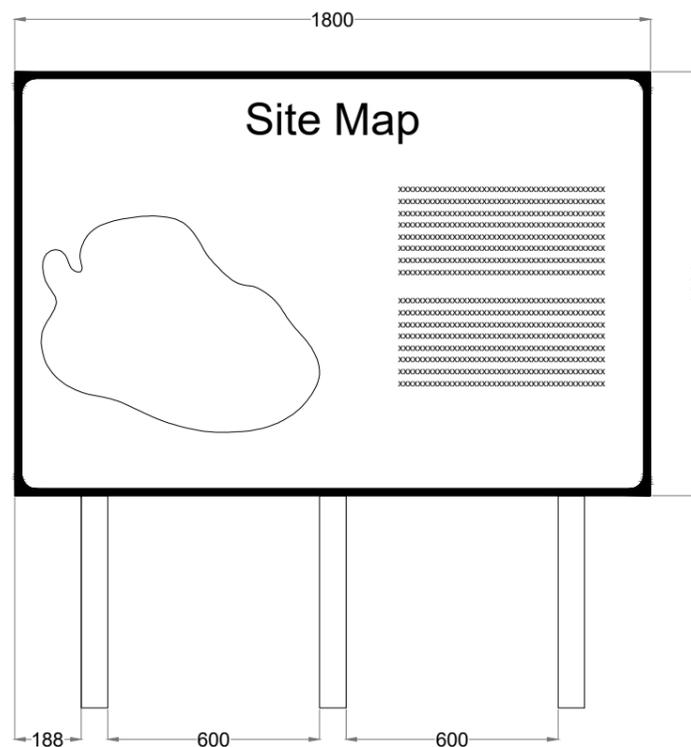
The cabling may be placed on either side of the roads, on both sides of the road or within the road. The exact configuration of the underground cabling will be set by the requirements of the electrical designers at detailed design stage.

DRAWING TITLE: <b>Excavated road section in Site-Specific Flood Modelled Zones</b>	
PROJECT TITLE: Umma More Renewable Energy Development, Co. Westmeath	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 27</b>
SCALE: <b>1:50@A3</b>	DATE: <b>02.03.2023</b>
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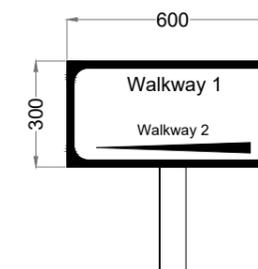
**Note**  
For illustrative purposes only  
exact details to be confirmed



Signage Type A - Waypoint Map Signage



Signage Type B - Entry Point Signage

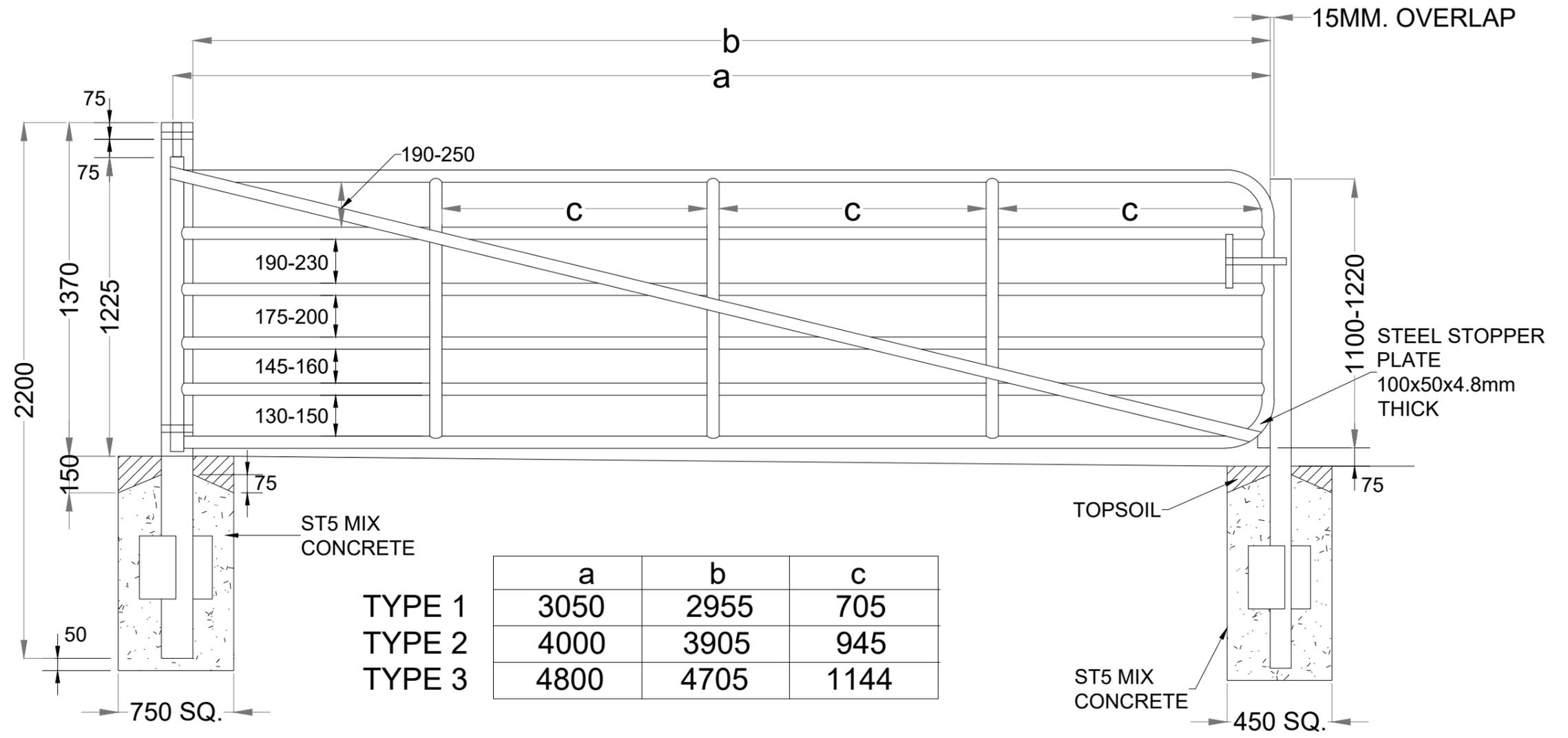


Signage Type C - Way Point Direction Signage

DRAWING TITLE: <b>Site Signage</b>	
PROJECT TITLE: Umma More Renewable Energy Development, Co. Westmeath	
DRAWING BY: <b>Joseph O Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 28</b>
SCALE: <b>1:20 @A3</b>	DATE: <b>02.03.2023</b>



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Website: www.mkofireland.ie



**DRAWING TITLE:**  
**Field Gate Detail**

**PROJECT TITLE:**  
 Umma More Renewable Energy Development, Co. Westmeath

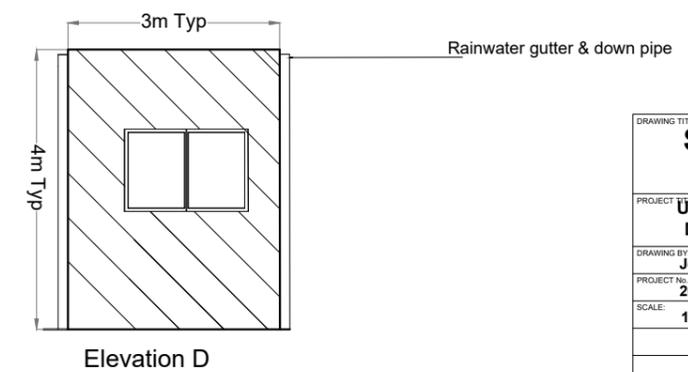
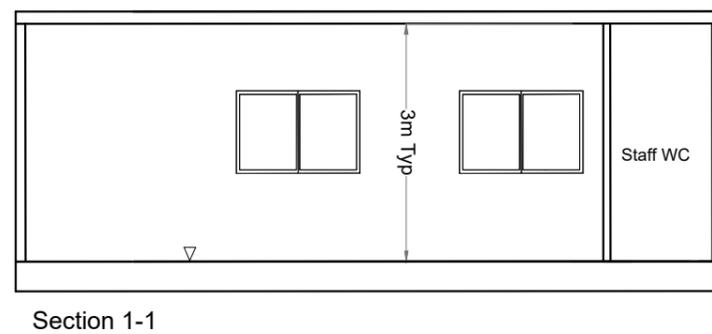
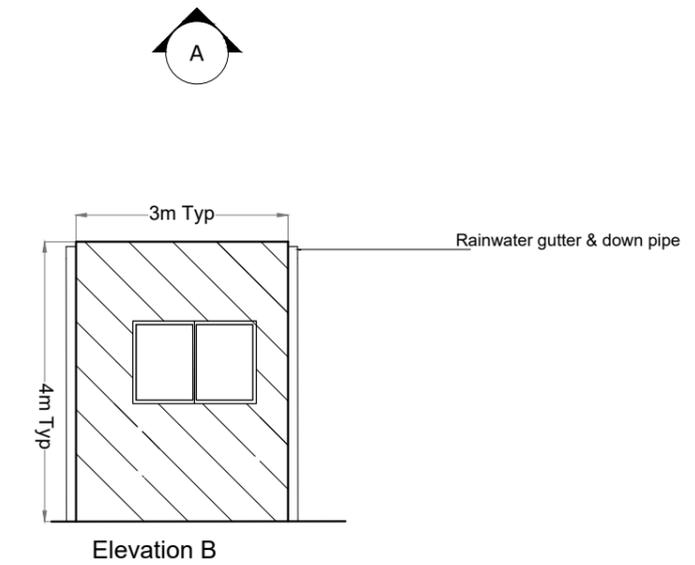
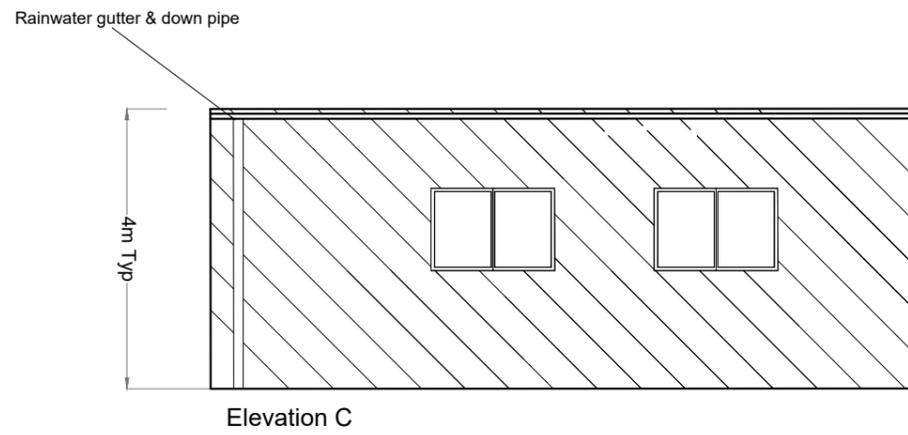
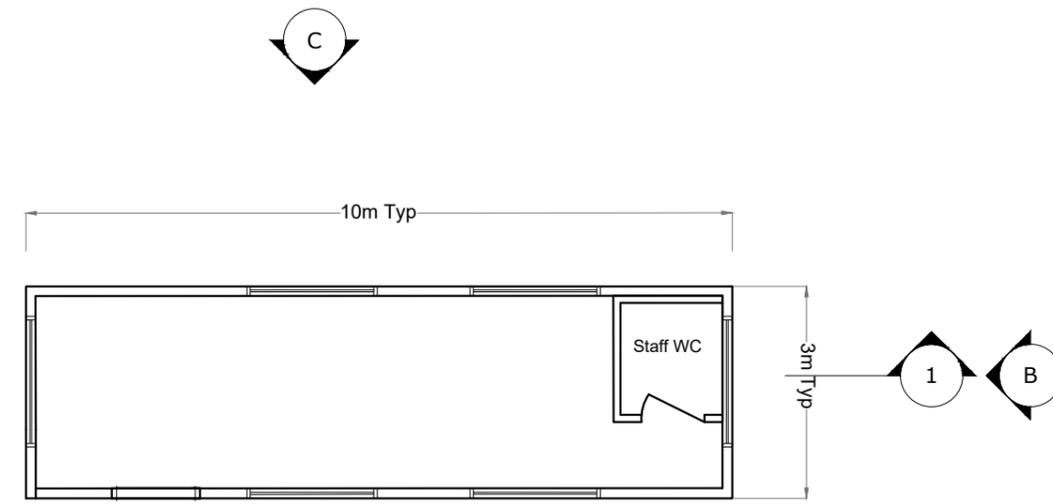
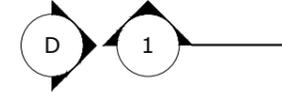
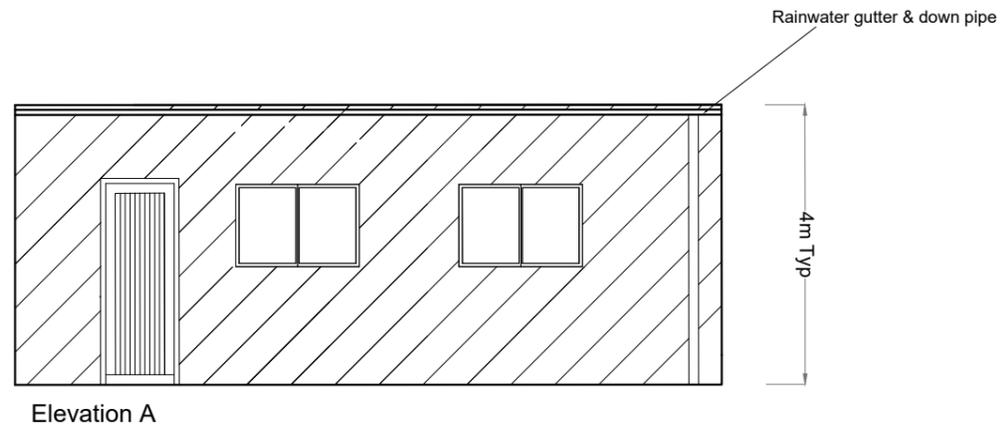
**DRAWING BY:** Joseph O'Brien      **CHECKED BY:** Ellen Costello

**PROJECT No.:** 201050      **DRAWING No.:** 201050 - 29

**SCALE:** 1:20 @A3      **DATE:** 02.03.2023

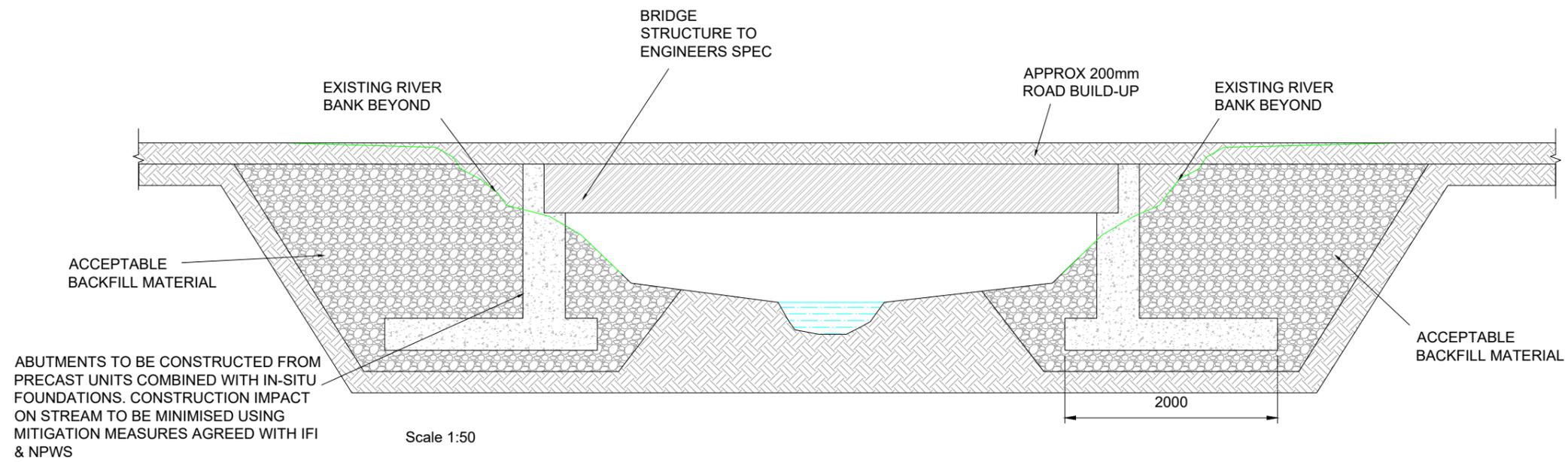
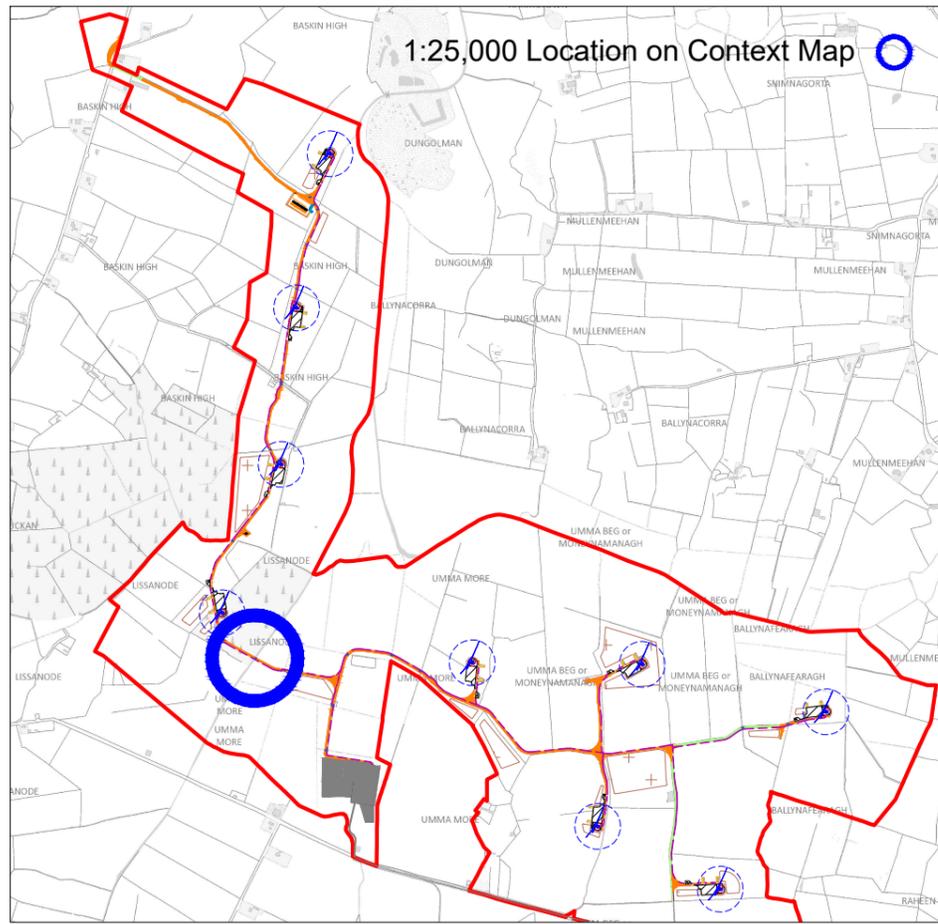
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 Website: www.mkofireland.ie

Note:  
To be located in Temporary  
Compound - refer to DWG  
201050 - 22

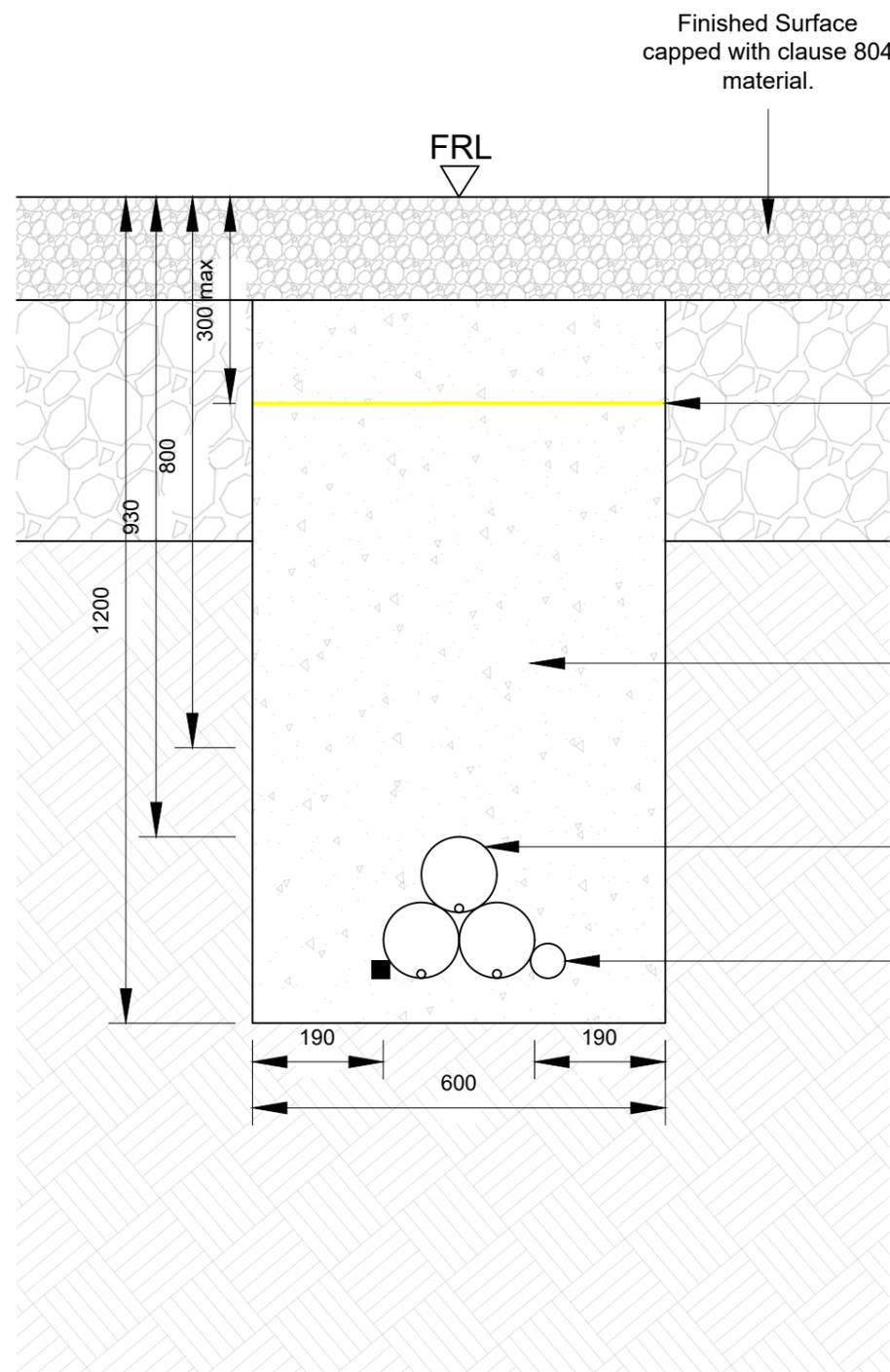


DRAWING TITLE: <b>Site Office &amp; Staff Facilities Detail</b>	
PROJECT TITLE: <b>Umma More Renewable Energy Development, Co. Westmeath</b>	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 30</b>
SCALE: <b>1:100 @ A3</b>	DATE: <b>02.03.2023</b>

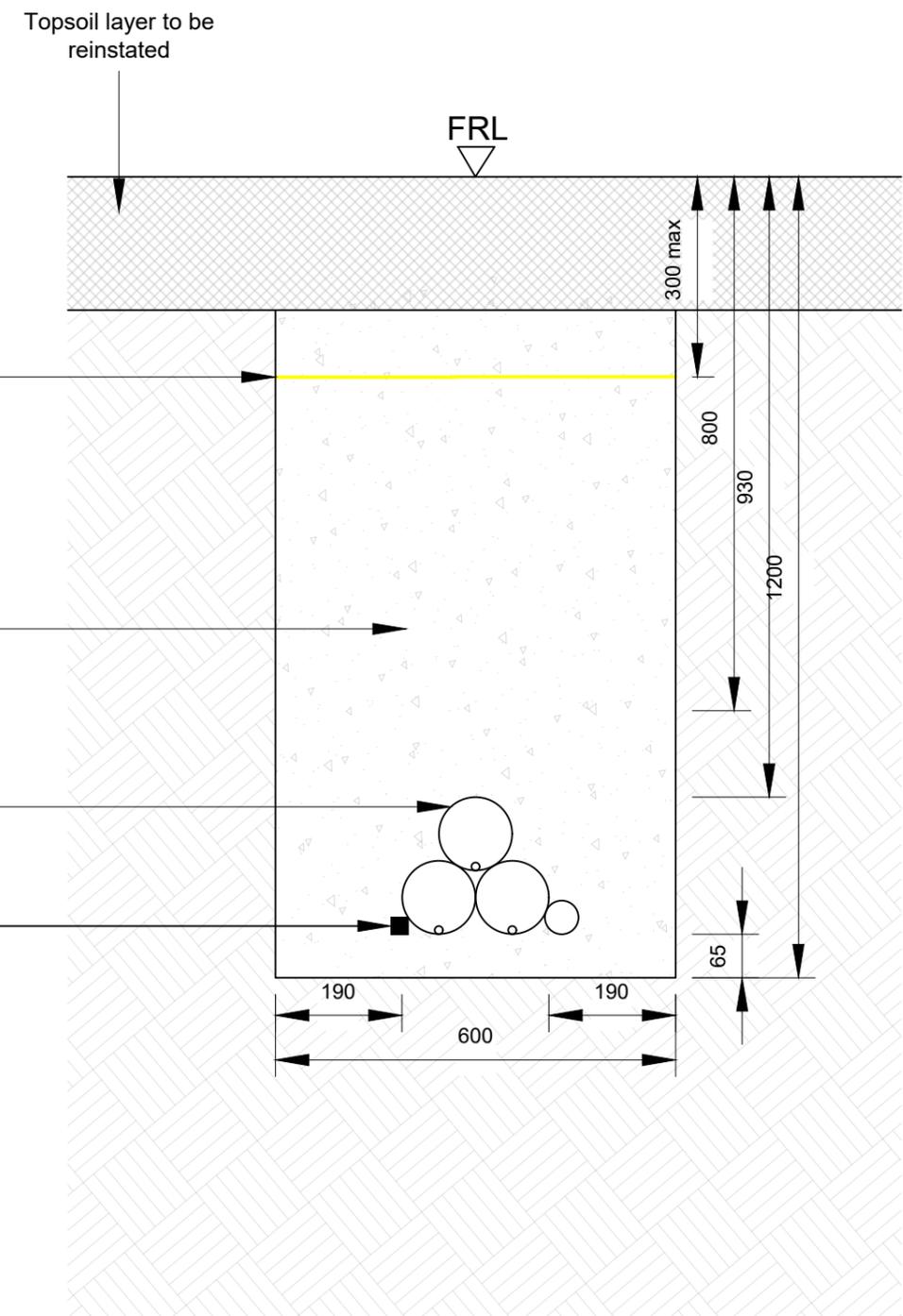
**MKO**  
Planning and  
Environmental  
Consultants  
Tuam Road, Galway  
Ireland, H91 VW84  
+353 (0) 91 735611  
email: info@www.mkofireland.ie  
Website: www.mkofireland.ie



DRAWING TITLE: <b>Clear Span Bridge Crossing</b>	
Umma More Renewable Energy Development, Co. Westmeath	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 31</b>
SCALE: <b>As Shown @A3</b>	DATE: <b>02.03.2023</b>
OS SHEET No.: 2900, 2901, 2969, 2970	
 <b>MKO</b> Planning and Environmental Consultants Tuam Road, Galway Ireland, H91 VWB4 +353 (0) 91 735611 email: info@www.mkofireland.ie Website: www.mkofireland.ie	



**33kV Cable - On Road Trench Detail - Cross Section**



**33kV Cable - Off Road Trench Detail - Cross Section**

Yellow Marker Warning Tape.  
across full width of trench

Trench backfilled with clause 804  
material and compacted in accordance  
with NRA guidelines.

110mm Diameter Ducts, complete with  
12mm Diameter draw ropes.

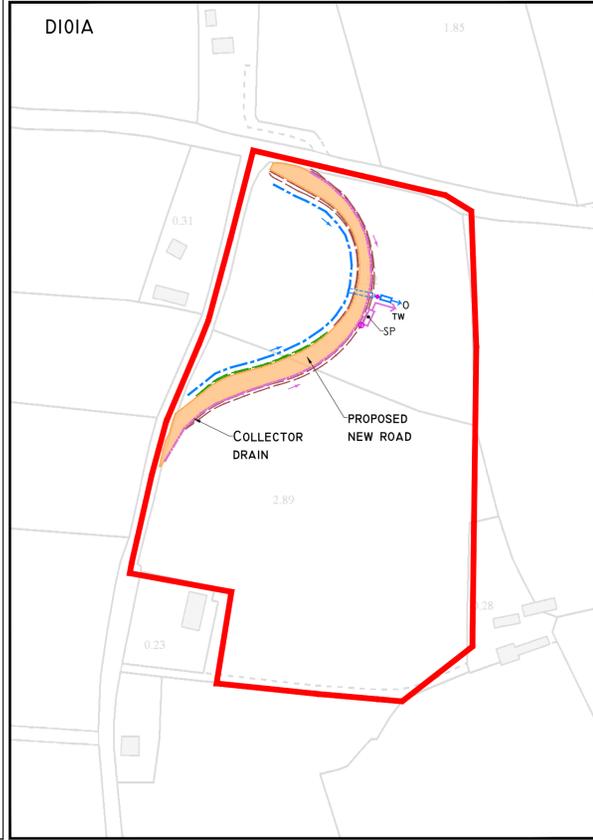
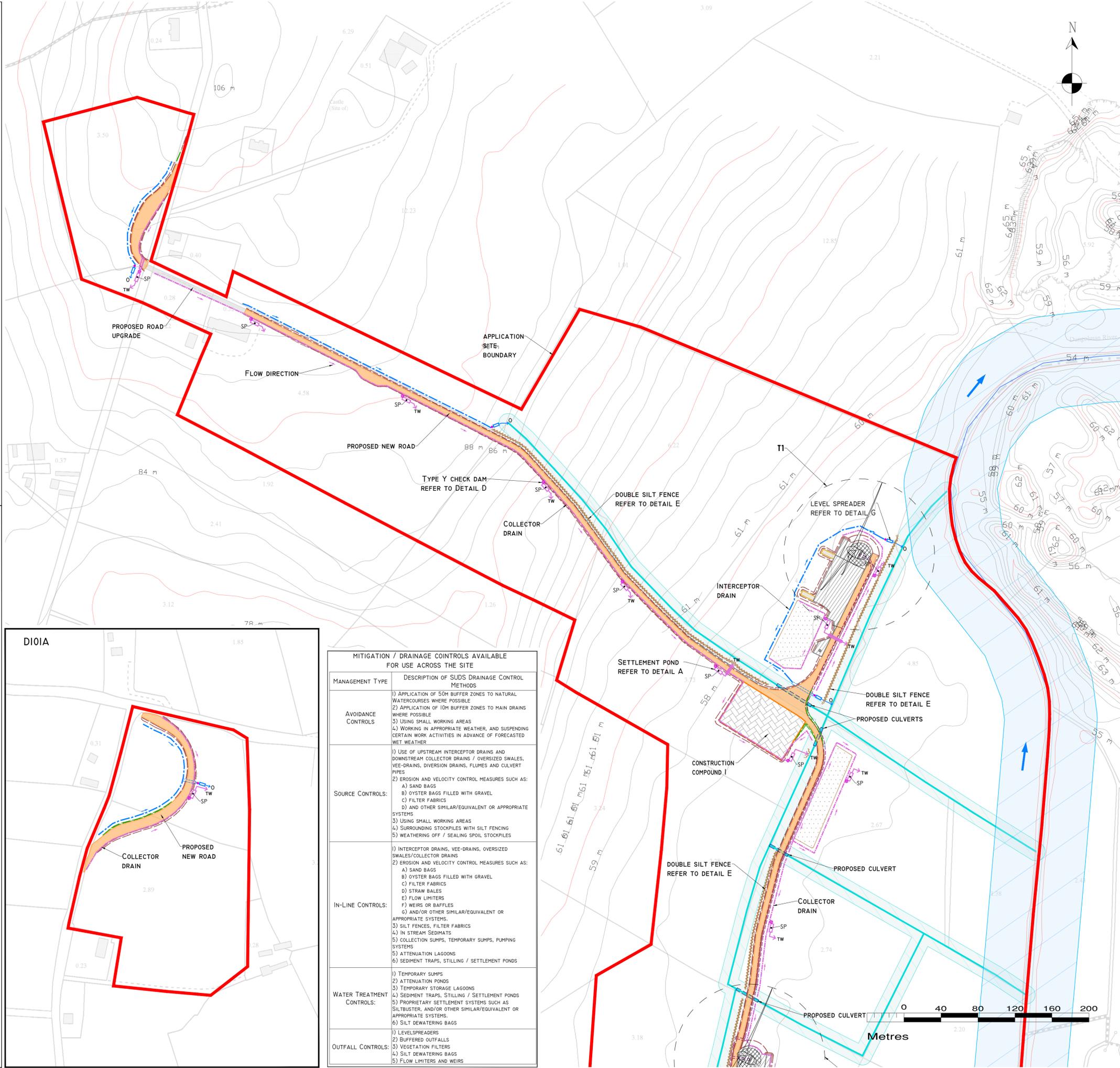
50mm Diameter solid wall  
fibre optic cable ducting.

25mm Square earth  
conductor.

DRAWING TITLE: <b>33kV Cable Trench Sections</b>	
PROJECT TITLE: Umma More Renewable Energy Development, Co. Westmeath	
DRAWING BY: <b>Joseph O'Brien</b>	CHECKED BY: <b>Ellen Costello</b>
PROJECT No.: <b>201050</b>	DRAWING No.: <b>201050 - 32</b>
SCALE: <b>1:10 @ A3</b>	DATE: <b>02.03.2023</b>

**POLLUTION PREVENTION NOTES:**

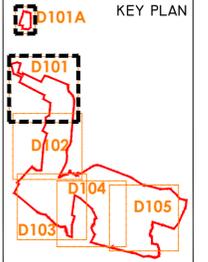
- SITE MANAGEMENT PROPOSALS ARE INTENDED TO ENSURE PROTECTION AGAINST SURFACE WATER AND GROUNDWATER POLLUTION, SILTATION AND EROSION.
  - SUITABLE DRAINAGE CONTROL MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT CONVEYANCE OF SIGNIFICANT VOLUMES OF SILT TO OFF SITE RECEIVING WATERCOURSES.
  - SILTY 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**
- WATER CONTAINING SILT WILL NOT BE PUMPED DIRECTLY TO ANY NATURAL WATERCOURSE. ALL DISCHARGES TO BE MADE OVER OPEN GROUND OR INTO EXISTING FIELD DRAINS WITH SILT TRAP AT A MINIMUM OF 20M FROM NEAREST WATERCOURSE UNLESS OTHERWISE STATED.
  - NO EXCAVATED MATERIAL IS TO BE STORED WITHIN ANY SURFACE WATER BUFFER ZONE.
  - PUMPED WATER WILL BE DIRECTED INTO TRACK SIDE DITCHES AND TREATED IN SETTLEMENT PONDS AND VEGETATION SWALES PRIOR TO OVERLAND DISCHARGE.
  - PUMPING OF CLEAN WATER FROM EXCAVATIONS / OR OVER-PUMPING IN DRAINS/DITCHES/STREAMS WILL BE COMPLETED IN A MANNER THAT DOES NOT CAUSE SCOUR OR EROSION AT THE POINT OF RELEASE/DISCHARGE. THIS WILL BE DONE BY REDUCING THE FLOW VELOCITIES OR BY USE OF SPLASH PLATES, AND OTHER SIMILAR DISCHARGE CONTROLS.
  - VEGETATION WILL NOT BE STRIPPED FROM EXISTING DRAINS/DITCHES UNLESS ABSOLUTELY NECESSARY.
- EXCAVATIONS**
- WHERE 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**
- THE AMOUNT OF EXPOSED GROUND AND TEMPORARY STOCKPILES OPEN AT ANY ONE TIME WILL BE MINIMISED, AS FAR AS PRACTICABLE.
- SITE TRACKS**
- USE OF TRACK SIDE SWALES WITH CHECK DAMS, AND/OR FILTRATION CHECK DAMS WILL REDUCE SILT IN RUNOFF WATER AS REQUIRED.
  - CHECK DAMS TO BE INSPECTED AND CLEANED REGULARLY.
- REFUELLING**
- REFUELLING OF MOBILE PLANT WILL BE COMPLETED IN DESIGNATED REFUELLING AREAS ONLY, PREFERABLY ON AN IMPERMEABLE SURFACE AND AWAY FROM FIELD DRAINS / DITCHES AND WATERCOURSES / WATERBODIES.
  - SPILL KITS AND DRIP TRAYS WILL BE AVAILABLE ON SITE FOR USE AS REQUIRED.
- CONCRETE**
- CARE WILL BE TAKEN WHEN COMPLETING CONCRETE WORKS ON SITE TO ENSURE NO DISCHARGES OCCUR.
  - CONCRETE WASH WATER, AND WASTE CONCRETE WILL BE MANAGED APPROPRIATELY ON SITE.
- 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 THE 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 AREAS.
- DRAINAGE NOTES:**
- ROADWAY SURFACING DESIGN AND CONSTRUCTION TO ENGINEER'S SPECIFICATION (I.E. BY OTHERS).
  - SPARE STRAW BALES/SILT FENCING/ OR SIMILAR, TO 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.
  - SUDS 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.
  - SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SIGNIFICANT VOLUMES OF SILT TO RECEIVING WATERCOURSES. SEE NOTES ON POLLUTION PREVENTION.
  - INTERCEPTOR SWALES / DITCHES TO BE USED TO COLLECT UPSTREAM SURFACE WATER FLOWS. REGULAR CROSS DRAINS / DISCHARGE TO FIELD DITCHES/DRAINS WILL BE REQUIRED TO TRANSFER / DISCHARGE SURFACE WATER IN INTERCEPTOR DRAINS TO SUITABLE FIELD DRAIN OUTFALL POINTS.
  - 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. LOCATIONS OF CROSS DRAINS TO BE AGREED WITH THE ENGINEER ON SITE. SURFACE WATER WILL NOT BE ALLOWED TO DISCHARGE DIRECTLY INTO EXISTING WATERCOURSES.
  - WHERE POSSIBLE, A BUFFER ZONE OF >20M TO ANY EXISTING WATERCOURSE WILL BE REQUIRED WHERE OVER LAND DISCHARGES ARE PROPOSED FROM ACCESS TRACK SWALES / DITCHES.
  - 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.
  - TRACK SIDE SWALES / DITCHES TO BE SHALLOW WITH MODERATE GRADIENTS TO PREVENT SCOURING. IN STEEP AREAS CHECK DAMS SHOULD BE INSTALLED TO REDUCE FLOW VELOCITIES AND PROVIDE SOURCE CONTROL OF SILT CONTAINMENT. WHERE NECESSARY THESE HAVE BEEN DESIGNATED IN CONJUNCTION WITH SETTLEMENT PONDS AND SILT TRAPS, PRIOR TO DISCHARGE.
  - SETTLEMENT PONDS TO BE CONSTRUCTED FOR SILT REMOVAL AT TURBINE BASES AND HARD STAND AREAS. POND SIZES DEPENDS ON CATCHMENT AREA SERVED. SAMPLE POND SIZES SHOWN ON DRAWING D501.
  - STRAW BALES / OR SIMILAR AND SILT FENCES TO BE USED ALSO AROUND SPOIL STOCKPILES TO MITIGATE SILT RUNOFF. SILT FENCES MAY BE REMOVED WHEN SUITABLE VEGETATION COVER IS ESTABLISHED.
  - SILT FENCES TO BE PROVIDED ALONG EDGE OF EXISTING WATERCOURSE WHERE WORKS COMES WITHIN 10M OF EDGE OF ANY DITCH / EPHEMERAL CHANNELS.
  - SLOPES OF THE SWALES / DITCHES TO BE VEGETATED OR PROTECTED FROM EROSION UNTIL VEGETATION HAS BEEN ESTABLISHED. STRIPPED VEGETATIVE LAYER 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.
  - AREAS STRIPPED OF VEGETATION SHOULD BE KEPT TO A MINIMUM.
  - 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.
  - 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.
  - SPACING AND FREQUENCY OF CHECK DAMS WILL BE DEPENDENT UPON LONGITUDINAL GRADIENT OF SWALE.
  - 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.
  - OIL/FUEL SHOULD BE STORED WITHIN BUNDED CONTAINMENT STRUCTURES.
  - SILT BAGS WILL BE USED ON SITE AT FIELD DRAIN DISCHARGE LOCATIONS, AS NECESSARY.



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 WHERE POSSIBLE 2) APPLICATION OF 10M BUFFER ZONES TO MAIN DRAINS WHERE POSSIBLE 3) USING SMALL WORKING AREAS 4) 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 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) OYSTER BAGS FILLED WITH GRAVEL C) FILTER FABRICS D) AND OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 3) USING SMALL WORKING AREAS 4) SURROUNDING STOCKPILES WITH SILT FENCING 5) WEATHERING OFF / SEALING SPOIL STOCKPILES
IN-LINE CONTROLS:	1) INTERCEPTOR DRAINS, VEE-DRAINS, OVERSIZED SWALES/COLLECTOR DRAINS 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) OYSTER BAGS FILLED WITH GRAVEL C) FILTER FABRICS D) STRAW BALES E) FLOW LIMITERS F) WEIRS OR BARRIERS G) AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 3) SILT FENCES, FILTER FABRICS 4) IN STREAM SEDIMENTS 5) COLLECTION SUMPS, TEMPORARY SUMPS, PUMPING SYSTEMS 6) ATTENUATION LAGOONS 7) SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS
WATER TREATMENT CONTROLS:	1) TEMPORARY SUMPS 2) ATTENUATION PONDS 3) TEMPORARY STORAGE LAGOONS 4) SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS 5) PROPRIETARY SETTLEMENT SYSTEMS SUCH AS SILTBUSTER, AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS. 6) SILT DEWATERING BAGS
OUTFALL CONTROLS:	1) LEVELSPREADERS 2) BUFFERED OUTFALLS 3) VEGETATION FILTERS 4) SILT DEWATERING BAGS 5) FLOW LIMITERS AND WEIRS

- DRAWING LEGEND :**
- RIVERS/STREAMS
  - RIVERS/STREAMS 50M BUFFER
  - STREAM FLOW DIRECTION
  - DRAINS
  - DRAINS 10M BUFFER
  - DRAINS TO BE REMOVED
  - DRAIN REDIRECTION
  - DRAIN REDIRECTION 10M BUFFER
  - UPSTREAM INTERCEPTOR DRAIN
  - SWALES/DOWNSTREAM COLLECTOR DRAIN
  - DIRECTION OF FLOW
  - SILT FENCES
  - DOUBLE SILT FENCES
  - SETTLEMENT POND - LEVEL SPREADER
  - SETTLEMENT POND - VEGETATION FILTER - LEVEL SPREADER
  - CHECK DAM 'TYPE A'
  - CHECK DAM 'TYPE B'
  - PROPOSED CULVERTS/BRIDGES
  - INTERCEPTOR DITCH CULVERT
  - COLLECTOR DITCH CULVERT
  - OVERLAND FLOW DISCHARGE
  - TREATED WATER DISCHARGE
  - SP
  - VS
  - SEMI-NATURAL VEGETATION
  - SWALE / FILTER BED / SECONDARY SP
  - GROUND SLOPE DIRECTION
  - EDGE PROTECTION

- PLANNING APPLICATION
- EXISTING GROUND SURFACE
- INTERMEDIATE CONTOUR (2M INTERVALS)
- EXISTING GROUND SURFACE
- MAJOR CONTOUR (10M INTERVALS)
- PROPOSED TURBINE AND SWEEP AREA
- PROPOSED TURBINE FOUNDATION
- PROPOSED CRANE PLATFORM
- PROPOSED NEW ACCESS ROAD
- EXISTING ACCESS ROAD
- PROPOSED TO BE UPGRADED
- SUBSTATION
- TEMPORARY CONSTRUCTION COMPOUND
- SPOIL MANAGEMENT AREAS
- MET MAST
- CUT AREA
- FILL AREA



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- DRAWINGS ISSUED ARE FOR PLANNING APPLICATION PURPOSES ONLY.
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  - ALL DIMENSIONS ARE IN METRES.

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Date	Description	Chkd	Signed

Revisions

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 email: info@hydroenvironmental.ie  
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Client: **UMMA MORE LTD**

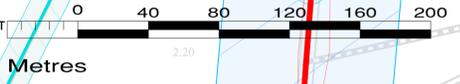
Job: **UMMA MORE RENEWABLE ENERGY DEVELOPMENT**

Title: **PROPOSED DRAINAGE LAYOUT**

Figure No: **D101**

Drawing No: **P1553-0-0223-A1-D101-Rev A**

Sheet Size: A1 Project No.: P1553-0  
 Scale: 1:2,000 (A1) Drawn By: GD  
 Date: 09/02/2023 Checked By: MG



**POLLUTION PREVENTION NOTES:**

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  - SUITABLE DRAINAGE CONTROL MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT CONVEYANCE OF SIGNIFICANT VOLUMES OF SILT TO OFF SITE RECEIVING WATERCOURSES.
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- CARE WILL BE TAKEN WHEN COMPLETING CONCRETE WORKS ON SITE TO ENSURE NO DISCHARGES OCCUR.
  - CONCRETE WASH WATER, AND WASTE CONCRETE WILL BE MANAGED APPROPRIATELY ON SITE.

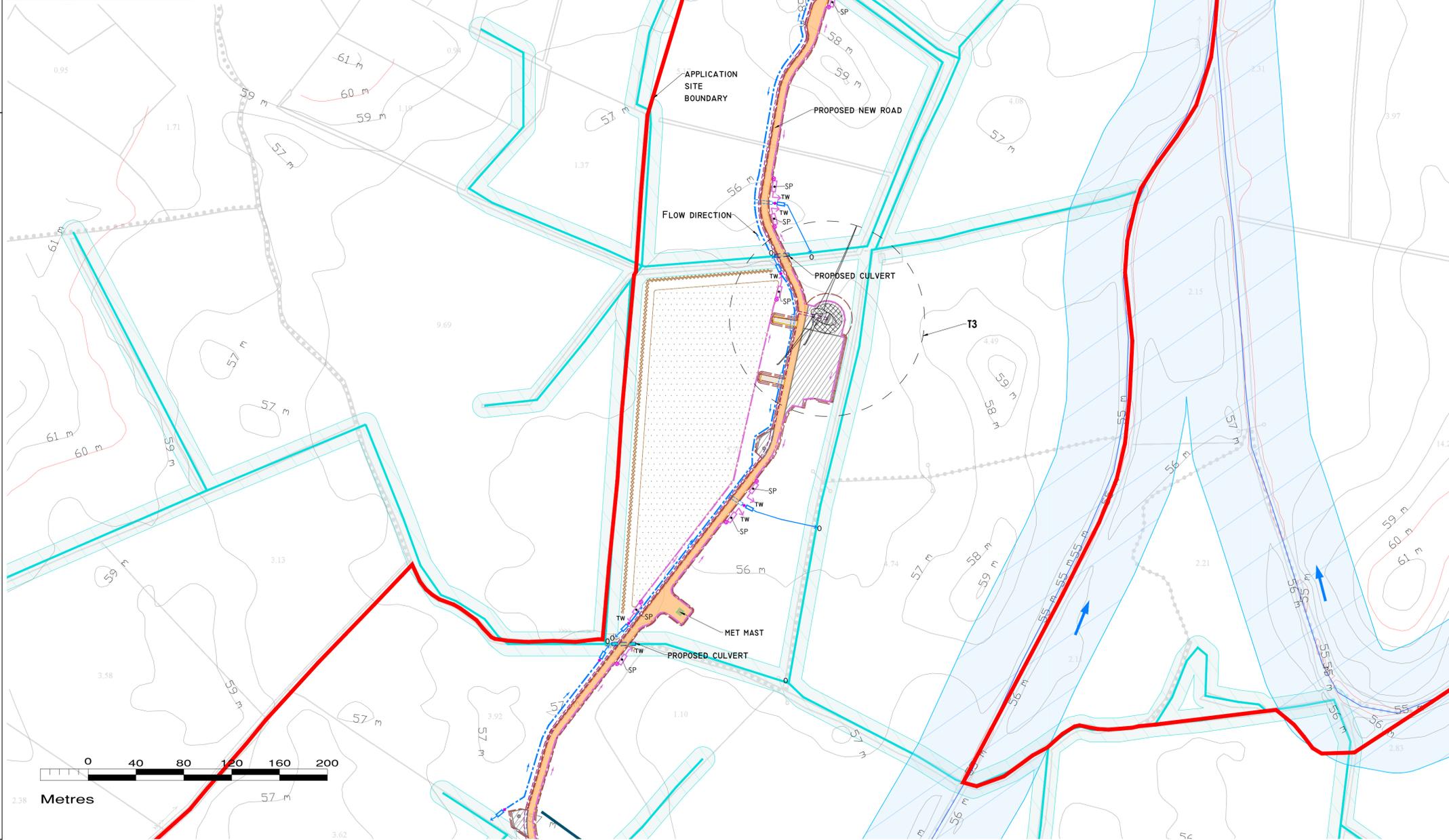
**IF WATER POLLUTION IS IDENTIFIED THE FOLLOWING STEPS WOULD BE ADHERED TO:**

- 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 THE 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 AREAS.

**DRAINAGE NOTES:**

- ROADWAY SURFACING DESIGN AND CONSTRUCTION TO ENGINEER'S SPECIFICATION (I.E. BY OTHERS).
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- WHERE POSSIBLE, A BUFFER ZONE OF >20M TO ANY EXISTING WATERCOURSE WILL BE REQUIRED WHERE OVER LAND DISCHARGES ARE PROPOSED FROM ACCESS TRACK SWALES / DITCHES.
- 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.
- TRACK SIDE SWALES / DITCHES TO BE SHALLOW WITH MODERATE GRADIENTS TO PREVENT SCOURING. IN STEEP AREAS CHECK DAMS SHOULD BE INSTALLED TO REDUCE FLOW VELOCITIES AND PROVIDE SOURCE CONTROL OF SILT CONTAINMENT. WHERE NECESSARY THESE HAVE BEEN DESIGNATED IN CONJUNCTION WITH SETTLEMENT PONDS AND SILT TRAPS, PRIOR TO DISCHARGE.
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- AREAS STRIPPED OF VEGETATION SHOULD BE KEPT TO A MINIMUM.
- 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.
- 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.
- SPACING AND FREQUENCY OF CHECK DAMS WILL BE DEPENDENT UPON LONGITUDINAL GRADIENT OF SWALE.
- 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.
- OIL/FUEL SHOULD BE STORED WITHIN BUNDED CONTAINMENT STRUCTURES.
- SILT BAGS WILL BE USED ON SITE AT FIELD DRAIN DISCHARGE LOCATIONS, AS NECESSARY.

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 WHERE POSSIBLE 2) APPLICATION OF 10M BUFFER ZONES TO MAIN DRAINS WHERE POSSIBLE 3) USING SMALL WORKING AREAS 4) 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 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) OYSTER BAGS FILLED WITH GRAVEL C) FILTER FABRICS D) AND OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 3) USING SMALL WORKING AREAS 4) SURROUNDING STOCKPILES WITH SILT FENCING 5) WEATHERING OFF / SEALING SPOIL STOCKPILES
IN-LINE CONTROLS	1) INTERCEPTOR DRAINS, VEE-DRAINS, OVERSIZED SWALES/COLLECTOR DRAINS 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) OYSTER BAGS FILLED WITH GRAVEL C) FILTER FABRICS D) STRAW BALES E) FLOW LIMITERS F) WEIRS OR BAFFLES G) AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 3) SILT FENCES, FILTER FABRICS 4) IN STREAM SEDIMIATS 5) COLLECTION SUMPS, TEMPORARY SUMPS, PUMPING SYSTEMS 6) ATTENUATION LAGOONS 7) SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS
WATER TREATMENT CONTROLS	1) TEMPORARY SUMPS 2) ATTENUATION PONDS 3) TEMPORARY STORAGE LAGOONS 4) SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS 5) PROPRIETARY SETTLEMENT SYSTEMS SUCH AS SILTBUSTER, AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS. 6) SILT DEWATERING BAGS
OUTFALL CONTROLS	1) LEVELSPREADERS 2) BUFFERED OUTFALLS 3) VEGETATION FILTERS 4) SILT DEWATERING BAGS 5) FLOW LIMITERS AND WEIRS



**DRAWING LEGEND :**

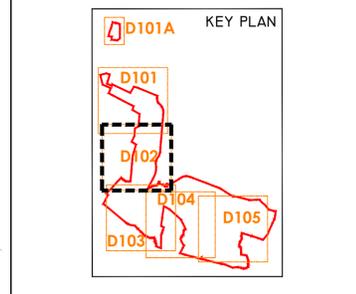
- RIVERS/STREAMS
- RIVERS/STREAMS 50M BUFFER
- STREAM FLOW DIRECTION
- DRAINS
- DRAINS 10M BUFFER
- DRAINS TO BE REMOVED
- DRAIN REDIRECTION
- DRAIN REDIRECTION 10M BUFFER

**EXISTING DRAINAGE**

- UPSTREAM INTERCEPTOR DRAIN
- SWALES/DOWNSTREAM COLLECTOR DRAIN
- DIRECTION OF FLOW
- SILT FENCES
- DOUBLE SILT FENCES
- SETTLEMENT POND - LEVEL SPREADER
- SETTLEMENT POND - VEGETATION FILTER
- LEVEL SPREADER
- CHECK DAM 'TYPE A'
- CHECK DAM 'TYPE B'
- PROPOSED CULVERTS/BRIDGES
- INTERCEPTOR DITCH CULVERT
- COLLECTOR DITCH CULVERT
- OVERLAND FLOW DISCHARGE
- SETTLEMENT POND
- SP
- TW
- TREATED WATER DISCHARGE
- SEMI-NATURAL VEGETATION SWALE / FILTER BED / SECONDARY SP
- VS
- GROUND SLOPE DIRECTION
- EDGE PROTECTION

**PLANNING APPLICATION**

- EXISTING GROUND SURFACE
- INTERMEDIATE CONTOUR (2M INTERVALS)
- EXISTING GROUND SURFACE
- MAJOR CONTOUR (10M INTERVALS)
- PROPOSED TURBINE AND SWEEP AREA
- PROPOSED TURBINE FOUNDATION
- PROPOSED CRANE PLATFORM
- PROPOSED NEW ACCESS ROAD
- EXISTING ACCESS ROAD
- PROPOSED TO BE UPGRADED
- SUBSTATION
- TEMPORARY CONSTRUCTION COMPOUND
- SPOIL MANAGEMENT AREAS
- MET MAST
- CUT AREA
- FILL AREA



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Date	Description	Chkd	Signed
Revisions			

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Client: **UMMA MORE LTD**

Job: **UMMA MORE RENEWABLE ENERGY DEVELOPMENT**

Title: **PROPOSED DRAINAGE LAYOUT**

Figure No: **D102**

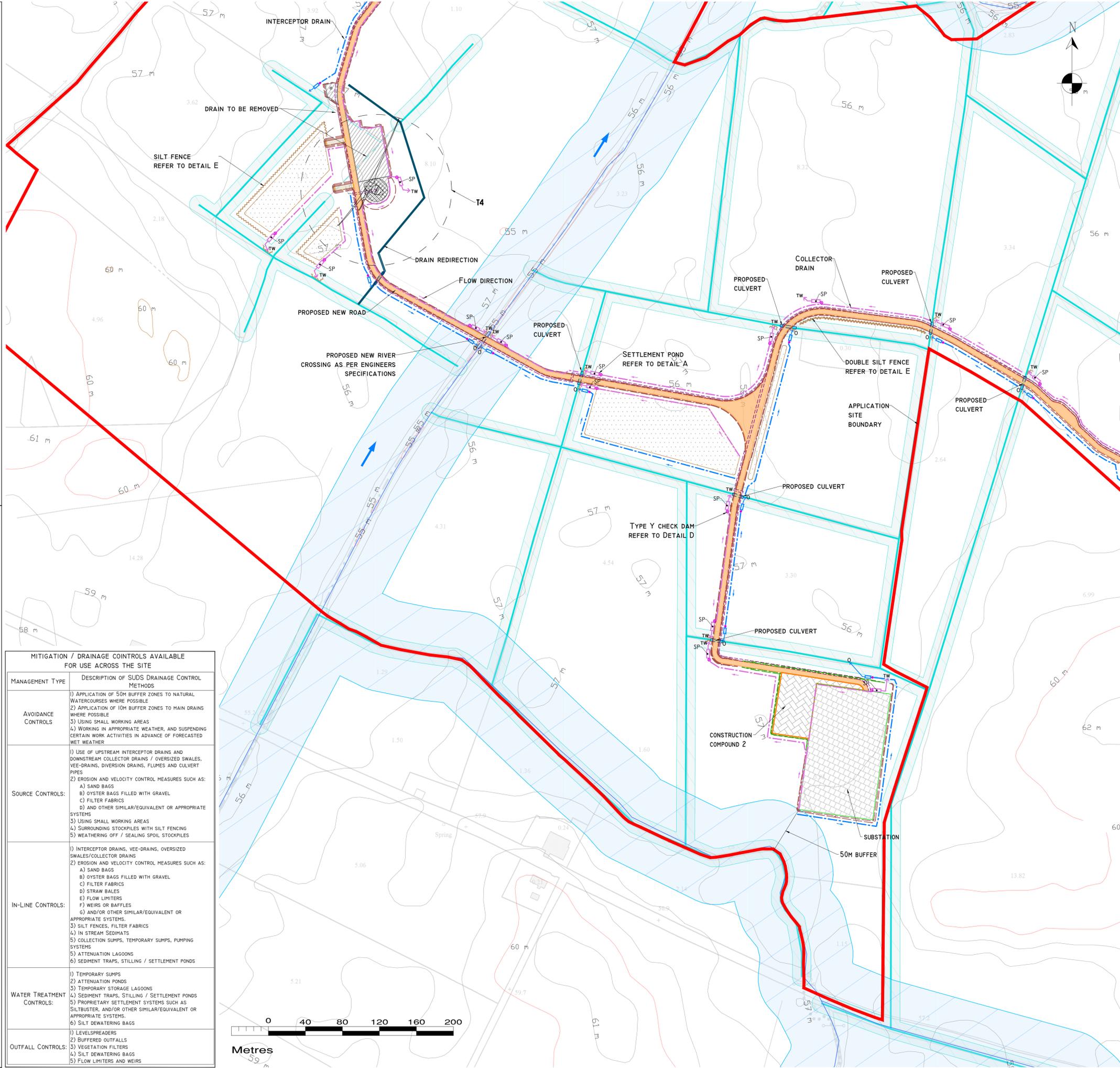
Drawing No: P1553-0-0223-A1-D102-RevA

Sheet Size: A1 Project No.: P1553-0  
Scale: 1:2,000 (A1) Drawn By: GD  
Date: 09/02/2023 Checked By: MG

**POLLUTION PREVENTION NOTES:**

- SITE MANAGEMENT PROPOSALS ARE INTENDED TO ENSURE PROTECTION AGAINST SURFACE WATER AND GROUNDWATER POLLUTION, SILTATION AND EROSION.
  - SUITABLE DRAINAGE CONTROL MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT CONVEYANCE OF SIGNIFICANT VOLUMES OF SILT TO OFF SITE RECEIVING WATERCOURSES.
  - 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**
- WATER CONTAINING SILT WILL NOT BE PUMPED DIRECTLY TO ANY NATURAL WATERCOURSE. ALL DISCHARGES TO BE MADE OVER OPEN GROUND OR INTO EXISTING FIELD DRAINS WITH SILT TRAP AT A MINIMUM OF 20M FROM NEAREST WATERCOURSE UNLESS OTHERWISE STATED.
  - NO EXCAVATED MATERIAL IS TO BE STORED WITHIN ANY SURFACE WATER BUFFER ZONE.
  - PUMPED WATER WILL BE DIRECTED INTO TRACK SIDE DITCHES AND TREATED IN SETTLEMENT PONDS AND VEGETATION SWALES PRIOR TO OVERLAND DISCHARGE.
  - PUMPING OF CLEAN WATER FROM EXCAVATIONS / OR OVER-PUMPING IN DRAINS/DITCHES/STREAMS WILL BE COMPLETED IN A MANNER THAT DOES NOT CAUSE SCOUR OR EROSION AT THE POINT OF RELEASE/DISCHARGE. THIS WILL BE DONE BY REDUCING THE FLOW VELOCITIES OR BY USE OF SPLASH PLATES, AND OTHER SIMILAR DISCHARGE CONTROLS.
  - VEGETATION WILL NOT BE STRIPPED FROM EXISTING DRAINS/DITCHES UNLESS ABSOLUTELY NECESSARY.
- EXCAVATIONS**
- WHERE 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**
- THE AMOUNT OF EXPOSED GROUND AND TEMPORARY STOCKPILES OPEN AT ANY ONE TIME WILL BE MINIMISED, AS FAR AS PRACTICABLE.
- SITE TRACKS**
- USE OF TRACK SIDE SWALES WITH CHECK DAMS, AND/OR FILTRATION CHECK DAMS WILL REDUCE SILT IN RUNOFF WATER AS REQUIRED.
  - CHECK DAMS TO BE INSPECTED AND CLEANED REGULARLY.
- REFUELLING**
- REFUELLING OF MOBILE PLANT WILL BE COMPLETED IN DESIGNATED REFUELLING AREAS ONLY, PREFERABLY ON AN IMPERMEABLE SURFACE AND AWAY FROM FIELD DRAINS / DITCHES AND WATERCOURSES / WATERBODIES.
  - SPILL KITS AND DRIP TRAYS WILL BE AVAILABLE ON SITE FOR USE AS REQUIRED.
- CONCRETE**
- CARE WILL BE TAKEN WHEN COMPLETING CONCRETE WORKS ON SITE TO ENSURE NO DISCHARGES OCCUR.
  - CONCRETE WASH WATER, AND WASTE CONCRETE WILL BE MANAGED APPROPRIATELY ON SITE.
- 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 THE 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 AREAS.

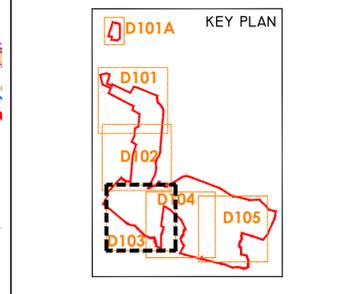
- DRAINAGE NOTES:**
- ROADWAY SURFACING DESIGN AND CONSTRUCTION TO ENGINEER'S SPECIFICATION (I.E. BY OTHERS).
  - SPARE STRAW BALES/SILT FENCING/ OR SIMILAR, TO BE STORED ON SITE. THE LEVEL OF SILT IN RUNOFF DURING CONSTRUCTION IS TO BE MONITORED VISUALLY AND EXCESSIVE SILT LEVELS IN ANY AREA TO BE TEMPORARILY 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.
  - SUDS 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.
  - SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SIGNIFICANT VOLUMES OF SILT TO RECEIVING WATERCOURSES. SEE NOTES ON POLLUTION PREVENTION.
  - INTERCEPTOR SWALES / DITCHES TO BE USED TO COLLECT UPSTREAM SURFACE WATER FLOWS, REGULAR CROSS DRAINS / DISCHARGE TO FIELD DITCHES/DRAINS WILL BE REQUIRED TO TRANSFER / DISCHARGE SURFACE WATER IN INTERCEPTOR DRAINS TO SUITABLE FIELD DRAIN OUTFALL POINTS.
  - 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. LOCATIONS OF CROSS DRAINS TO BE AGREED WITH THE ENGINEER ON SITE. SURFACE WATER WILL NOT BE ALLOWED TO DISCHARGE DIRECTLY INTO EXISTING WATERCOURSES.
  - WHERE POSSIBLE, A BUFFER ZONE OF >20M TO ANY EXISTING WATERCOURSE WILL BE REQUIRED WHERE OVER LAND DISCHARGES ARE PROPOSED FROM ACCESS TRACK SWALES / DITCHES.
  - 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.
  - TRACK SIDE SWALES / DITCHES TO BE SHALLOW WITH MODERATE GRADIENTS TO PREVENT SCOURING. IN STEEP AREAS CHECK DAMS SHOULD BE INSTALLED TO REDUCE FLOW VELOCITIES AND PROVIDE SOURCE CONTROL OF SILT CONTAINMENT. WHERE NECESSARY THESE HAVE BEEN DESIGNATED IN CONJUNCTION WITH SETTLEMENT PONDS AND SILT TRAPS, PRIOR TO DISCHARGE.
  - SETTLEMENT PONDS TO BE CONSTRUCTED FOR SILT REMOVAL AT TURBINE BASES AND HARD STAND AREAS. POND SIZES DEPENDS ON CATCHMENT AREA SERVED. SAMPLE POND SIZES SHOWN ON DRAWING D501.
  - STRAW BALES / OR SIMILAR AND SILT FENCES TO BE USED ALSO AROUND SPOIL STOCKPILES TO MITIGATE SILT RUNOFF. SILT FENCES MAY BE REMOVED WHEN SUITABLE VEGETATION COVER IS ESTABLISHED.
  - SILT FENCES TO BE PROVIDED ALONG EDGE OF EXISTING WATERCOURSE WHERE WORKS COMES WITHIN 10M OF EDGE OF ANY DITCH / EPHEMERAL CHANNELS.
  - SLOPES OF THE SWALES / DITCHES TO BE VEGETATED OR PROTECTED FROM EROSION UNTIL VEGETATION HAS BEEN ESTABLISHED. STRIPPED VEGETATIVE LAYER 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.
  - AREAS STRIPPED OF VEGETATION SHOULD BE KEPT TO A MINIMUM.
  - 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.
  - 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.
  - SPACING AND FREQUENCY OF CHECK DAMS WILL BE DEPENDENT UPON LONGITUDINAL GRADIENT OF SWALE.
  - 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.
  - OIL/FUEL SHOULD BE STORED WITHIN BUNDED CONTAINMENT STRUCTURES.
  - SILT BAGS WILL BE USED ON SITE AT FIELD DRAIN DISCHARGE LOCATIONS, AS NECESSARY.



MITIGATION / DRAINAGE CONTROLS AVAILABLE FOR USE ACROSS THE SITE	
MANAGEMENT TYPE	DESCRIPTION OF SUDS DRAINAGE CONTROL METHODS
AVOIDANCE CONTROLS	<ol style="list-style-type: none"> <li>APPLICATION OF 50M BUFFER ZONES TO NATURAL WATERCOURSES WHERE POSSIBLE</li> <li>APPLICATION OF 10M BUFFER ZONES TO MAIN DRAINS WHERE POSSIBLE</li> <li>USING SMALL WORKING AREAS</li> <li>WORKING IN APPROPRIATE WEATHER, AND SUSPENDING CERTAIN WORK ACTIVITIES IN ADVANCE OF FORECASTED WET WEATHER</li> </ol>
SOURCE CONTROLS	<ol style="list-style-type: none"> <li>USE OF UPSTREAM INTERCEPTOR DRAINS AND DOWNSTREAM COLLECTOR DRAINS / OVERSIZED SWALES, VEE-DRAINS, DIVERSION DRAINS, FLUMES AND CULVERT PIPES</li> <li>EROSION AND VELOCITY CONTROL MEASURES SUCH AS:                     <ol style="list-style-type: none"> <li>SAND BAGS</li> <li>OSTER BAGS FILLED WITH GRAVEL</li> <li>FILTER FABRICS</li> <li>AND OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS</li> </ol> </li> <li>USING SMALL WORKING AREAS</li> <li>SURROUNDING STOCKPILES WITH SILT FENCING</li> <li>WEATHERING OFF / SEALING SPOIL STOCKPILES</li> </ol>
IN-LINE CONTROLS	<ol style="list-style-type: none"> <li>INTERCEPTOR DRAINS, VEE-DRAINS, OVERSIZED SWALES/COLLECTOR DRAINS</li> <li>EROSION AND VELOCITY CONTROL MEASURES SUCH AS:                     <ol style="list-style-type: none"> <li>SAND BAGS</li> <li>OSTER BAGS FILLED WITH GRAVEL</li> <li>FILTER FABRICS</li> <li>STRAW BALES</li> <li>FLOW LIMITERS</li> <li>WEIRS OR BARRIERS</li> <li>AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS.</li> </ol> </li> <li>SILT FENCES, FILTER FABRICS</li> <li>IN STREAM SEDIMENTS</li> <li>COLLECTION SUMPS, TEMPORARY SUMPS, PUMPING SYSTEMS</li> <li>ATTENUATION LAGOONS</li> <li>SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS</li> </ol>
WATER TREATMENT CONTROLS	<ol style="list-style-type: none"> <li>TEMPORARY SUMPS</li> <li>ATTENUATION PONDS</li> <li>TEMPORARY STORAGE LAGOONS</li> <li>SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS</li> <li>PROPRIETARY SETTLEMENT SYSTEMS SUCH AS SILTBUSTER, AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS.</li> <li>SILT DEWATERING BAGS</li> </ol>
OUTFALL CONTROLS	<ol style="list-style-type: none"> <li>LEVELSPREADERS</li> <li>BUFFERED OUTFALLS</li> <li>VEGETATION FILTERS</li> <li>SILT DEWATERING BAGS</li> <li>FLOW LIMITERS AND WEIRS</li> </ol>

- DRAWING LEGEND:**
- RIVERS/STREAMS
  - RIVERS/STREAMS 50M BUFFER
  - STREAM FLOW DIRECTION
  - DRAINS
  - DRAINS 10M BUFFER
  - DRAINS TO BE REMOVED
  - DRAIN REDIRECTION
  - DRAIN REDIRECTION 10M BUFFER
  - EXISTING DRAINAGE
  - PROPOSED DRAINAGE
  - UPSTREAM INTERCEPTOR DRAIN
  - SWALES/DOWNSTREAM COLLECTOR DRAIN
  - DIRECTION OF FLOW
  - SILT FENCES
  - DOUBLE SILT FENCES
  - SETTLEMENT POND - LEVEL SPREADER
  - SETTLEMENT POND - VEGETATION FILTER
  - LEVEL SPREADER
  - CHECK DAM 'TYPE A'
  - CHECK DAM 'TYPE B'
  - PROPOSED CULVERTS/BRIDGES
  - INTERCEPTOR DITCH CULVERT
  - COLLECTOR DITCH CULVERT
  - OVERLAND FLOW DISCHARGE
  - SETTLEMENT POND
  - TREATED WATER DISCHARGE
  - SEMI-NATURAL VEGETATION SWALE / FILTER BED / SECONDARY SP
  - GROUND SLOPE DIRECTION
  - EDGE PROTECTION

- PLANNING APPLICATION
- EXISTING GROUND SURFACE
- INTERMEDIATE CONTOUR (2M INTERVALS)
- EXISTING GROUND SURFACE
- MAJOR CONTOUR (10M INTERVALS)
- PROPOSED TURBINE AND SWEEP AREA
- PROPOSED TURBINE FOUNDATION
- PROPOSED CRANE PLATFORM
- PROPOSED NEW ACCESS ROAD
- EXISTING ACCESS ROAD
- PROPOSED TO BE UPGRADED
- SUBSTATION
- TEMPORARY CONSTRUCTION COMPOUND
- SPOIL MANAGEMENT AREAS
- MET MAST
- CUT AREA
- FILL AREA



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Date	Description	Chkd	Signed

Revisions

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Client: **UMMA MORE LTD**

Job: **UMMA MORE RENEWABLE ENERGY DEVELOPMENT**

Title: **PROPOSED DRAINAGE LAYOUT**

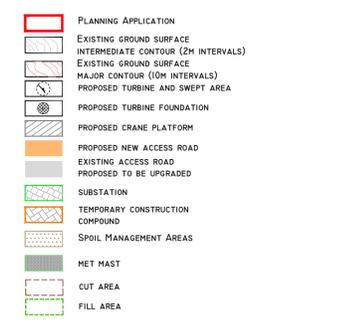
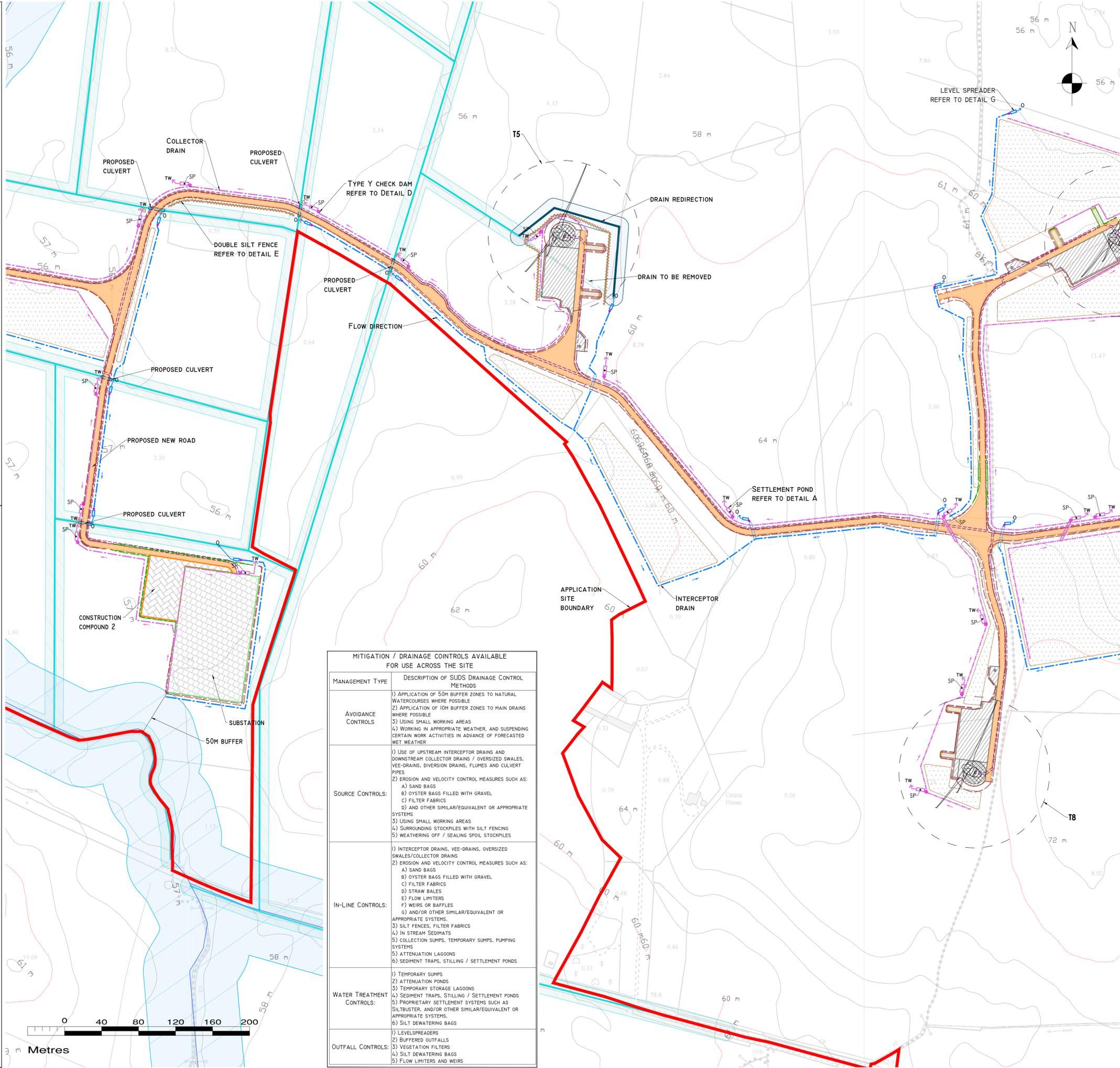
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Drawing No: P1553-0-0223-A1-D103-RevA  
 Sheet Size: A1 Project No.: P1553-0  
 Scale: 1:2,000 (A1) Drawn By: GD  
 Date: 09/02/2023 Checked By: MG

**POLLUTION PREVENTION NOTES:**

- SITE MANAGEMENT PROPOSALS ARE INTENDED TO ENSURE PROTECTION AGAINST SURFACE WATER AND GROUNDWATER POLLUTION, SILTATION AND EROSION.
  - SUITABLE DRAINAGE CONTROL MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT CONVEYANCE OF SIGNIFICANT VOLUMES OF SILT TO OFF SITE RECEIVING WATERCOURSES.
  - 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**
- WATER CONTAINING SILT WILL NOT BE PUMPED DIRECTLY TO ANY NATURAL WATERCOURSE. ALL DISCHARGES TO BE MADE OVER OPEN GROUND OR INTO EXISTING FIELD DRAINS WITH SILT TRAP AT A MINIMUM OF 20M FROM NEAREST WATERCOURSE UNLESS OTHERWISE STATED.
  - NO EXCAVATED MATERIAL IS TO BE STORED WITHIN ANY SURFACE WATER BUFFER ZONE.
  - PUMPED WATER WILL BE DIRECTED INTO TRACK SIDE DITCHES AND TREATED IN SETTLEMENT PONDS AND VEGETATION SWALES PRIOR TO OVERLAND DISCHARGE.
  - PUMPING OF CLEAN WATER FROM EXCAVATIONS / OR OVER-PUMPING IN DRAINS/DITCHES/STREAMS WILL BE COMPLETED IN A MANNER THAT DOES NOT CAUSE SCOUR OR EROSION AT THE POINT OF RELEASE/DISCHARGE. THIS WILL BE DONE BY REDUCING THE FLOW VELOCITIES OR BY USE OF SPLASH PLATES, AND OTHER SIMILAR DISCHARGE CONTROLS.
  - VEGETATION WILL NOT BE STRIPPED FROM EXISTING DRAINS/DITCHES UNLESS ABSOLUTELY NECESSARY.
- EXCAVATIONS**
- WHERE 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**
- THE AMOUNT OF EXPOSED GROUND AND TEMPORARY STOCKPILES OPEN AT ANY ONE TIME WILL BE MINIMISED, AS FAR AS PRACTICABLE.
- SITE TRACKS**
- USE OF TRACK SIDE SWALES WITH CHECK DAMS, AND/OR FILTRATION CHECK DAMS WILL REDUCE SILT IN RUNOFF WATER AS REQUIRED.
  - CHECK DAMS TO BE INSPECTED AND CLEANED REGULARLY.
- REFUELLING**
- REFUELLING OF MOBILE PLANT WILL BE COMPLETED IN DESIGNATED REFUELLING AREAS ONLY, PREFERABLY ON AN IMPERMEABLE SURFACE AND AWAY FROM FIELD DRAINS / DITCHES AND WATERCOURSES / WATERBODIES.
  - SPILL KITS AND DRIP TRAYS WILL BE AVAILABLE ON SITE FOR USE AS REQUIRED.
- CONCRETE**
- CARE WILL BE TAKEN WHEN COMPLETING CONCRETE WORKS ON SITE TO ENSURE NO DISCHARGES OCCUR.
  - CONCRETE WASH WATER, AND WASTE CONCRETE WILL BE MANAGED APPROPRIATELY ON SITE.
- 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 THE 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 AREAS.

- DRAINAGE NOTES:**
- ROADWAY SURFACING DESIGN AND CONSTRUCTION TO ENGINEER'S SPECIFICATION (I.E. BY OTHERS).
  - SPARE STRAW BALES/SILT FENCING/ OR SIMILAR, TO 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.
  - SUDS 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.
  - SUITABLE PREVENTION MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT THE CONVEYANCE OF SIGNIFICANT VOLUMES OF SILT TO RECEIVING WATERCOURSES. SEE NOTES ON POLLUTION PREVENTION.
  - INTERCEPTOR SWALES / DITCHES TO BE USED TO COLLECT UPSTREAM SURFACE WATER FLOWS. REGULAR CROSS DRAINS / DISCHARGE TO FIELD DITCHES/DRAINS WILL BE REQUIRED TO TRANSFER / DISCHARGE SURFACE WATER IN INTERCEPTOR DRAINS TO SUITABLE FIELD DRAIN OUTFALL POINTS.
  - 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. LOCATIONS OF CROSS DRAINS TO BE AGREED WITH THE ENGINEER ON SITE. SURFACE WATER WILL NOT BE ALLOWED TO DISCHARGE DIRECTLY INTO EXISTING WATERCOURSES.
  - WHERE POSSIBLE, A BUFFER ZONE OF >20M TO ANY EXISTING WATERCOURSE WILL BE REQUIRED WHERE OVER LAND DISCHARGES ARE PROPOSED FROM ACCESS TRACK SWALES / DITCHES.
  - 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.
  - TRACK SIDE SWALES / DITCHES TO BE SHALLOW WITH MODERATE GRADIENTS TO PREVENT SCOURING. IN STEEP AREAS CHECK DAMS SHOULD BE INSTALLED TO REDUCE FLOW VELOCITIES AND PROVIDE SOURCE CONTROL OF SILT CONTAINMENT. WHERE NECESSARY THESE HAVE BEEN DESIGNATED IN CONJUNCTION WITH SETTLEMENT PONDS AND SILT TRAPS, PRIOR TO DISCHARGE.
  - SETTLEMENT PONDS TO BE CONSTRUCTED FOR SILT REMOVAL AT TURBINE BASES AND HARD STAND AREAS. POND SIZES DEPENDS ON CATCHMENT AREA SERVED. SAMPLE POND SIZES SHOWN ON DRAWING D501.
  - STRAW BALES / OR SIMILAR AND SILT FENCES TO BE USED ALSO AROUND SPOIL STOCKPILES TO MITIGATE SILT RUNOFF. SILT FENCES MAY BE REMOVED WHEN SUITABLE VEGETATION COVER IS ESTABLISHED.
  - SILT FENCES TO BE PROVIDED ALONG EDGE OF EXISTING WATERCOURSE WHERE WORKS COMES WITHIN 10M OF EDGE OF ANY DITCH / EPHEMERAL CHANNELS.
  - SLOPES OF THE SWALES / DITCHES TO BE VEGETATED OR PROTECTED FROM EROSION UNTIL VEGETATION HAS BEEN ESTABLISHED. STRIPPED VEGETATIVE LAYER FROM EXCAVATIONS TO BE STORED LOCALLY AND USED TO LINE SLOPES AND BASES OF SWALES / DITCHES OR LONGITUDINAL MOUNDS OF VEGETATION SWALES AT FIELD DRAIN DISCHARGE POINTS.
  - AREAS STRIPPED OF VEGETATION SHOULD BE KEPT TO A MINIMUM.
  - 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.
  - 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.
  - SPACING AND FREQUENCY OF CHECK DAMS WILL BE DEPENDENT UPON LONGITUDINAL GRADIENT OF SWALE.
  - 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 HARSTAND CONSTRUCTION). ONLY SUITABLE MATERIALS EXCAVATED FROM THE POND TO BE USED TO FORM PART OF THE EMBANKMENT AROUND THE POND.
  - OIL/FUEL SHOULD BE STORED WITHIN BUNDED CONTAINMENT STRUCTURES.
  - SILT BAGS WILL BE USED ON SITE AT FIELD DRAIN DISCHARGE LOCATIONS, AS NECESSARY.



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- ALL DIMENSIONS ARE IN METRES.

MITIGATION / DRAINAGE CONTROLS AVAILABLE FOR USE ACROSS THE SITE	
MANAGEMENT TYPE	DESCRIPTION OF SUDS DRAINAGE CONTROL METHODS
AVOIDANCE CONTROLS:	<ol style="list-style-type: none"> <li>APPLICATION OF 50M BUFFER ZONES TO NATURAL WATERCOURSES WHERE POSSIBLE</li> <li>APPLICATION OF 10M BUFFER ZONES TO MAIN DRAINS WHERE POSSIBLE</li> <li>USING SMALL WORKING AREAS</li> <li>WORKING IN APPROPRIATE WEATHER, AND SUSPENDING CERTAIN WORK ACTIVITIES IN ADVANCE OF FORECASTED WET WEATHER</li> </ol>
SOURCE CONTROLS:	<ol style="list-style-type: none"> <li>USE OF UPSTREAM INTERCEPTOR DRAINS AND DOWNSTREAM COLLECTOR DRAINS / OVERSIZED SWALES, VEE-DRAINS, DIVERSION DRAINS, FLUMES AND CULTVERT PIPES</li> <li>EROSION AND VELOCITY CONTROL MEASURES SUCH AS:                     <ol style="list-style-type: none"> <li>SAND BAGS</li> <li>OYSTER BAGS FILLED WITH GRAVEL</li> <li>FILTER FABRICS</li> <li>AND OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS</li> </ol> </li> <li>USING SMALL WORKING AREAS</li> <li>SURROUNDING STOCKPILES WITH SILT FENCING</li> <li>WEATHERING OFF / SEALING SPOIL STOCKPILES</li> </ol>
IN-LINE CONTROLS:	<ol style="list-style-type: none"> <li>INTERCEPTOR DRAINS, VEE-DRAINS, OVERSIZED SWALES/COLLECTOR DRAINS</li> <li>EROSION AND VELOCITY CONTROL MEASURES SUCH AS:                     <ol style="list-style-type: none"> <li>SAND BAGS</li> <li>OYSTER BAGS FILLED WITH GRAVEL</li> <li>FILTER FABRICS</li> <li>STRAW BALES</li> <li>FLOW LIMITERS</li> <li>WEIRS OR BAFFLES</li> <li>AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS.</li> </ol> </li> <li>SILT FENCES, FILTER FABRICS</li> <li>IN STREAM SEDIMENTS</li> <li>COLLECTION SUMPS, TEMPORARY SUMPS, PUMPING SYSTEMS</li> <li>ATTENUATION LAGOONS</li> <li>SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS</li> </ol>
WATER TREATMENT CONTROLS:	<ol style="list-style-type: none"> <li>TEMPORARY SUMPS</li> <li>ATTENUATION PONDS</li> <li>TEMPORARY STORAGE LAGOONS</li> <li>SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS</li> <li>PROPRIETARY SETTLEMENT SYSTEMS SUCH AS SILTBUSTER, AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS.</li> <li>SILT DEWATERING BAGS</li> </ol>
OUTFALL CONTROLS:	<ol style="list-style-type: none"> <li>LEVELSPREADERS</li> <li>BUFFERED OUTFALLS</li> <li>VEGETATION FILTERS</li> <li>SILT DEWATERING BAGS</li> <li>FLOW LIMITERS AND WEIRS</li> </ol>

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Revisions

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Client: **UMMA MORE LTD**

Job: **UMMA MORE RENEWABLE ENERGY DEVELOPMENT**

Title: **PROPOSED DRAINAGE LAYOUT**

Figure No: **D104**

Drawing No: P1553-0-0223-A1-D104-RevA

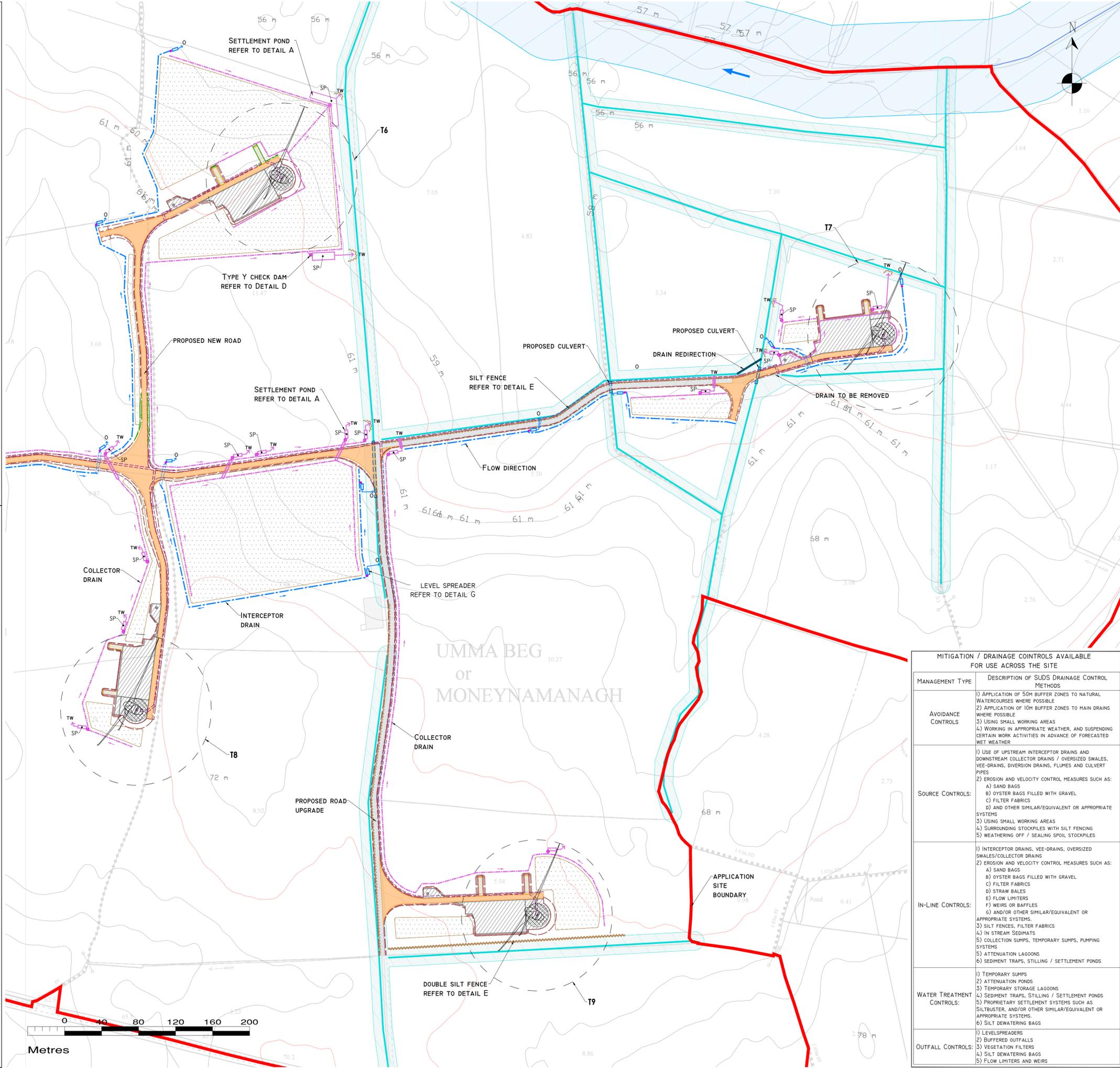
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Date: 09/02/2023 Checked By: MG

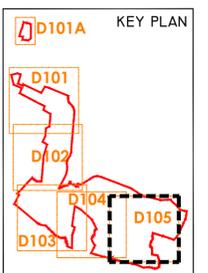
**POLLUTION PREVENTION NOTES:**

- SITE MANAGEMENT PROPOSALS ARE INTENDED TO ENSURE PROTECTION AGAINST SURFACE WATER AND GROUNDWATER POLLUTION, SILTATION AND EROSION.
  - SUITABLE DRAINAGE CONTROL MEASURES SHOULD BE IN PLACE AT ALL TIMES TO PREVENT CONVEYANCE OF SIGNIFICANT VOLUMES OF SILT TO OFF SITE RECEIVING WATERCOURSES.
  - 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**
- WATER CONTAINING SILT WILL NOT BE PUMPED DIRECTLY TO ANY NATURAL WATERCOURSE. ALL DISCHARGES TO BE MADE OVER OPEN GROUND OR INTO EXISTING FIELD DRAINS WITH SILT TRAP AT A MINIMUM OF 20M FROM NEAREST WATERCOURSE UNLESS OTHERWISE STATED.
  - NO EXCAVATED MATERIAL IS TO BE STORED WITHIN ANY SURFACE WATER BUFFER ZONE.
  - PUMPED WATER WILL BE DIRECTED INTO TRACK SIDE DITCHES AND TREATED IN SETTLEMENT PONDS AND VEGETATION SWALES PRIOR TO OVERLAND DISCHARGE.
  - PUMPING OF CLEAN WATER FROM EXCAVATIONS / OR OVER-PUMPING IN DRAINS/DITCHES/STREAMS WILL BE COMPLETED IN A MANNER THAT DOES NOT CAUSE SCOUR OR EROSION AT THE POINT OF RELEASE/DISCHARGE. THIS WILL BE DONE BY REDUCING THE FLOW VELOCITIES OR BY USE OF SPLASH PLATES, AND OTHER SIMILAR DISCHARGE CONTROLS.
  - VEGETATION WILL NOT BE STRIPPED FROM EXISTING DRAINS/DITCHES UNLESS ABSOLUTELY NECESSARY.
- EXCAVATIONS**
- WHERE 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**
- THE AMOUNT OF EXPOSED GROUND AND TEMPORARY STOCKPILES OPEN AT ANY ONE TIME WILL BE MINIMISED, AS FAR AS PRACTICABLE.
- SITE TRACKS**
- USE OF TRACK SIDE SWALES WITH CHECK DAMS, AND/OR FILTRATION CHECK DAMS WILL REDUCE SILT IN RUNOFF WATER AS REQUIRED.
  - CHECK DAMS TO BE INSPECTED AND CLEANED REGULARLY.
- REFUELLING**
- REFUELLING OF MOBILE PLANT WILL BE COMPLETED IN DESIGNATED REFUELLING AREAS ONLY, PREFERABLY ON AN IMPERMEABLE SURFACE AND AWAY FROM FIELD DRAINS / DITCHES AND WATERCOURSES / WATERBODIES.
  - SPILL KITS AND DRIP TRAYS WILL BE AVAILABLE ON SITE FOR USE AS REQUIRED.
- CONCRETE**
- CARE WILL BE TAKEN WHEN COMPLETING CONCRETE WORKS ON SITE TO ENSURE NO DISCHARGES OCCUR.
  - CONCRETE WASH WATER, AND WASTE CONCRETE WILL BE MANAGED APPROPRIATELY ON SITE.
- 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 THE 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 AREAS.
- DRAINAGE NOTES:**
- ROADWAY SURFACING DESIGN AND CONSTRUCTION TO ENGINEER'S SPECIFICATION (I.E. BY OTHERS).
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  - WHERE POSSIBLE, A BUFFER ZONE OF >20M TO ANY EXISTING WATERCOURSE WILL BE REQUIRED WHERE OVER LAND DISCHARGES ARE PROPOSED FROM ACCESS TRACK SWALES / DITCHES.
  - 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.
  - TRACK SIDE SWALES / DITCHES TO BE SHALLOW WITH MODERATE GRADIENTS TO PREVENT SCOURING. IN STEEP AREAS CHECK DAMS SHOULD BE INSTALLED TO REDUCE FLOW VELOCITIES AND PROVIDE SOURCE CONTROL OF SILT CONTAINMENT. WHERE NECESSARY THESE HAVE BEEN DESIGNATED IN CONJUNCTION WITH SETTLEMENT PONDS AND SILT TRAPS, PRIOR TO DISCHARGE.
  - SETTLEMENT PONDS TO BE CONSTRUCTED FOR SILT REMOVAL AT TURBINE BASES AND HARD STAND AREAS. POND SIZES DEPENDS ON CATCHMENT AREA SERVED. SAMPLE POND SIZES SHOWN ON DRAWING D501.
  - STRAW BALES / OR SIMILAR AND SILT FENCES TO BE USED ALSO AROUND SPOIL STOCKPILES TO MITIGATE SILT RUNOFF. SILT FENCES MAY BE REMOVED WHEN SUITABLE VEGETATION COVER IS ESTABLISHED.
  - SILT FENCES TO BE PROVIDED ALONG EDGE OF EXISTING WATERCOURSE WHERE WORKS COMES WITHIN 10M OF EDGE OF ANY DITCH / EPHEMERAL CHANNELS.
  - SLOPES OF THE SWALES / DITCHES TO BE VEGETATED OR PROTECTED FROM EROSION UNTIL VEGETATION HAS BEEN ESTABLISHED. STRIPPED VEGETATIVE LAYER FROM EXCAVATIONS TO BE STORED LOCALLY AND USED TO LINE SLOPES AND BASES OF SWALES / DITCHES OR LONGITUDINAL MOUNDS OF VEGETATION SWALES AT FIELD DRAIN DISCHARGE POINTS.
  - AREAS STRIPPED OF VEGETATION SHOULD BE KEPT TO A MINIMUM.
  - 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.
  - 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.
  - SPACING AND FREQUENCY OF CHECK DAMS WILL BE DEPENDENT UPON LONGITUDINAL GRADIENT OF SWALE.
  - 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.
  - OIL/FUEL SHOULD BE STORED WITHIN BUNDED CONTAINMENT STRUCTURES.
  - SILT BAGS WILL BE USED ON SITE AT FIELD DRAIN DISCHARGE LOCATIONS, AS NECESSARY.



- DRAWING LEGEND:**
- RIVERS/STREAMS
  - RIVERS/STREAMS 50M BUFFER
  - STREAM FLOW DIRECTION
  - DRAINS
  - DRAINS 10M BUFFER
  - DRAINS TO BE REMOVED
  - DRAIN REDIRECTION
  - DRAIN REDIRECTION 10M BUFFER
  - UPSTREAM INTERCEPTOR DRAIN
  - SWALES/DOWNSTREAM COLLECTOR DRAIN
  - DIRECTION OF FLOW
  - SILT FENCES
  - DOUBLE SILT FENCES
  - SETTLEMENT POND - LEVEL SPREADER
  - SETTLEMENT POND - VEGETATION FILTER
  - LEVEL SPREADER
  - CHECK DAM 'TYPE A'
  - CHECK DAM 'TYPE B'
  - PROPOSED CULVERTS/BRIDGES
  - INTERCEPTOR DITCH CULVERT
  - COLLECTOR DITCH CULVERT
  - OVERLAND FLOW DISCHARGE
  - SETTLEMENT POND
  - TW TREATED WATER DISCHARGE
  - VS SEMI-NATURAL VEGETATION SWALE / FILTER BED / SECONDARY SP
  - GROUND SLOPE DIRECTION
  - EDGE PROTECTION

- PLANNING APPLICATION**
- EXISTING GROUND SURFACE
  - INTERMEDIATE CONTOUR (2M INTERVALS)
  - EXISTING GROUND SURFACE
  - MAJOR CONTOUR (10M INTERVALS)
  - PROPOSED TURBINE AND SWEEP AREA
  - PROPOSED TURBINE FOUNDATION
  - PROPOSED CRANE PLATFORM
  - PROPOSED NEW ACCESS ROAD
  - EXISTING ACCESS ROAD
  - PROPOSED TO BE UPGRADED
  - SUBSTATION
  - TEMPORARY CONSTRUCTION COMPOUND
  - SPOIL MANAGEMENT AREAS
  - MET MAST
  - CUT AREA
  - FILL AREA



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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 WHERE POSSIBLE 2) APPLICATION OF 10M BUFFER ZONES TO MAIN DRAINS WHERE POSSIBLE 3) USING SMALL WORKING AREAS 4) 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 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) OYSTER BAGS FILLED WITH GRAVEL C) FILTER FABRICS D) AND OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 3) USING SMALL WORKING AREAS 4) SURROUNDING STOCKPILES WITH SILT FENCING 5) WEATHERING OFF / SEALING SPOIL STOCKPILES
IN-LINE CONTROLS	1) INTERCEPTOR DRAINS, VEE-DRAINS, OVERSIZED SWALES/COLLECTOR DRAINS 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) OYSTER BAGS FILLED WITH GRAVEL C) FILTER FABRICS D) STRAW BALES E) FLOW LIMITERS F) WEIRS OR BARRIERS G) AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS. 3) SILT FENCES, FILTER FABRICS 4) IN STREAM SEDIMENTS 5) COLLECTION SUMPS, TEMPORARY SUMPS, PUMPING SYSTEMS 6) ATTENUATION LAGOONS 7) SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS
WATER TREATMENT CONTROLS	1) TEMPORARY SUMPS 2) ATTENUATION PONDS 3) TEMPORARY STORAGE LAGOONS 4) SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS 5) PROPRIETARY SETTLEMENT SYSTEMS SUCH AS SILTBUSTER, AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS. 6) SILT DEWATERING BAGS
OUTFALL CONTROLS	1) LEVELSPREADERS 2) BUFFERED OUTFALLS 3) VEGETATION FILTERS 4) SILT DEWATERING BAGS 5) FLOW LIMITERS AND WEIRS

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Client: **UMMA MORE LTD**

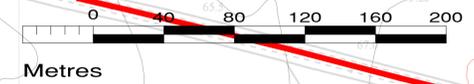
Job: **UMMA MORE RENEWABLE ENERGY DEVELOPMENT**

Title: **PROPOSED DRAINAGE LAYOUT**

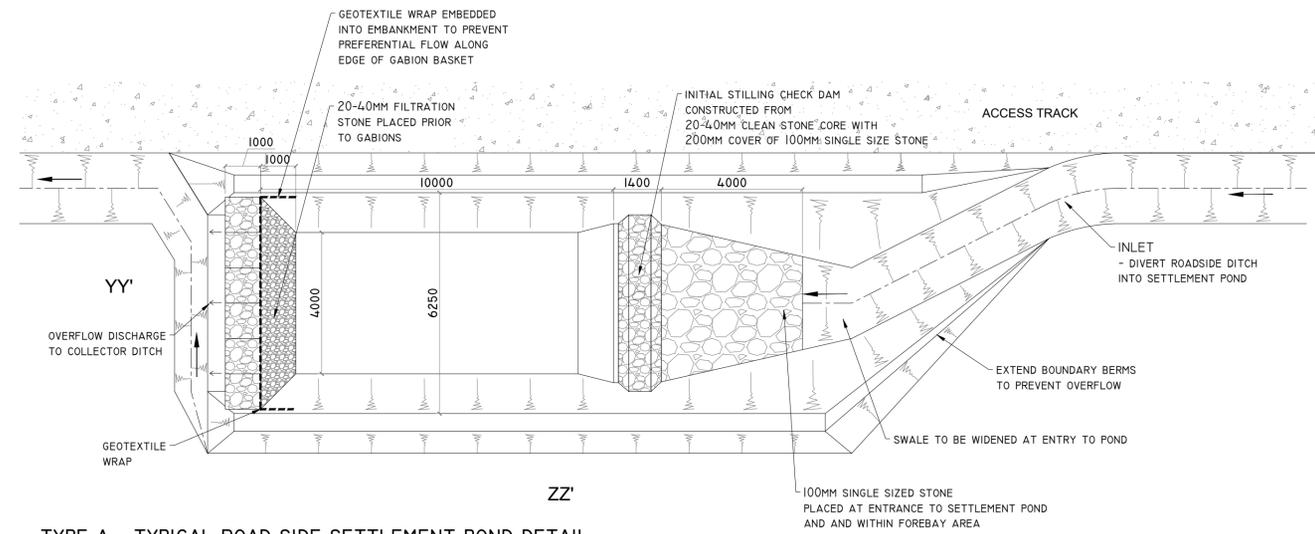
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Date: 09/02/2023	Checked By: MG

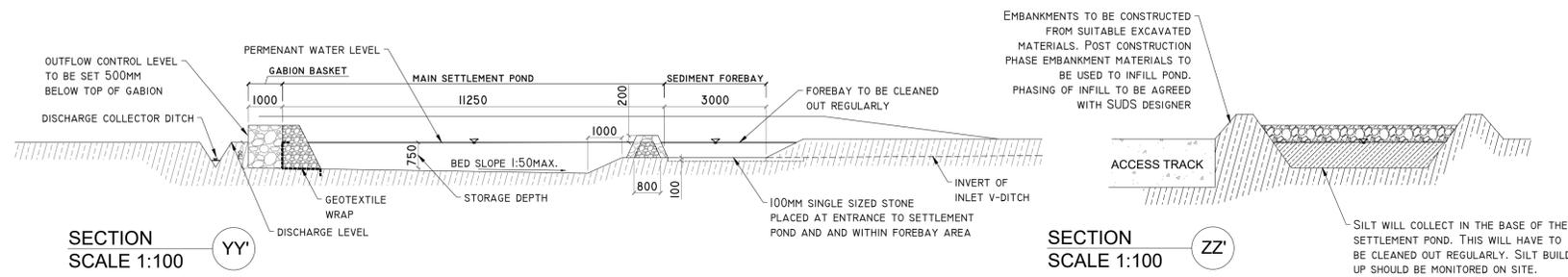


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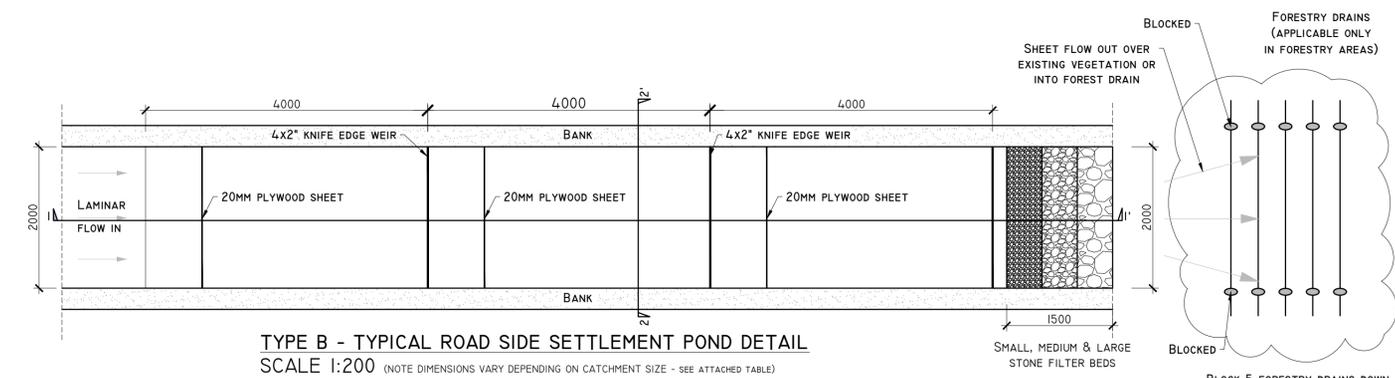
**TYPE A - TYPICAL ROAD SIDE SETTLEMENT POND DETAIL**  
SCALE 1:200 (NOTE DIMENSIONS VARY DEPENDING ON CATCHMENT SIZE - SEE ATTACHED TABLE)

RETURN PERIOD	10 YRS	STORM DURATION	CATCHMENT SIZE (M <sup>2</sup> )		
			500	1000	2000
6HR RETENTION FOR COARSE SILT		6 HRS	1.0 x 3.5 x 1 M	1.25x 3.75 x 1 M	2.0 x 6.25 x 1 M
11HR RETENTION FOR MEDIUM SILT		11 HRS	1.5 x 4.5 x 1 M	2.0 x 6.0 x 1 M	2.75x 8.25x 1 M
24HR RETENTION FOR FINE SILT		24 HRS	2.25x 6.75x 1 M	3.0 x 9.0 x 1 M	4.0 x 13.0 x 1 M

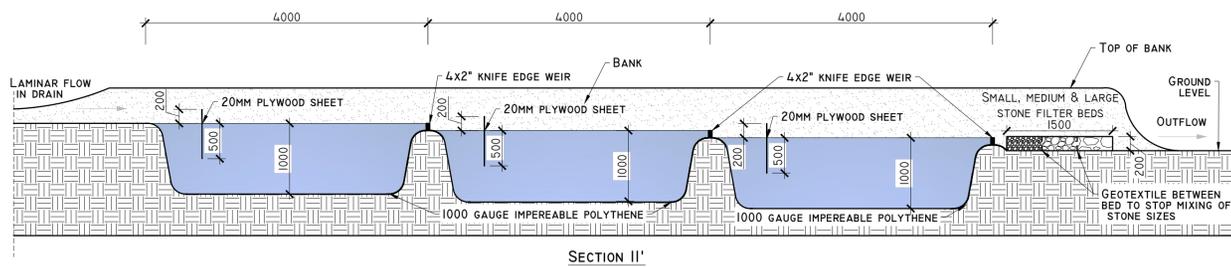


**SECTION YY'**  
SCALE 1:100

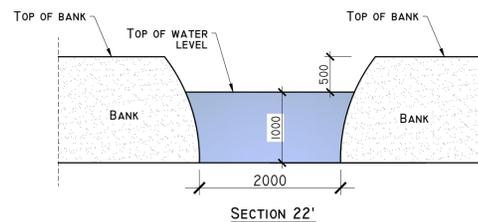
**SECTION ZZ'**  
SCALE 1:100



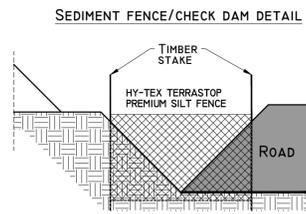
**TYPE B - TYPICAL ROAD SIDE SETTLEMENT POND DETAIL**  
SCALE 1:200 (NOTE DIMENSIONS VARY DEPENDING ON CATCHMENT SIZE - SEE ATTACHED TABLE)



**SECTION II'**



**SECTION 22'**



# DETAIL A2

**PROJECT DESIGN DRAWING NOTES**  
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Date	Description	Chkd	Signed
09/02/23	Planning	MG	MG

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Client: **UMMA MORE LTD**

Job: **UMMA MORE RENEWABLE ENERGY DEVELOPMENT**

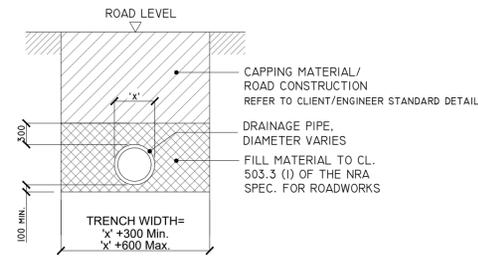
Title: **DRAINAGE DETAILS I**

Figure No: **D501**

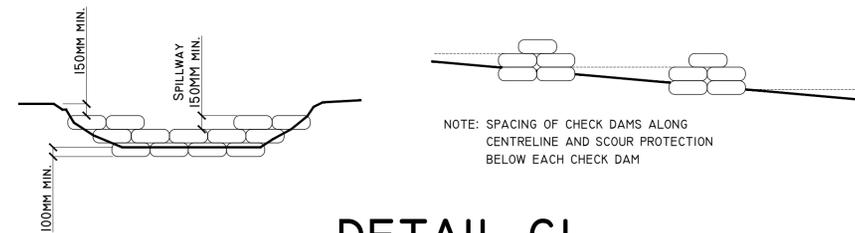
Drawing No: **P1553-0-0223-A1-D501-RevA**

Sheet Size: **A1** Project No.: **P1553-0**  
Scale: **as shown (A1)** Drawn By: **MG/GD**  
Date: **09/02/2023** Checked By: **M.G.**

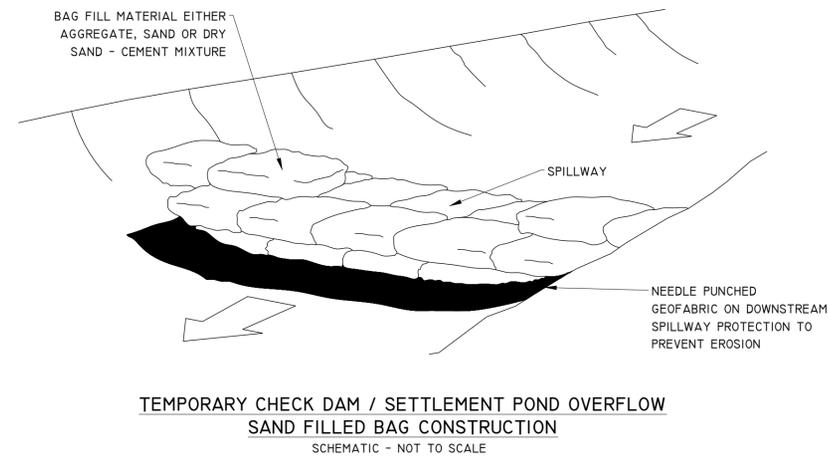
# DETAIL B



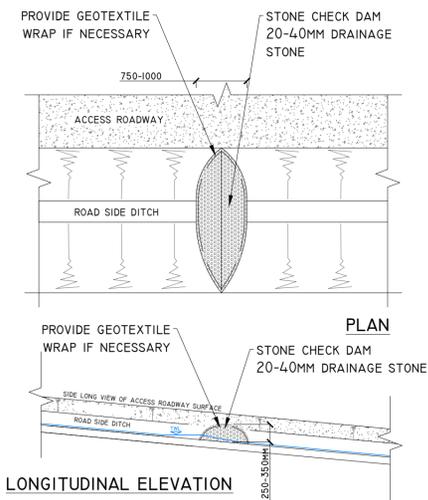
'TYPE B' CULVERT - DRAINAGE CROSSING BENEATH EXCAVATED ROAD  
SCALE 1:50



# DETAIL CI

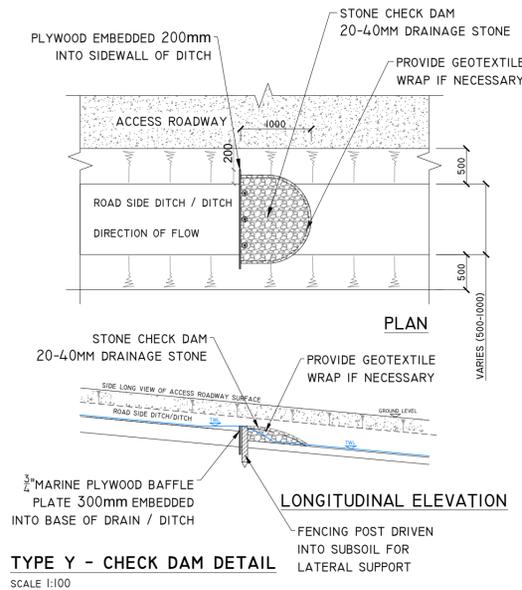


# DETAIL C



TYPE X - CHECK DAM DETAIL  
SCALE 1:50

# DETAIL D



TYPE Y - CHECK DAM DETAIL  
SCALE 1:100

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Date	Description	Chkd	Signed
09/02/23	Planning	MG	MG

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Client: **UMMA MORE LTD**

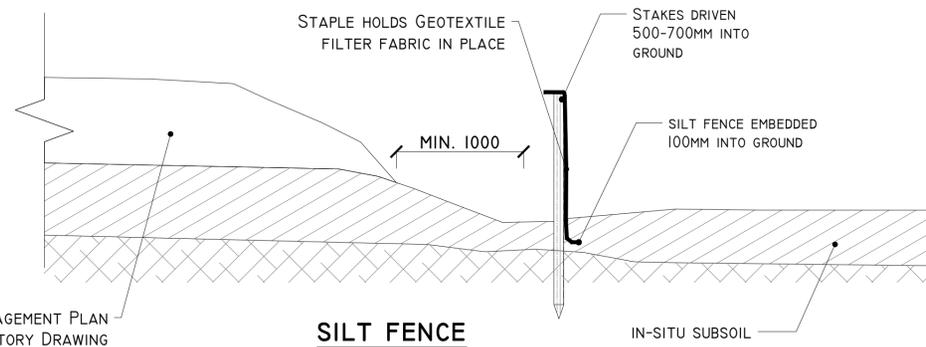
Job: **UMMA MORE RENEWABLE ENERGY DEVELOPMENT**

Title: **DRAINAGE DETAILS 2**

Figure No: **D502**

Drawing No: P1553-0-0223-A1-D502-RevA  
 Sheet Size: A1 | Project No.: P1553-0  
 Scale: as shown (A1) | Drawn By: MG/GD  
 Date: 09/02/2023 | Checked By: M.G.

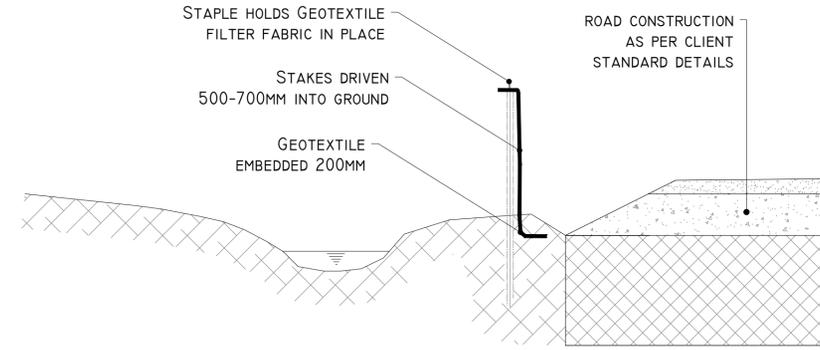
# DETAIL E1



**SILT FENCE**  
SCALE 1:25

REFER TO HABITAT MANAGEMENT PLAN AND PEAT AND SPOIL REPOSITORY DRAWING FOR STOCKPILE MANAGEMENT NOTES

# DETAIL E2

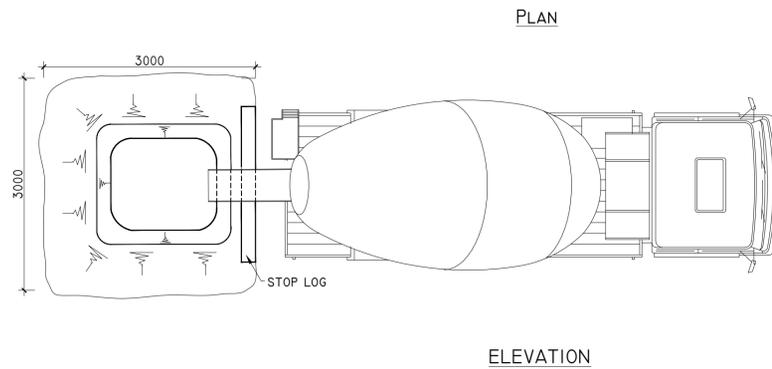


**SILT FENCE FOR WATERCOURSE PROTECTION**  
SCALE 1:25

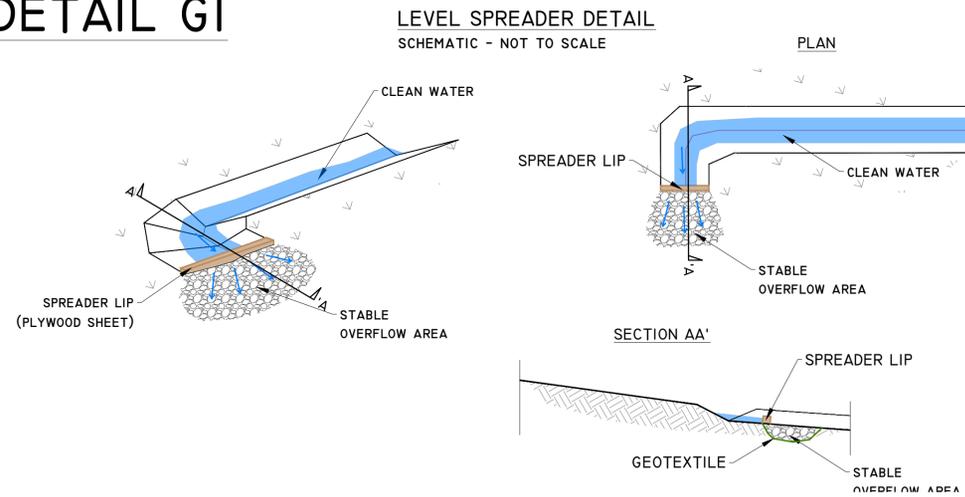
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# TEMPORARY CONCRETE WASH OUT PIT

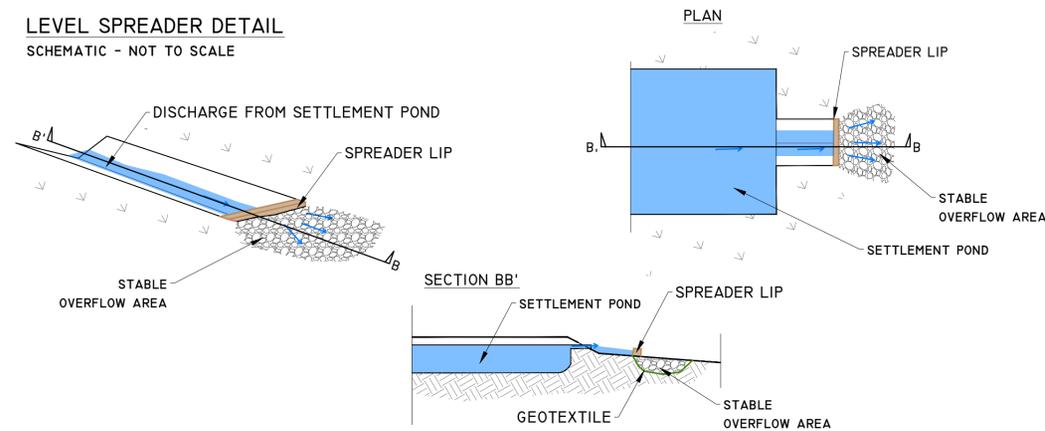
SCALE 1:50



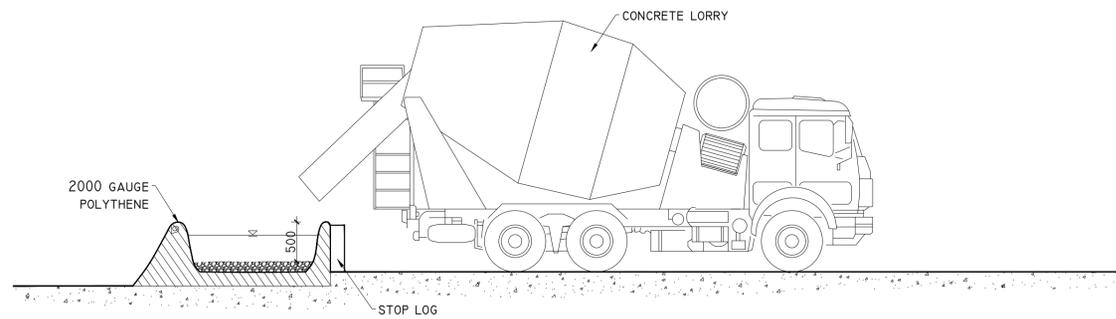
# DETAIL G1



# DETAIL G2



# DETAIL F



09/02/23	Planning	MG	MG
Date	Description	Chkd	Signed
Revisions			

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Client: **UMMA MORE LTD**

Job: **UMMA MORE RENEWABLE ENERGY DEVELOPMENT**

Title: **DRAINAGE DETAILS 3**

Figure No: **D503**

Drawing No: P1553-0-0223-A1-D503-RevA  
 Sheet Size: A1 Project No.: P1553-0  
 Scale: as shown (A1) Drawn By: MG/GD  
 Date: 09/02/2023 Checked By: M.G.