Ballynagare Wind Farm,

Co. Kerry

Planning Permission Application Drawings

Schedule of Drawings

Drawing No.	Drawing Title	Scale
200512 – 01	Location Context Map	1: 50,000
200512 – 02	Site Notice Location Map	1: 30,000
200512 – 03	Site Layout Key Plan	1: 30,000
200512 – 04	Site Layout Plan Sheet 1 of 17	1: 2,500
200512 – 05	Site Layout Plan Sheet 2 of 17	1: 2,500
200512 – 06	Site Layout Plan Sheet 3 of 17	1: 2,500
200512 – 07	Site Layout Plan Sheet 4 of 17	1: 2,500
200512 – 08	Site Layout Plan Sheet 5 of 17	1: 2,500
200512 – 09	Site Layout Plan Sheet 6 of 17	1: 2,500
200512 – 10	Site Layout Plan Sheet 7 of 17	1: 2,500
200512 – 11	Site Layout Plan Sheet 8 of 17	1: 2,500
200512 – 12	Site Layout Plan Sheet 9 of 17	1: 2,500
200512 – 13	Site Layout Plan Sheet 10 of 17	1: 2,500
200512 – 14	Site Layout Plan Sheet 11 of 17	1: 2,500
200512 – 15	Site Layout Plan Sheet 12 of 17	1: 2,500
200512 – 16	Site Layout Plan Sheet 13 of 17	1: 2,500
200512 – 17	Site Layout Plan Sheet 15 of 17	1: 2,500
200512 – 18	Site Layout Plan Sheet 15 of 17	1: 2,500
200512 – 19	Site Layout Plan Sheet 16 of 17	1: 2,500
200512 – 20	Site Layout Plan Sheet 17 of 17	1: 2,500
200512 – 21	Turbine Layout Sheet 1 of 7	1: 500
200512 – 22	Turbine Layout Sheet 2 of 7	1: 500
200512 – 23	Turbine Layout Sheet 3 of 7	1: 500
200512 – 24	Turbine Layout Sheet 4 of 7	1: 500
200512 – 25	Turbine Layout Sheet 5 of 7	1: 500
200512 – 26	Turbine Layout Sheet 6 of 7	1: 500
200512 – 27	Turbine Layout Sheet 7 of 7	1: 500
200512 – 28	Temporary Construction Compound 1	1: 500
200512 – 29	Temporary Construction Compound 2	1: 500
200512 – 30	Substation Layout	1: 500
200512 – 31	Borrow Pit Layout & Sections	1:500
200512 – 32	Temporary Peat Storage 1	1: 500
200512 – 33	Temporary Peat Storage 2	1: 500
200512 – 34	Met Mast - Option 1 - Guyed Mast	1: 500
200512 – 35	Met Mast - Option 2 - Free Standing Mast	1: 500
200512 – 36	Wind Turbine Range Elevations & Plan	1: 500
200512 – 37	95m hub and 75m blade Wind Turbine Elevations & Plan	1: 500
200512 – 38	95m hub and 74.5m blade Wind Turbine Elevations & Plan	1: 500
200512 – 39	Proposed Access Junction A	1:500
200512 – 40	Proposed Access Junction B	1:500
200512 – 41	Proposed Access Junction C	1:500
200512 – 42	Proposed Access Junction D	1:500
200512 – 43	Excavated Road Sections	1:75
200512 – 44	Floating Road Sections	1:75
05801-DR-103	38kV Substation Compound Layout & Section	1:100
05801-DR-104	38kV Substation Building Elevations	1:50
05801-DR-100	Overall Site Layout Plan	NTS
05801-DR-108	Site Layout Plan Sheet 1 of 5	1: 2,500
05801-DR-109	Site Layout Plan Sheet 2 of 5	1: 2,500
05801-DR-110	Site Layout Plan Sheet 3 of 5	1: 2,500
05801-DR-111	Site Layout Plan Sheet 4 of 5	1: 2,500
05801-DR-112	Site Layout Plan Sheet 5 of 5	1: 2,500
05801-DR-127	Bridge Crossing 1	As Shown
05801-DR-128	Bridge Crossing 2	As Shown
05801-DR-129	Bridge Crossing 3	As Shown
05801-DR-130	Bridge Crossing 4	As Shown
05801-DR-113	Typical 38kV Ducting Through Regional / Local Roadways	1:10
05801-DR-114	Typical 38kV Ducting through Off Road Section	1:10
05801-DR-115	Typical 38kV Ducting through Access Road	1:10
05801-DR-116	Typical 38kV Ducting Service/Culvert Undercrossing Detail	As Shown
05801-DR-117	Typical 38kV Ducting Service/Culvert Overcrossing Detail	As Shown
05801-DR-118	38kV Single Circuit - Ducting Through Floating Road / Peat	1:16
05801-DR-119	Typical 38kV National Ducting Flexible Road Reinstatement	1:10
05801-DR-120	Typical 38kV Ducting Watermain / Wastewater Crossing Detail	As Shown
05801-DR-121	Typical 38kV Ducting Watermain / Wastewater Crossing Detail	As Shown
05801-DR-122	General 38kV Joint Bay Arrangement	1:20
05801-DR-124	Typical Transition Chamber Details	1:20
05801-DR-126	Typical Communications Chamber Details	1:20
20260 GDG XX XX DR G 0200	TYPICAL SECTION THROUGH GENERAL ACCESS TRACK DETAILS	1:25
20260-GDG-XX-XX-SK-G-0251	TEMPORARY PEAT STORAGE AREAS -TYPICAL DETAILS	1:200
D101	Proposed Drainage Layout	1:2,000

Drawing No.	Drawing Title	Scale
D102	Proposed Drainage Layout	1:2,000
D103	Proposed Drainage Layout	1:2,000
D104	Proposed Drainage Layout	1:2,000
D105	Proposed Drainage Layout	1:2,000
D501	Drainage Details 1	As Shown
D502	Drainage Details 2	As Shown
D503	Drainage Details 2	As Shown

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

Planning Application Boundary

N

DRAWING TITLE:

Location Context Map

PROJECT TITLE:

Ballynagare Wind Farm, Co. Kerry

DRAWING BY: Joseph O Brien	CHECKED BY: Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 01
SCALE: 1:50,000 @ A3	DATE: 23.11.2021
OS SHEET No.: OS0812	

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

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

N

DRAWING TITLE:

Site Location Map

PROJECT TITLE:

Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 02
SCALE: 1:30,000 @ A3	DATE: 23.11.2021

OS SHEET No.:
5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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7. Layout plans show 170m 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 Road
- Electrical Cable Trench
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area
- Borrow Pit

N

DRAWING TITLE:

Site Layout Key Plan

PROJECT TITLE:

Ballynagare Wind Farm, Co. Kerry

DRAWING BY: Joseph O Brien	CHECKED BY: Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 03
SCALE: 1:15,000 @ A1	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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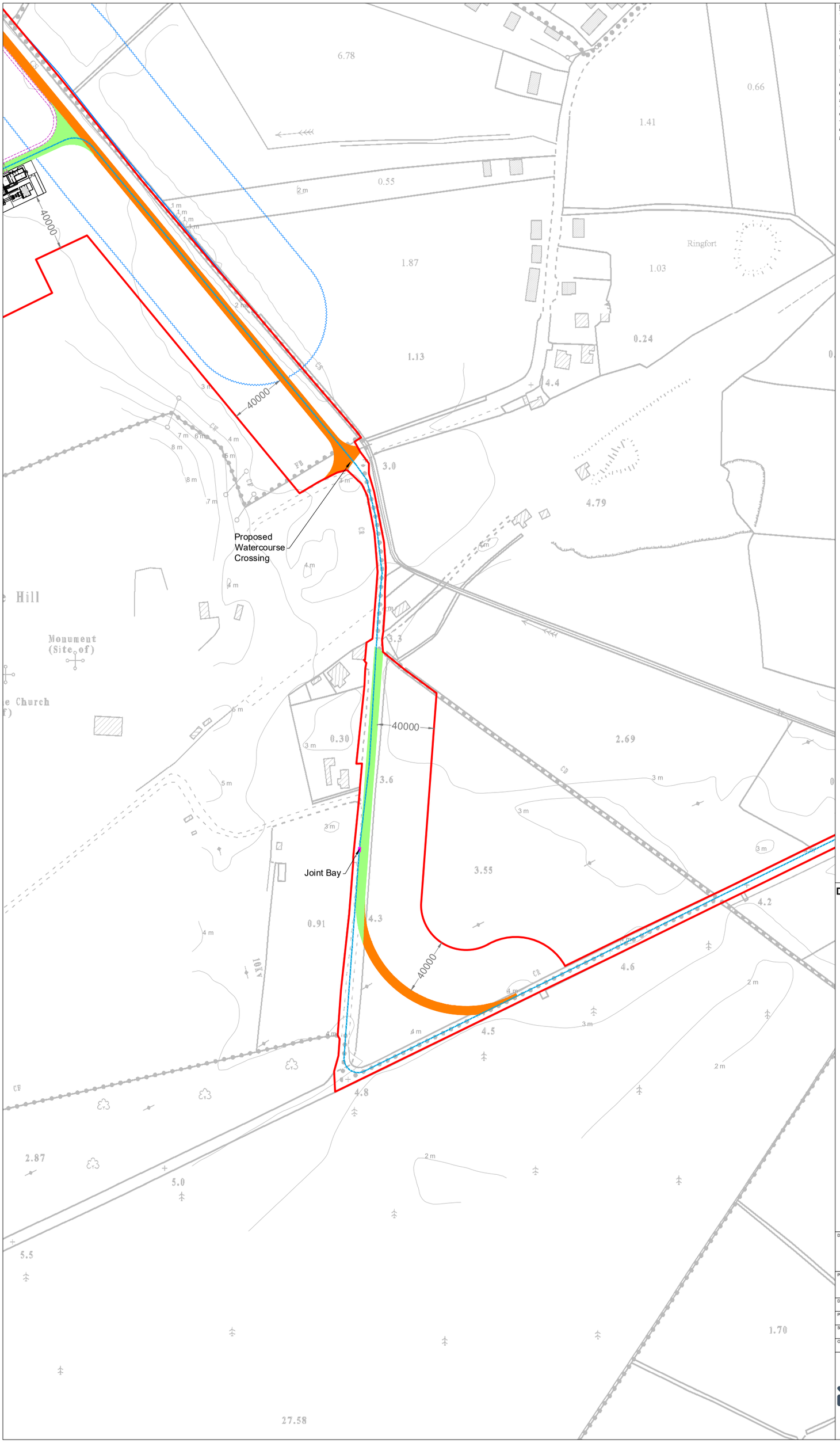

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Existing Road to be Upgraded
- Proposed Road
- Electrical Cable Trench
- Grid Connection Route
- River/Stream
- River/Stream 50m Buffer
- Joint Bay

N

DRAWING TITLE:

Site Layout Sheet 1 of 17

PROJECT TITLE:

Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 04
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

KNOCKAUNACURRAHE

FARRANDEEN

Kilbinane Hill

Fort (Site of)

Temporary Compound
Refer to DWG
200512 - 28

Substation
Compound
Refer to DWG
200512 - 30

Borrow Pit
Refer to DWG
200512 - 31

40000

Drawing Legend

- Planning Application Boundary
- Existing Road to be Upgraded
- Proposed Road
- Proposed Passing Bay
- Electrical Cable Trench
- River/Stream
- River/Stream 50m Buffer
- Borrow Pit

N

DRAWING TITLE:

Site Layout Sheet 2 of 17

PROJECT TITLE:

Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 05
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Proposed Road
- Proposed Passing Bay
- Electrical Cable Trench
- River/Stream
- River/Stream 50m Buffer

N

DRAWING TITLE:
Site Layout Sheet 3 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 06
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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Proposed Watercourse Crossing

Land Drain

Refer to DWG 200512 - 21

T7
ITM 488706, 631208
Level - 1m O.D.

40000 37000 38080 90000

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7. Layout plans show 170m 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 Road
- Proposed Passing Bay
- Electrical Cable Trench
- River/Stream
- River/Stream 50m Buffer
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area
- Peat Repository

N

DRAWING TITLE:
Site Layout Sheet 4 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 07
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

T7
ITM 488706, 631208
Level - 1m O.D.

Met Mast
ITM 488438, 631057
Level - 1m O.D.

Refer to DWG 200512 - 21

40000
37000
38080
90000
110000
110000

-0.786 m

Drawing Legend

- Planning Application Boundary
- Proposed Road
- Electrical Cable Trench
- River/Stream
- River/Stream 50m Buffer
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area

N

DRAWING TITLE:
Site Layout Sheet 5 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 08
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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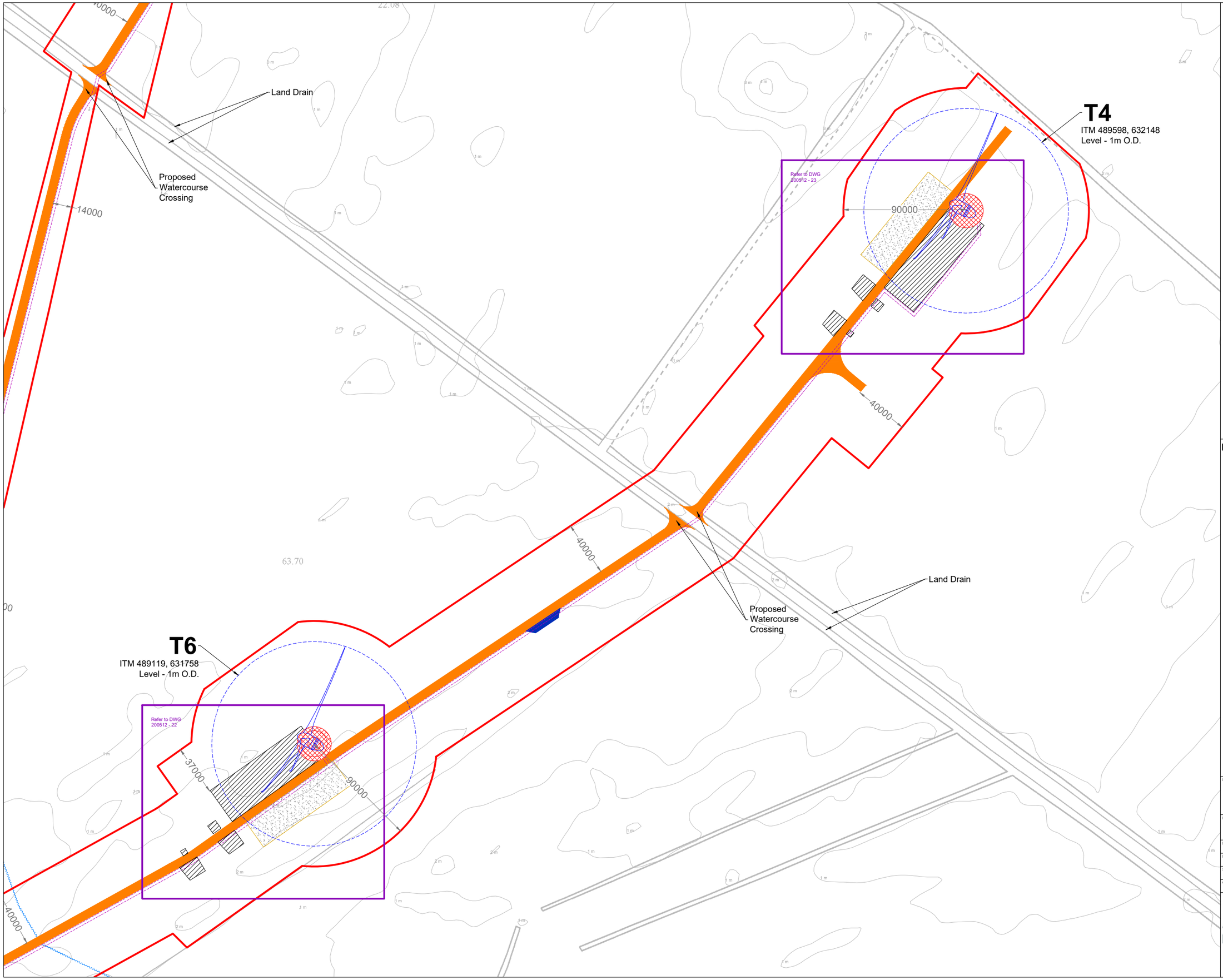

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Proposed Road
- Proposed Passing Bay
- Electrical Cable Trench
- River/Stream 50m Buffer
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area

N

DRAWING TITLE:
Site Layout Sheet 6 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 09
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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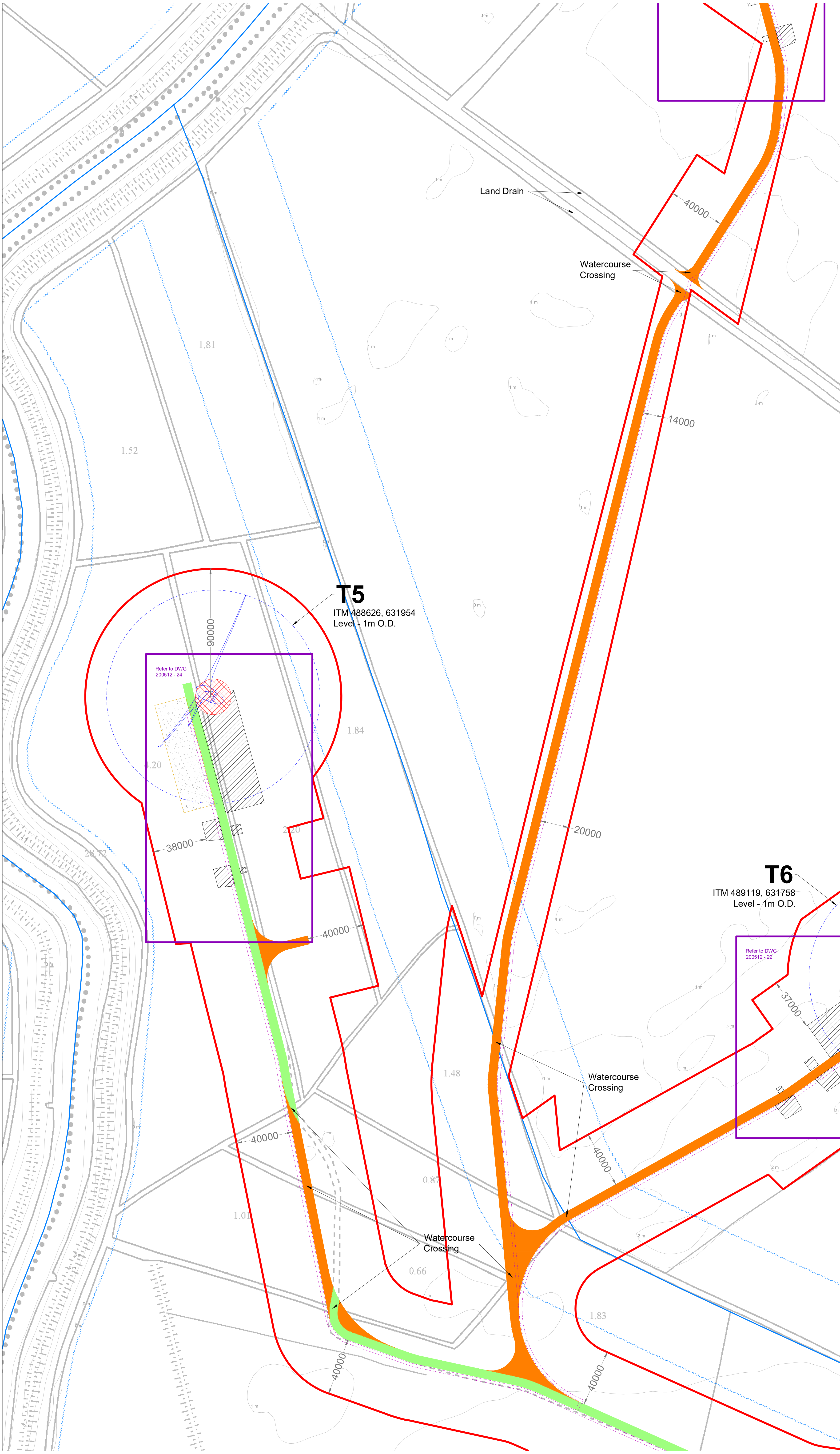

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Existing Road to be Upgraded
- Proposed Road
- Electrical Cable Trench
- River/Stream
- River/Stream 50m Buffer
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area

DRAWING TITLE:

Site Layout Sheet 7 of 17

PROJECT TITLE: Ballynagare Wind Farm, Co. Kerry

DRAWING BY: Joseph O Brien	CHECKED BY: Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 10
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

T2
ITM 489513, 632947
Level - 1m O.D.

Refer to DWG 200512 - 29

38080

90000

40000

40000

Proposed Watercourse Crossing

Temporary Compound Refer to DWG 200512 - 29

40000

T3
ITM 488975, 632534
Level - 1m O.D.

Refer to DWG 200512 - 29

90000

Drawing Legend

- Planning Application Boundary
- Proposed Road
- Proposed Passing Bay
- Electrical Cable Trench
- River/Stream
- River/Stream 50m Buffer
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area

N

DRAWING TITLE:
Site Layout Sheet 8 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 11
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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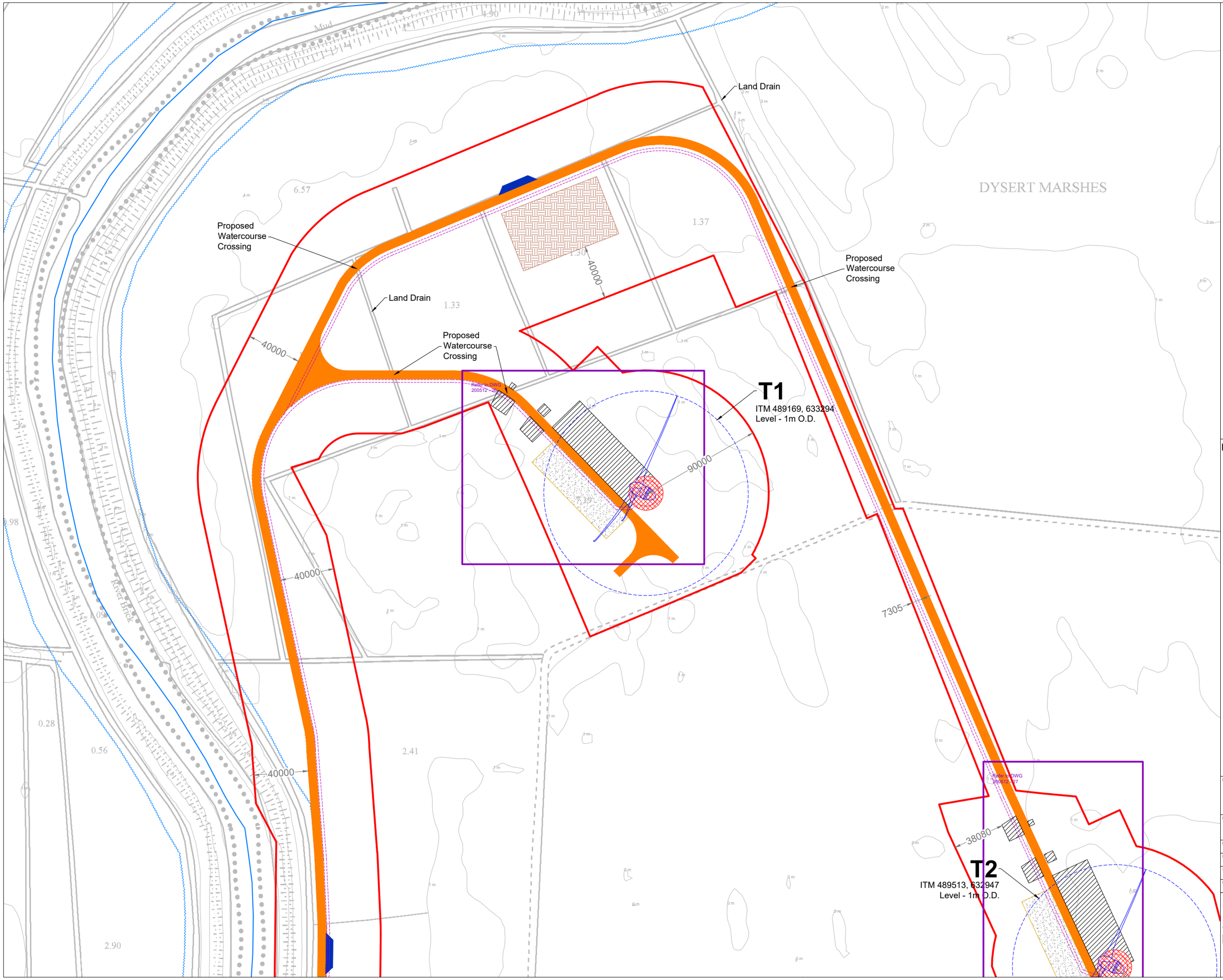

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Proposed Road
- Proposed Passing Bay
- Electrical Cable Trench
- River/Stream
- River/Stream 50m Buffer
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area
- Peat Repository

N

DRAWING TITLE:
Site Layout Sheet 9 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 12
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Grid Connection Route
- Joint Bay

N

DRAWING TITLE:
Site Layout Sheet 10 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 13
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Grid Connection Route
- Joint Bay

N

DRAWING TITLE:
Site Layout Sheet 11 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 14
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Grid Connection Route
- Joint Bay

N

DRAWING TITLE:
Site Layout Sheet 12 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 15
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.:
5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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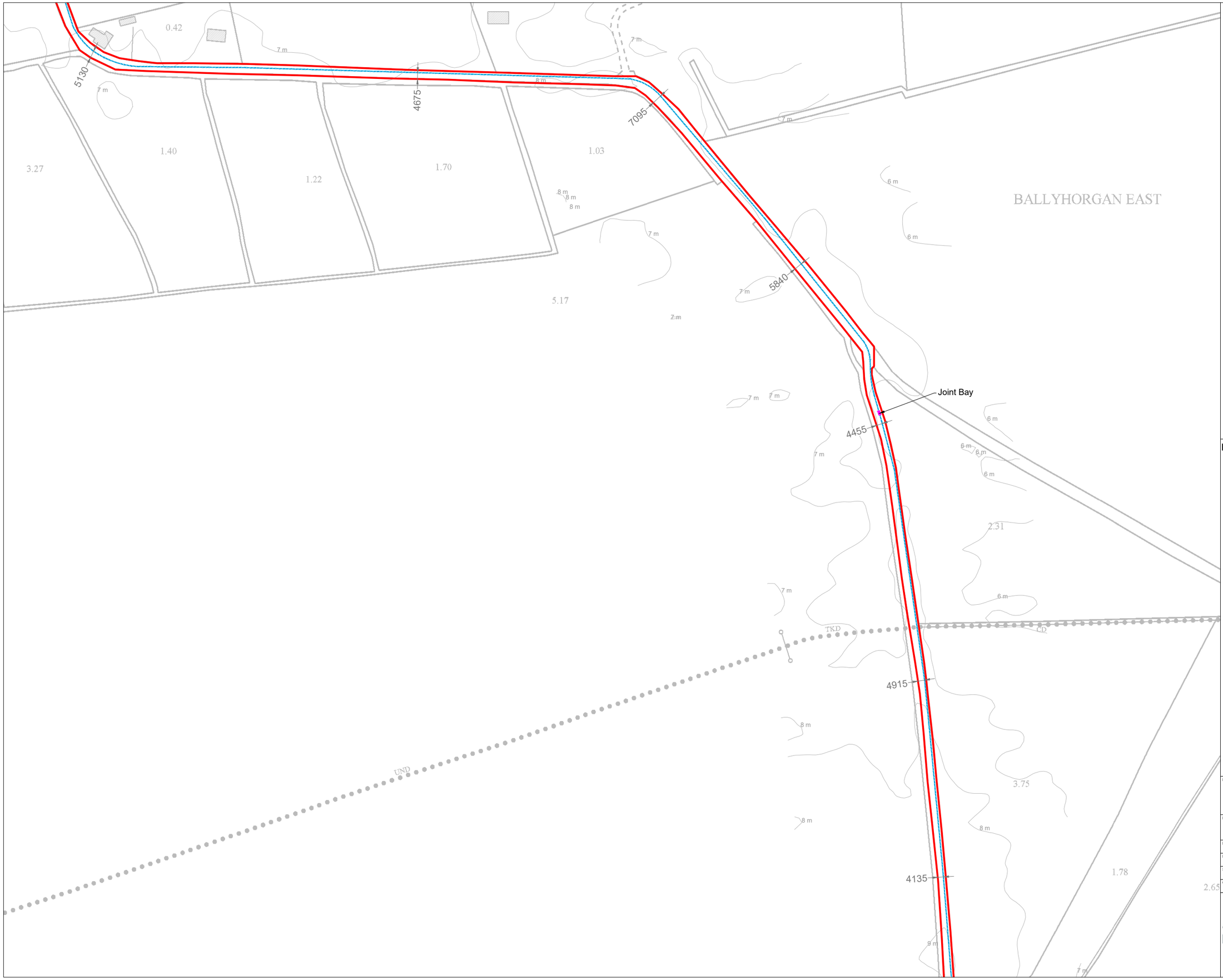

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Grid Connection Route
- Joint Bay

N

DRAWING TITLE:
Site Layout Sheet 13 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 16
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Grid Connection Route
- Joint Bay

N

DRAWING TITLE:
Site Layout Sheet 14 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 17
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Grid Connection Route
- Joint Bay

N

DRAWING TITLE:
Site Layout Sheet 15 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 18
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Grid Connection Route
- Joint Bay

N

DRAWING TITLE:

Site Layout Sheet 16 of 17

PROJECT TITLE:

Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 19
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Grid Connection Route

N

DRAWING TITLE:
Site Layout Sheet 17 of 17

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 20
SCALE: 1:2,500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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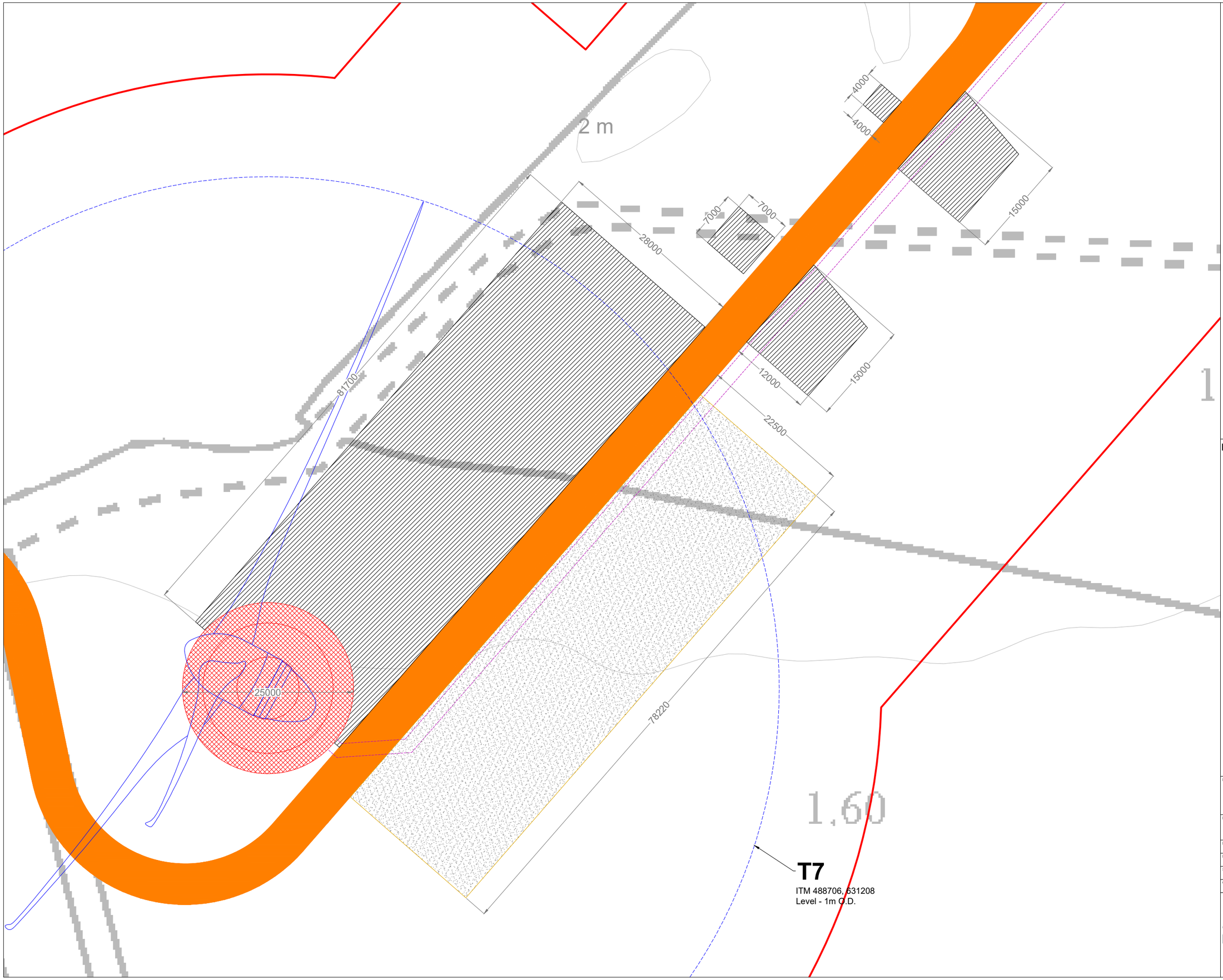

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drainage Design Notes

1. All drainage subject to micro-siting and optimisation on site.
2. The locations of the interceptor drains, check dams, culverts, swales, stilling ponds and level spreaders are shown as indicative, and may be changed to suit the requirements of the local topography.
3. Supervising hydrologist or environmental clerk of works (environmental scientist) to oversee installation of drainage features following detailed drainage design.
4. Drainage measures to be installed prior to, or at the same time as the works areas they are intended to drain.
5. Design elevation of the water surface along the route of the interceptor drains or swales will not be lower then the design elevation of the water surface in the outlet at the level spreader or stilling pond.
6. The spacing and frequency of the check dams will be dependant on the gradient of the interceptor drain or swale in which they are being installed.
7. Check dam designs to be selected best to suit particular topography and hydrological environment.
8. Down gradient slope below level spreader onto which the water will dissipate to have a grade less the 6%.
9. No direct discharge or pumping to watercourses will be permitted. All discharges from level spreaders or stilling ponds to be via vegetated filters. Selection or suitable areas to use as vegetation filters will be determined by the size of the contributing catchment, slope and ground conditions.
10. Stilling ponds to be sized according to the area they will be receiving water from.
11. Diversion of drainage ditches will only take place when alternative drainage ditch has been installed to handle the same water.
12. Existing drains/ditches to be incorporated or removed during wind farm construction.
13. All drainage system features to be subject of inspection and maintenance plan.
14. The layout shown is slightly offset for scale purposes, and all drainage would be installed as close to the road as possible.

Drawing Legend

- Planning Application Boundary
- Proposed Road
- Electrical Cable Trench
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area

N

DRAWING TITLE:
Turbine Layout
Sheet 1 of 7

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY: Joseph O Brien	CHECKED BY: Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 21
SCALE: 1:500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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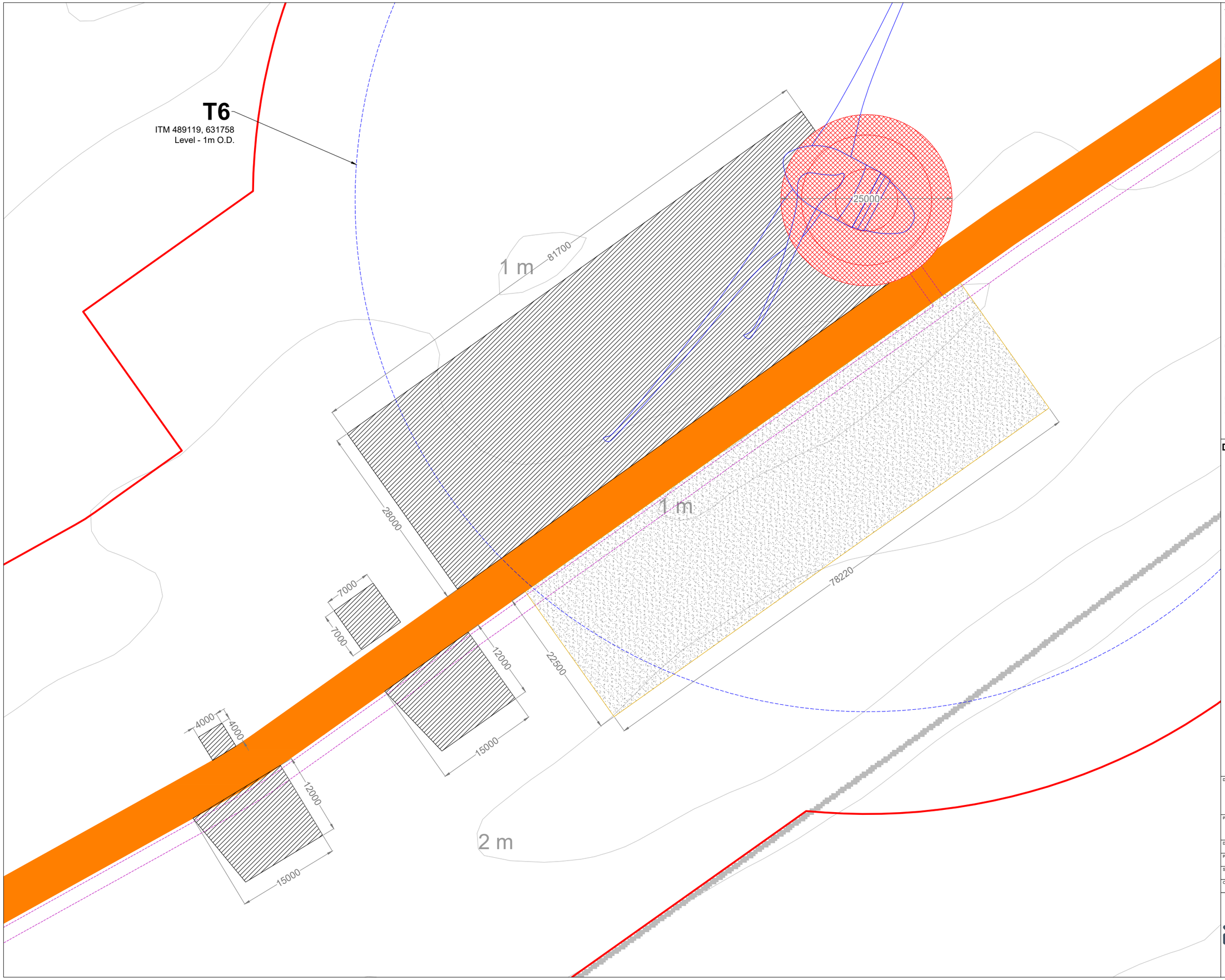

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drainage Design Notes

1. All drainage subject to micro-siting and optimisation on site.
2. The locations of the interceptor drains, check dams, culverts, swales, stilling ponds and level spreaders are shown as indicative, and may be changed to suit the requirements of the local topography.
3. Supervising hydrologist or environmental clerk of works (environmental scientist) to oversee installation of drainage features following detailed drainage design.
4. Drainage measures to be installed prior to, or at the same time as the works areas they are intended to drain.
5. Design elevation of the water surface along the route of the interceptor drains or swales will not be lower then the design elevation of the water surface in the outlet at the level spreader or stilling pond.
6. The spacing and frequency of the check dams will be dependant on the gradient of the interceptor drain or swale in which they are being installed.
7. Check dam designs to be selected best to suit particular topography and hydrological environment.
8. Down gradient slope below level spreader onto which the water will dissipate to have a grade less the 6%.
9. No direct discharge or pumping to watercourses will be permitted. All discharges from level spreaders or stilling ponds to be via vegetated filters. Selection or suitable areas to use as vegetation filters will be determined by the size of the contributing catchment, slope and ground conditions.
10. Stilling ponds to be sized according to the area they will be receiving water from.
11. Diversion of drainage ditches will only take place when alternative drainage ditch has been installed to handle the same water.
12. Existing drains/ditches to be incorporated or removed during wind farm construction.
13. All drainage system features to be subject of inspection and maintenance plan.
14. The layout shown is slightly offset for scale purposes, and all drainage would be installed as close to the road as possible.

Drawing Legend

- Planning Application Boundary
- Proposed Road
- Electrical Cable Trench
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area

N

DRAWING TITLE:
Turbine Layout Sheet 2 of 7

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 22
SCALE: 1:500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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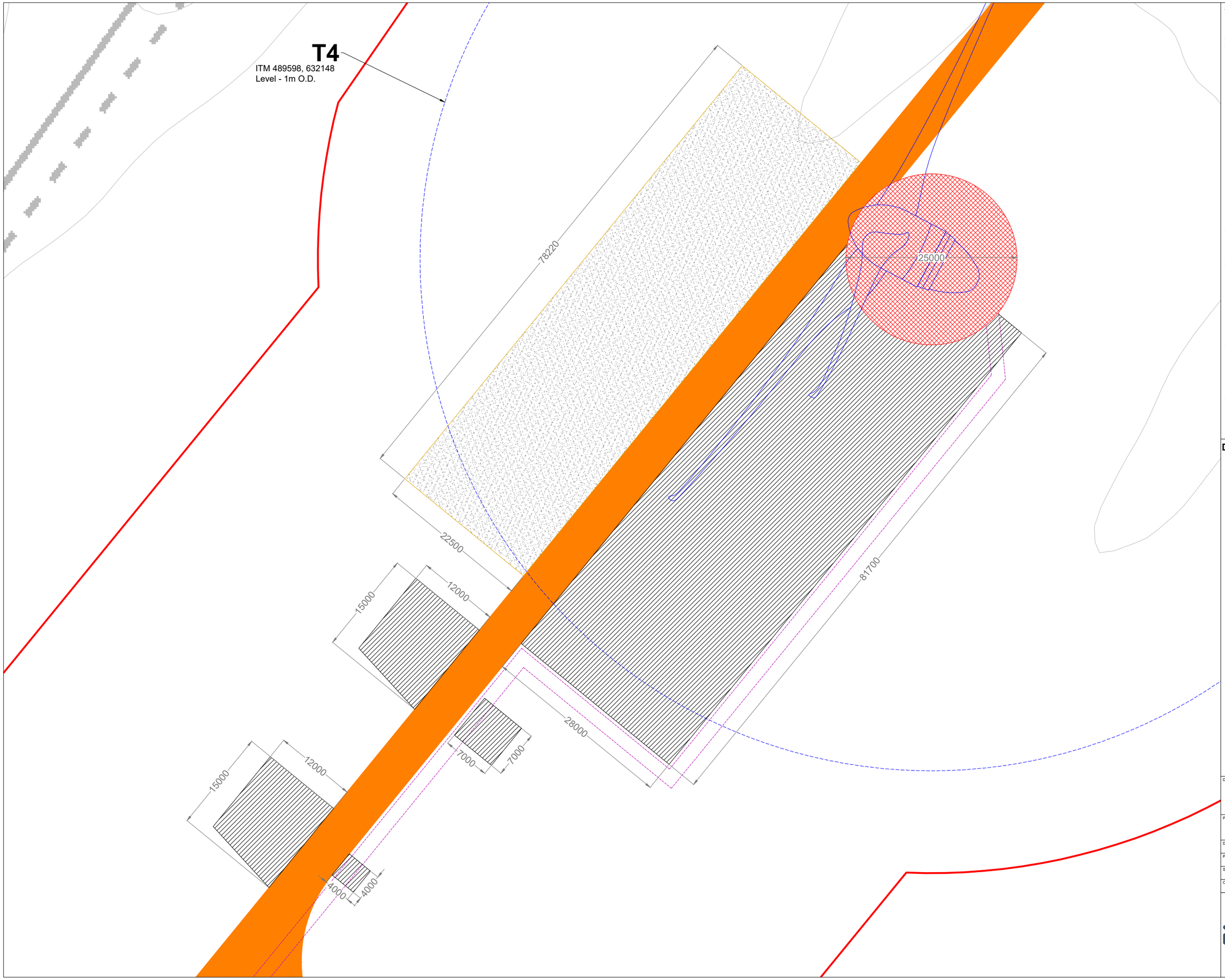

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drainage Design Notes

1. All drainage subject to micro-siting and optimisation on site.
2. The locations of the interceptor drains, check dams, culverts, swales, stilling ponds and level spreaders are shown as indicative, and may be changed to suit the requirements of the local topography.
3. Supervising hydrologist or environmental clerk of works (environmental scientist) to oversee installation of drainage features following detailed drainage design.
4. Drainage measures to be installed prior to, or at the same time as the works areas they are intended to drain.
5. Design elevation of the water surface along the route of the interceptor drains or swales will not be lower then the design elevation of the water surface in the outlet at the level spreader or stilling pond.
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7. Check dam designs to be selected best to suit particular topography and hydrological environment.
8. Down gradient slope below level spreader onto which the water will dissipate to have a grade less the 6%.
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10. Stilling ponds to be sized according to the area they will be receiving water from.
11. Diversion of drainage ditches will only take place when alternative drainage ditch has been installed to handle the same water.
12. Existing drains/ditches to be incorporated or removed during wind farm construction.
13. All drainage system features to be subject of inspection and maintenance plan.
14. The layout shown is slightly offset for scale purposes, and all drainage would be installed as close to the road as possible.

Drawing Legend

- Planning Application Boundary
- Proposed Road
- Electrical Cable Trench
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area

N

DRAWING TITLE:
Turbine Layout
Sheet 3 of 7

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 23
SCALE: 1:500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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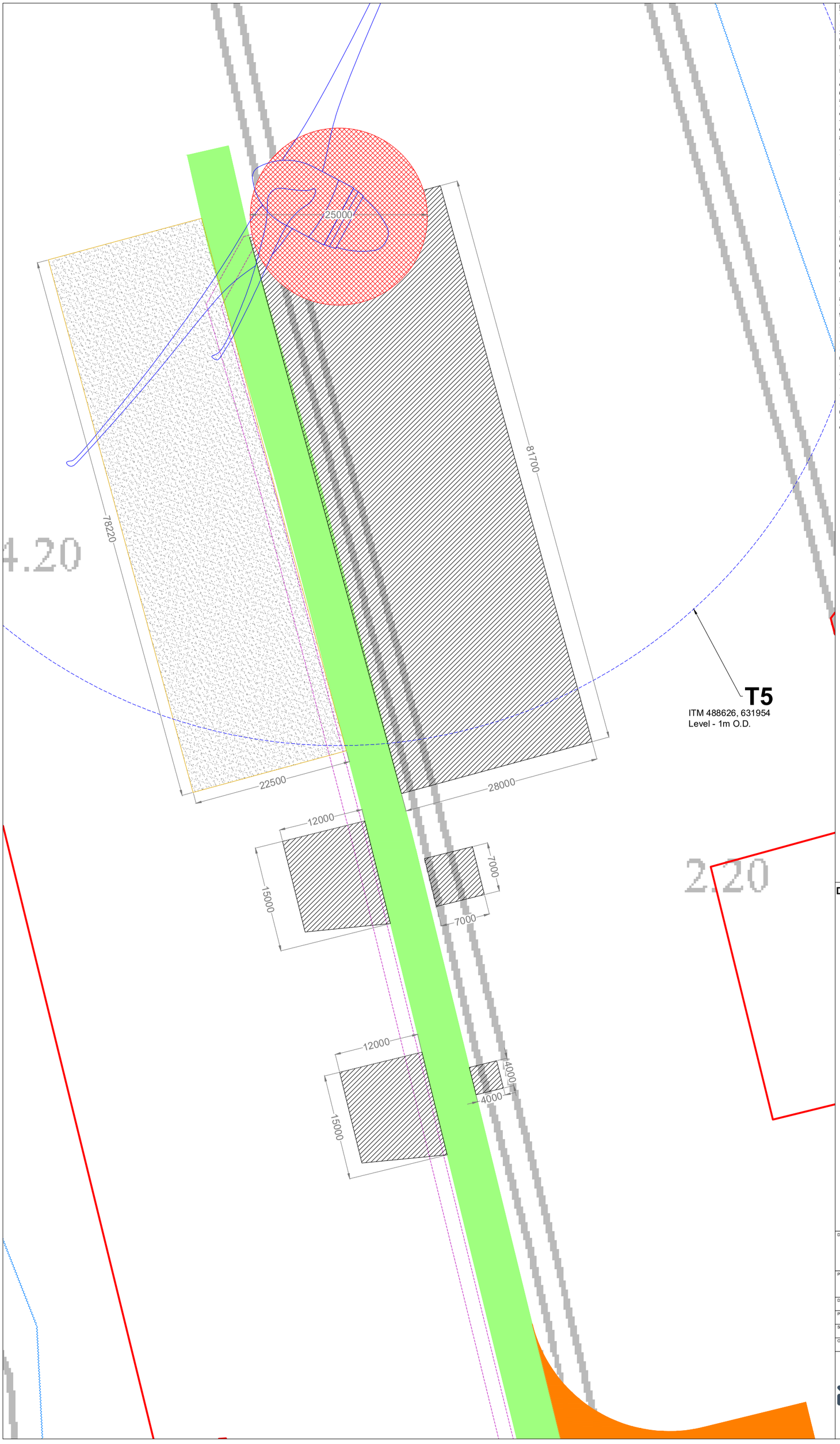

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drainage Design Notes

1. All drainage subject to micro-siting and optimisation on site.
2. The locations of the interceptor drains, check dams, culverts, swales, stilling ponds and level spreaders are shown as indicative, and may be changed to suit the requirements of the local topography.
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4. Drainage measures to be installed prior to, or at the same time as the works areas they are intended to drain.
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12. Existing drains/ditches to be incorporated or removed during wind farm construction.
13. All drainage system features to be subject of inspection and maintenance plan.
14. The layout shown is slightly offset for scale purposes, and all drainage would be installed as close to the road as possible.

Drawing Legend

- Planning Application Boundary
- Existing Road to be Upgraded
- Proposed Road
- Electrical Cable Trench
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area

N

DRAWING TITLE:

Turbine Layout Sheet 4 of 7

PROJECT TITLE:

Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No. 200512	DRAWING No. 200512 - 24
SCALE: 1:500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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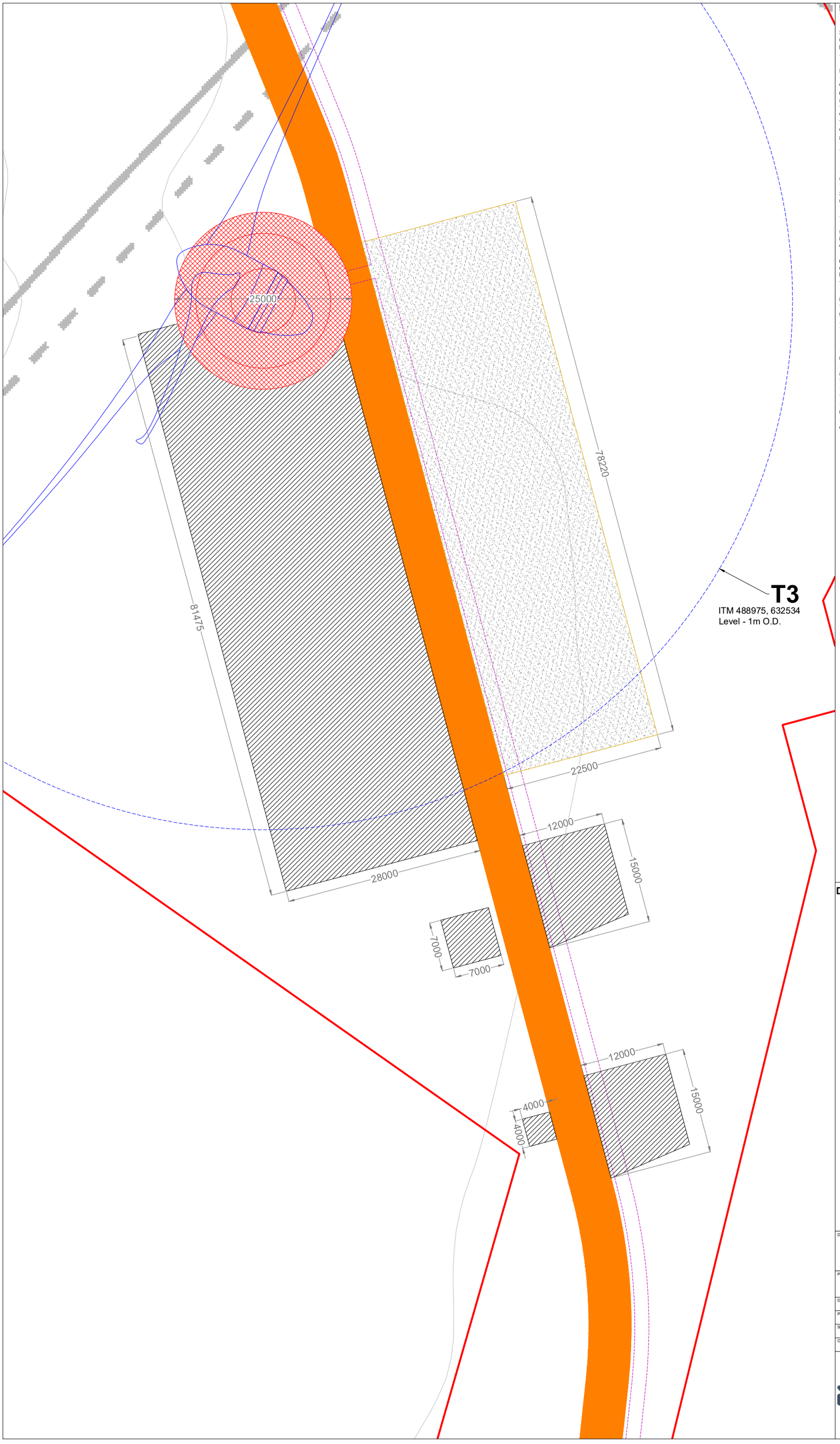

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drainage Design Notes

1. All drainage subject to micro-siting and optimisation on site.
2. The locations of the interceptor drains, check dams, culverts, swales, stilling ponds and level spreaders are shown as indicative, and may be changed to suit the requirements of the local topography.
3. Supervising hydrologist or environmental clerk of works (environmental scientist) to oversee installation of drainage features following detailed drainage design.
4. Drainage measures to be installed prior to, or at the same time as the works areas they are intended to drain.
5. Design elevation of the water surface along the route of the interceptor drains or swales will not be lower then the design elevation of the water surface in the outlet at the level spreader or stilling pond.
6. The spacing and frequency of the check dams will be dependant on the gradient of the interceptor drain or swale in which they are being installed.
7. Check dam designs to be selected best to suit particular topography and hydrological environment.
8. Down gradient slope below level spreader onto which the water will dissipate to have a grade less the 6%.
9. No direct discharge or pumping to watercourses will be permitted. All discharges from level spreaders or stilling ponds to be via vegetated filters. Selection or suitable areas to use as vegetation filters will be determined by the size of the contributing catchment, slope and ground conditions.
10. Stilling ponds to be sized according to the area they will be receiving water from.
11. Diversion of drainage ditches will only take place when alternative drainage ditch has been installed to handle the same water.
12. Existing drains/ditches to be incorporated or removed during wind farm construction.
13. All drainage system features to be subject of inspection and maintenance plan.
14. The layout shown is slightly offset for scale purposes, and all drainage would be installed as close to the road as possible.

Drawing Legend

- Planning Application Boundary
- Proposed Road
- Electrical Cable Trench
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area

N

DRAWING TITLE:
Turbine Layout
Sheet 5 of 7

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 25
SCALE: 1:500 @ A3	DATE: 23.11.2021

OS SHEET No.:
5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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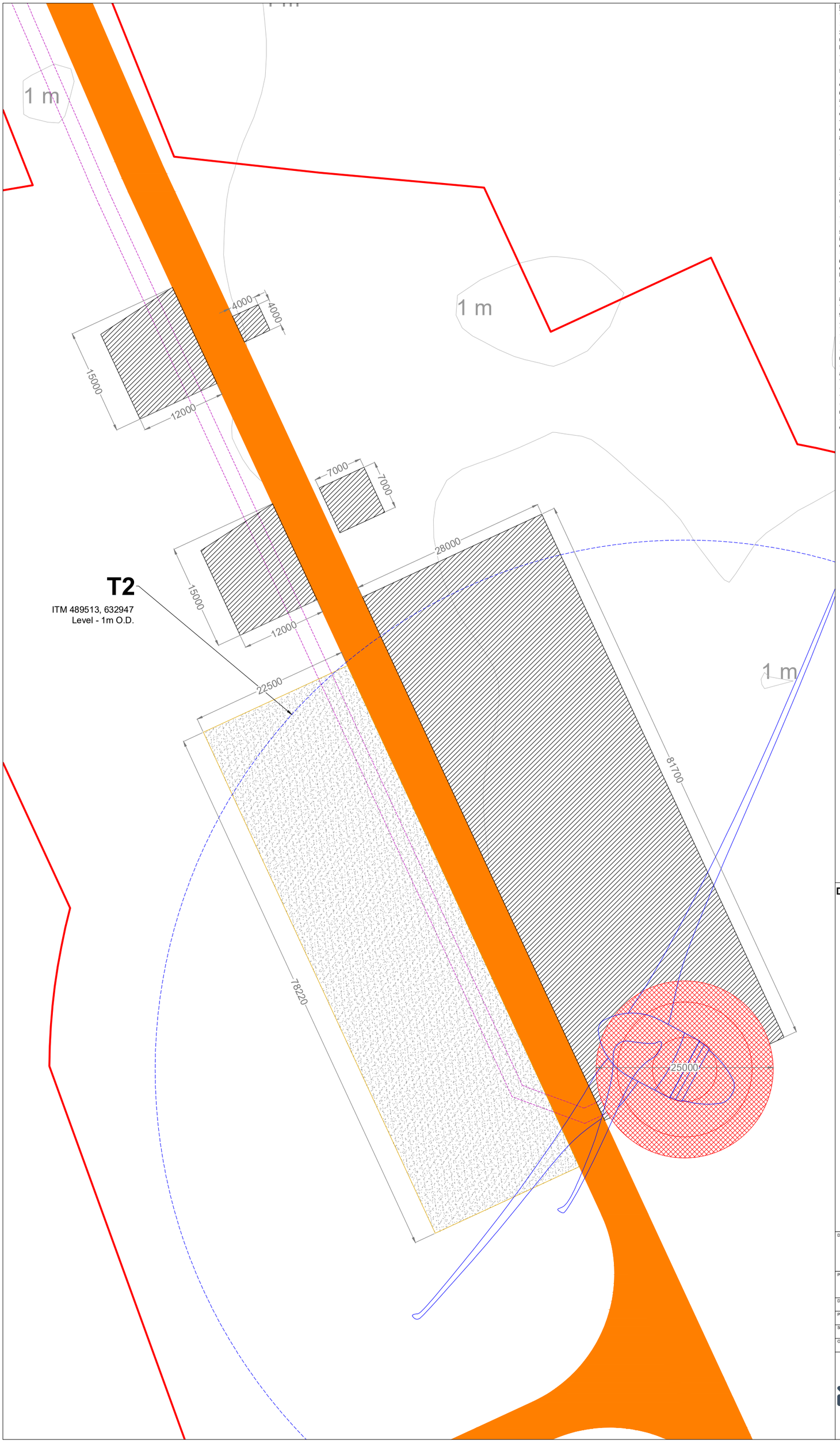

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8. Final levels may vary depending on local ground conditions.

Drainage Design Notes

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Drawing Legend

- Planning Application Boundary
- Proposed Road
- Electrical Cable Trench
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area

N

DRAWING TITLE:
Turbine Layout Sheet 6 of 7

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 26
SCALE: 1:500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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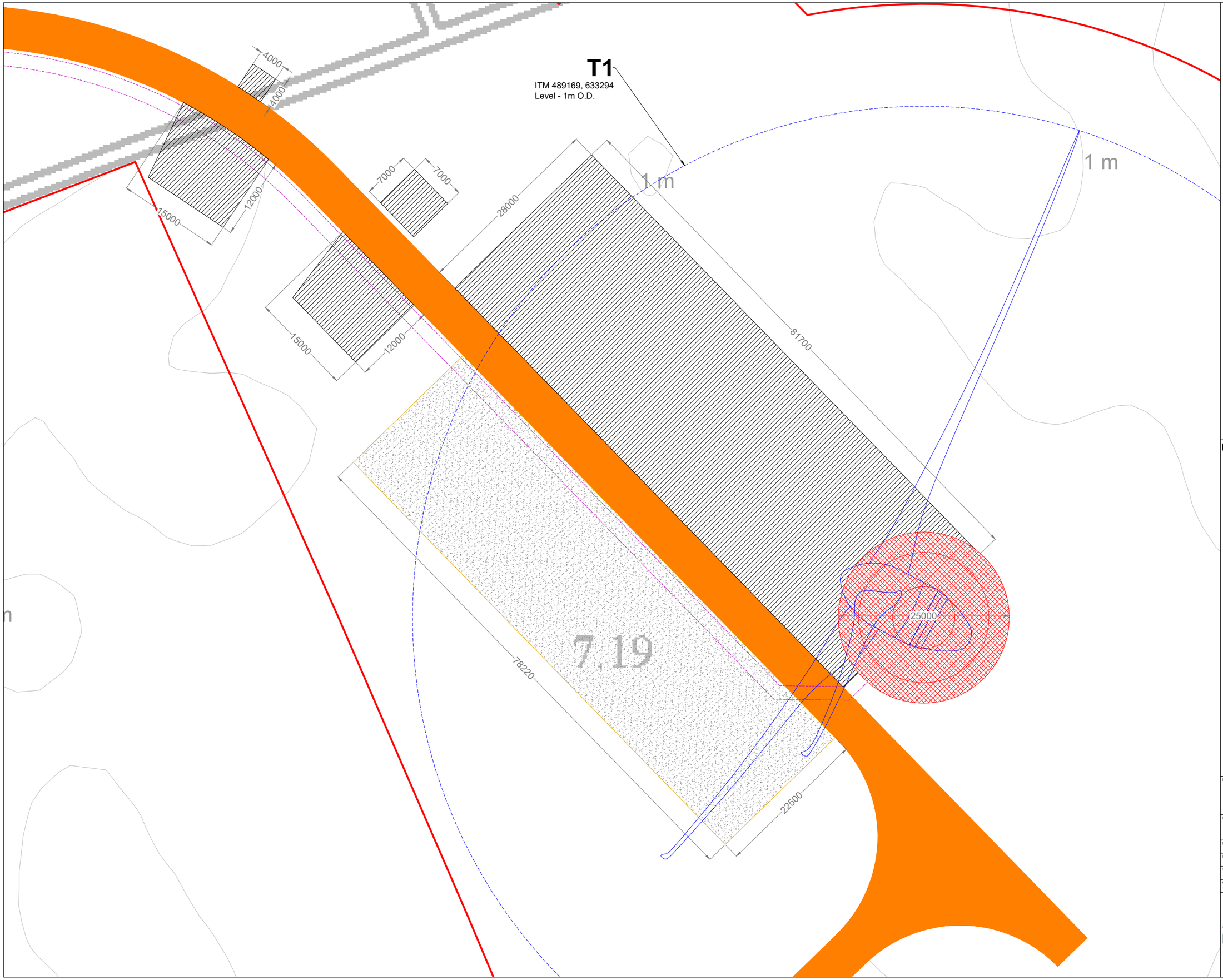

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drainage Design Notes

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13. All drainage system features to be subject of inspection and maintenance plan.
14. The layout shown is slightly offset for scale purposes, and all drainage would be installed as close to the road as possible.

Drawing Legend

- Planning Application Boundary
- Proposed Road
- Electrical Cable Trench
- Soft Levelled Area
- Crane Pad Hardstanding Area
- Turbine Foundation
- Turbine Sweep Area

N

DRAWING TITLE:
Turbine Layout
Sheet 7 of 7

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY: Joseph O Brien	CHECKED BY: Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 27
SCALE: 1:500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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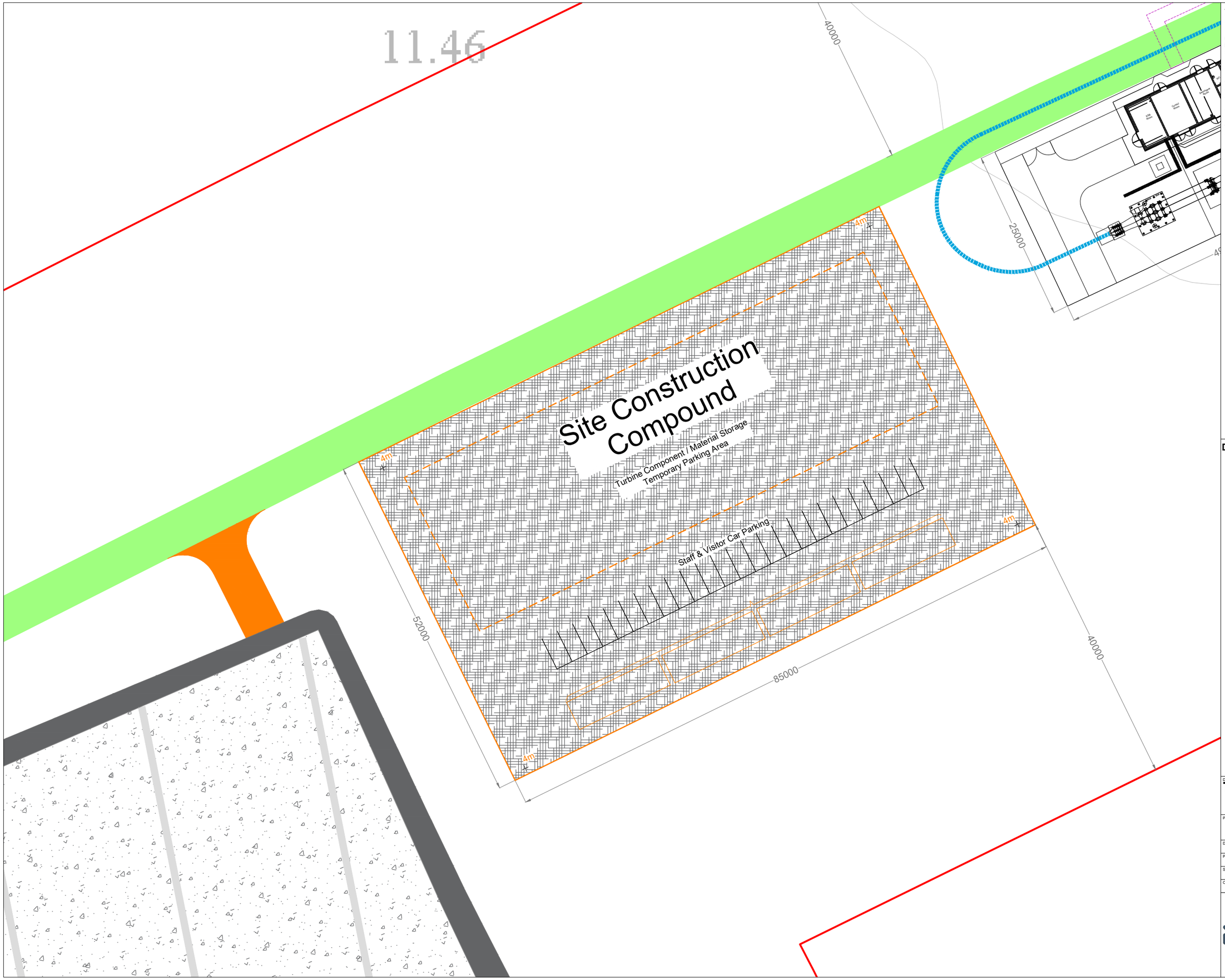

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Existing Road to be Upgraded
- Proposed Road
- Electrical Cable Trench
- Grid Connection Route
- Borrow Pit

N

DRAWING TITLE:
Temporary Construction Compound 1

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 28
SCALE: 1:500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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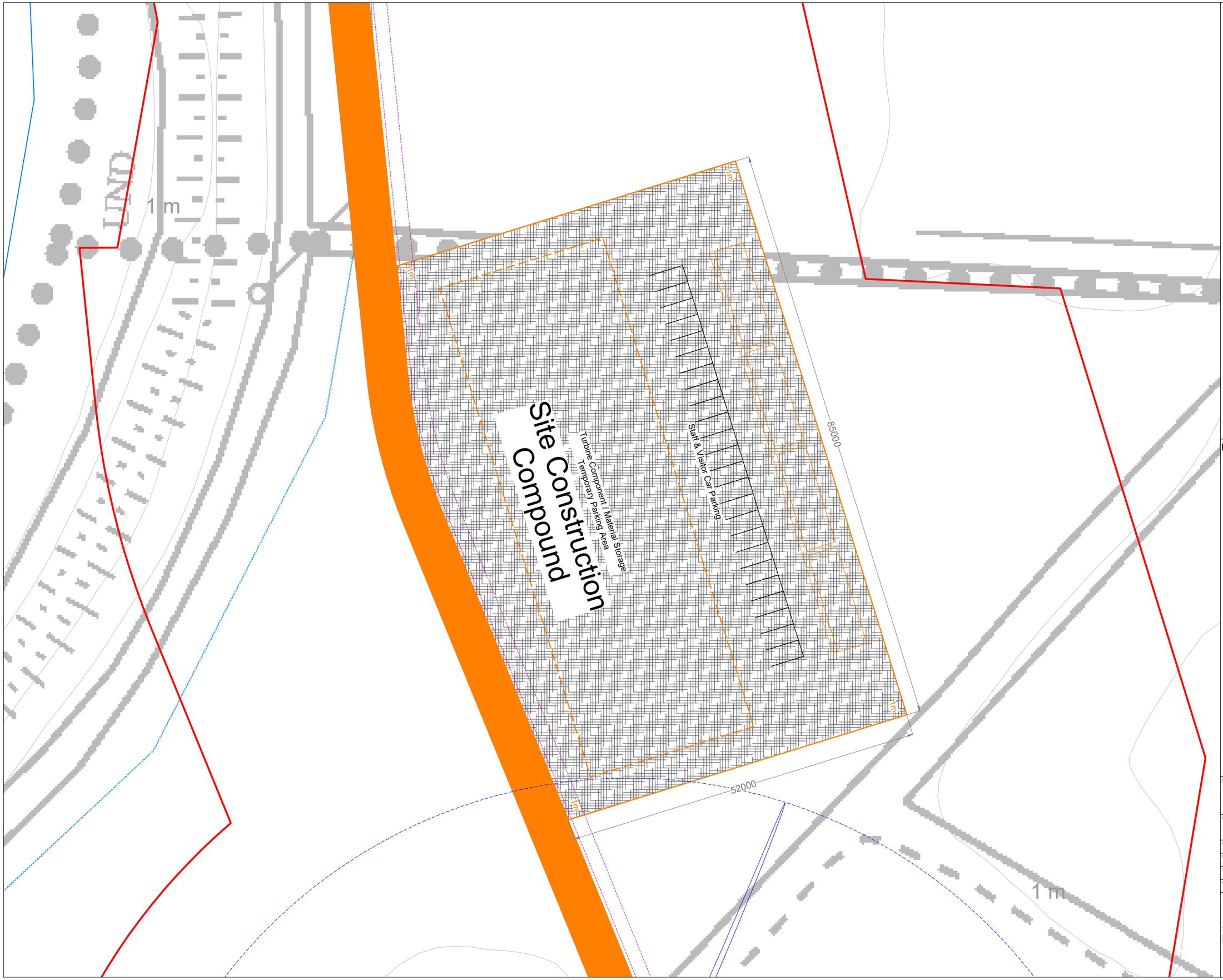

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7. Layout plans show 170m Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Proposed Road
- Electrical Cable Trench
- River/Stream
- River/Stream 50m Buffer
- Turbine Sweep Area

N

DRAWING TITLE:
Temporary Construction Compound 2

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 29
SCALE: 1:500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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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 Road
- Electrical Cable Trench
- Grid Connection Route

N

2m

2m

40000

40000

25000

49000

4m

4m

4m

4m

Site Construction Compound

Turbine Component / Material Storage
Temporary Parking Area

Staff & Visitor Car Parking

DRAWING TITLE:

Substation Layout

PROJECT TITLE:

Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 30
SCALE: 1:500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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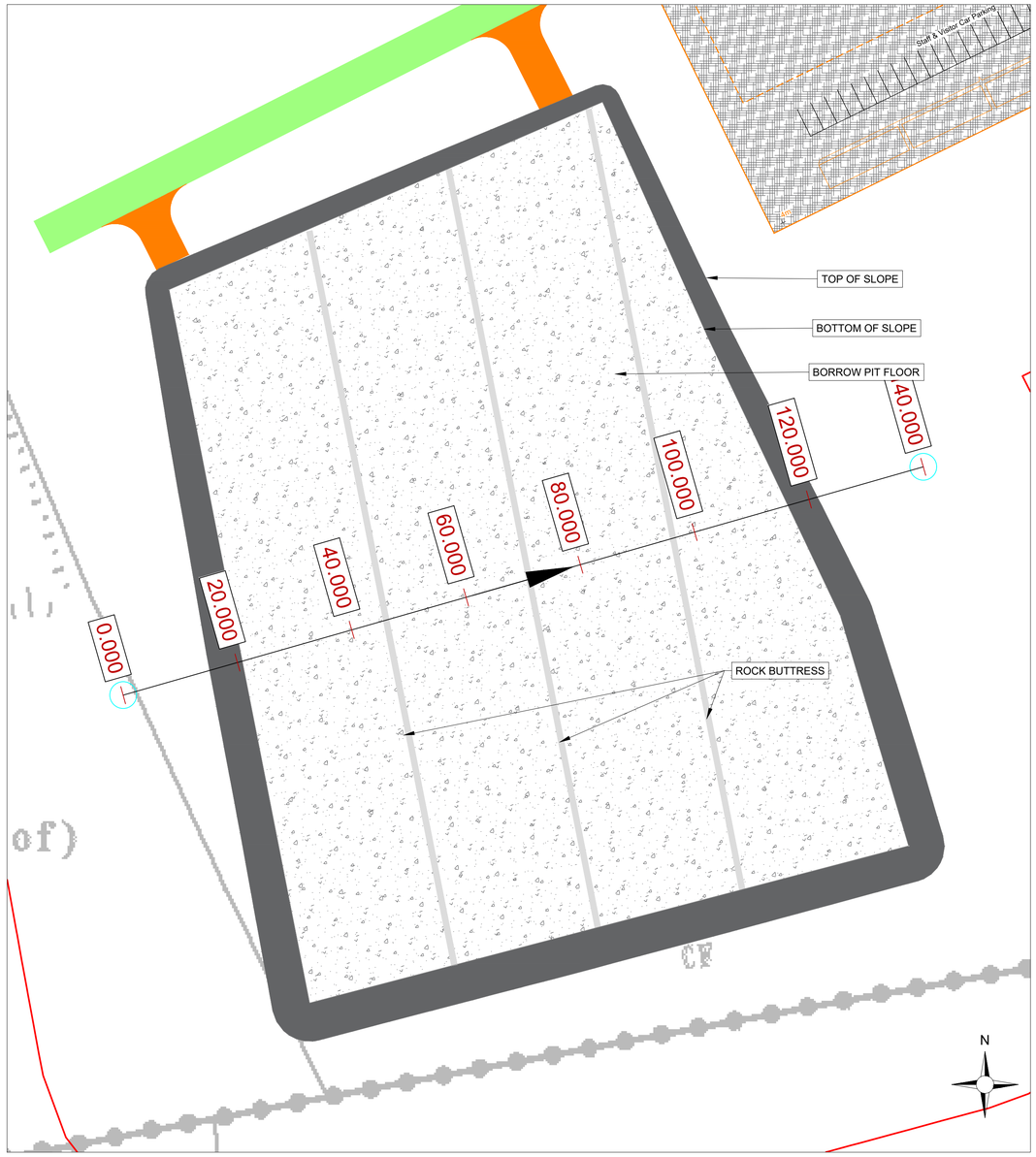

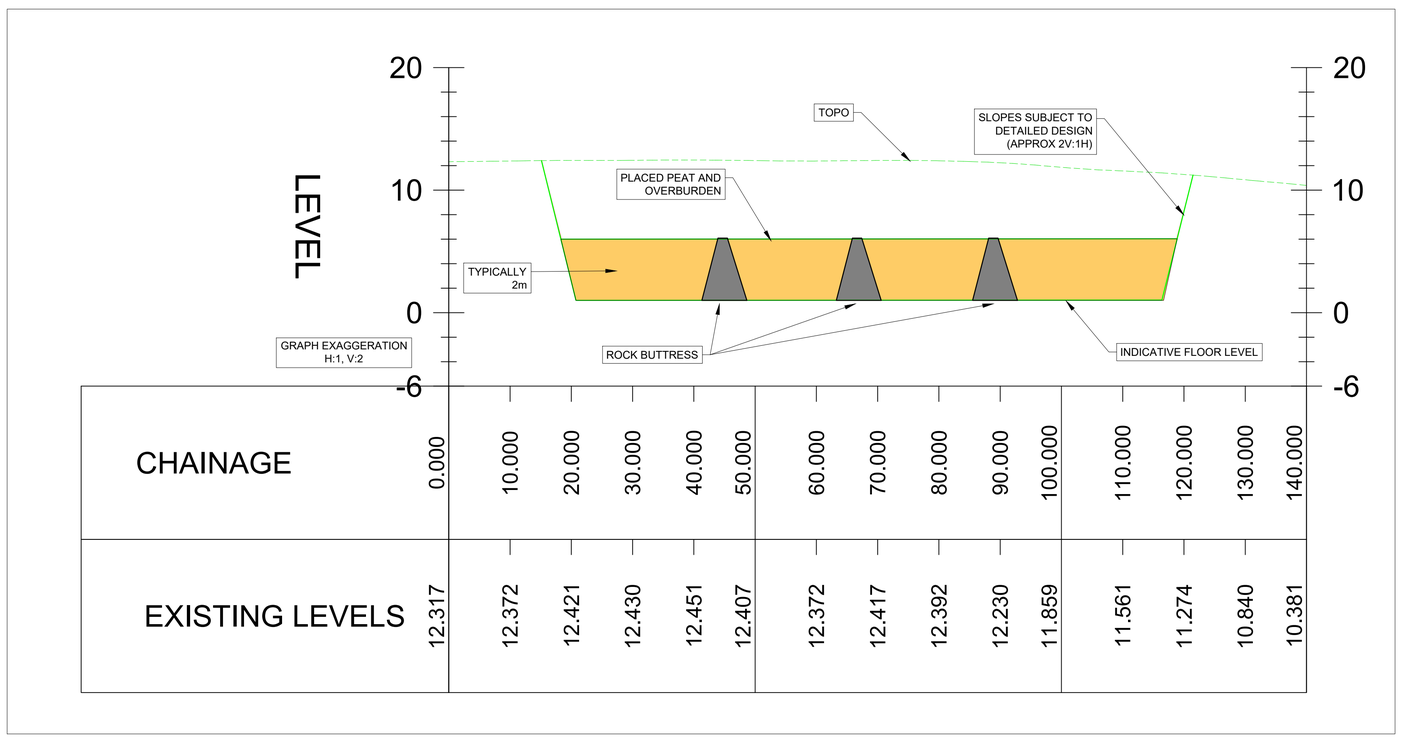

DRAWING TITLE:
Borrow Pit Layout & Sections

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 31
SCALE: 1:500 @ A1	DATE: 23.11.2021

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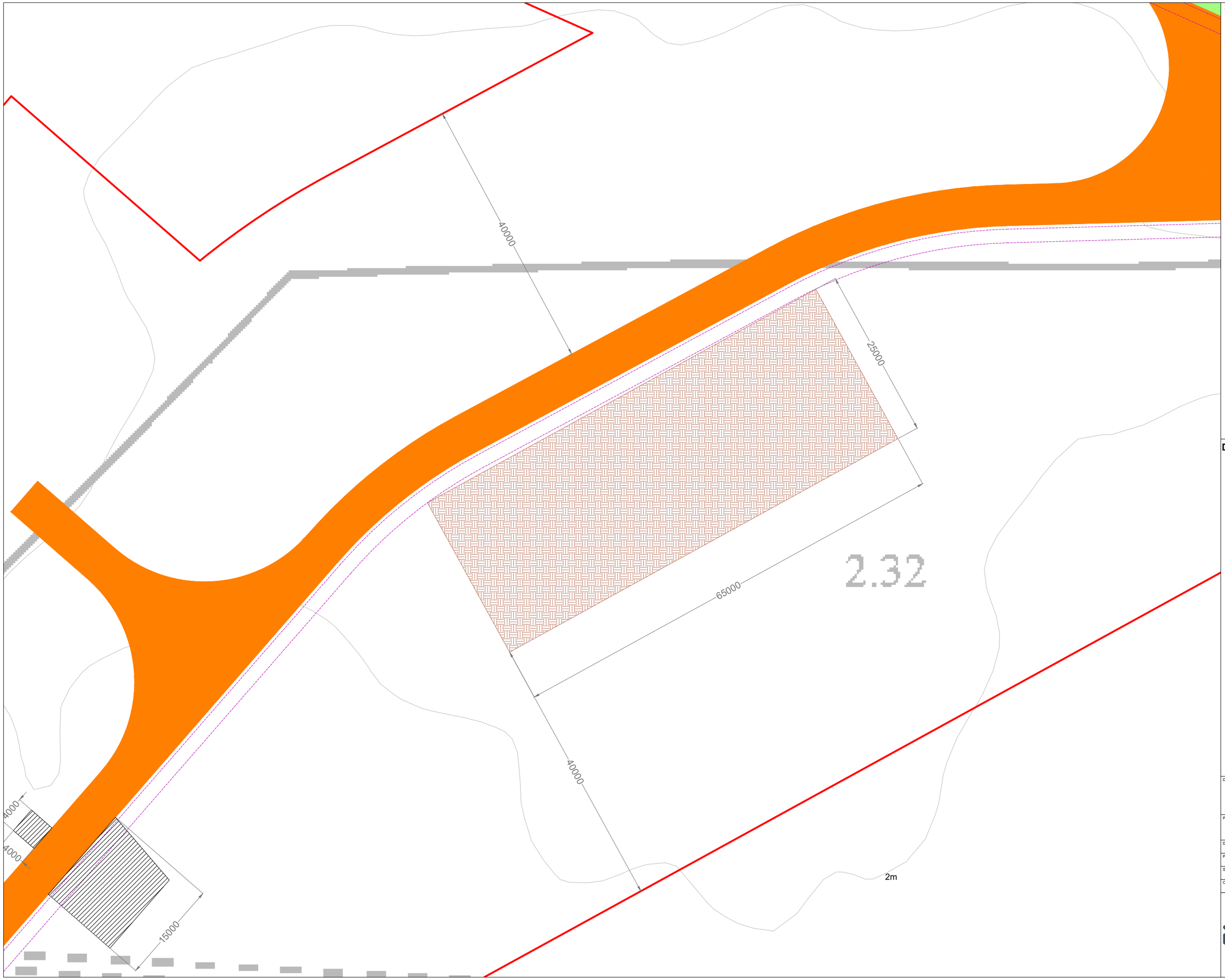

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8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Existing Road to be Upgraded
- Proposed Road
- Electrical Cable Trench
- Peat Repository

N

DRAWING TITLE:

Temporary Peat Storage 1

PROJECT TITLE:

Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 32
SCALE: 1:500 @ A3	DATE: 23.11.2021

OS SHEET No.: 5151, 5152, 5153, 5213, 5214, 5215, 5275, 5276, 5277, 5335, 5336, 5337

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1 m

40000

45000

1m

1.30

75000

40000

1.33

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Drawing Legend

- Planning Application Boundary
- Proposed Road
- Proposed Passing Bay
- Electrical Cable Trench
- Peat Repository

N

DRAWING TITLE:
Temporary Peat Storage 2

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 33
SCALE: 1:500 @ A3	DATE: 23.11.2021

OS SHEET No.:
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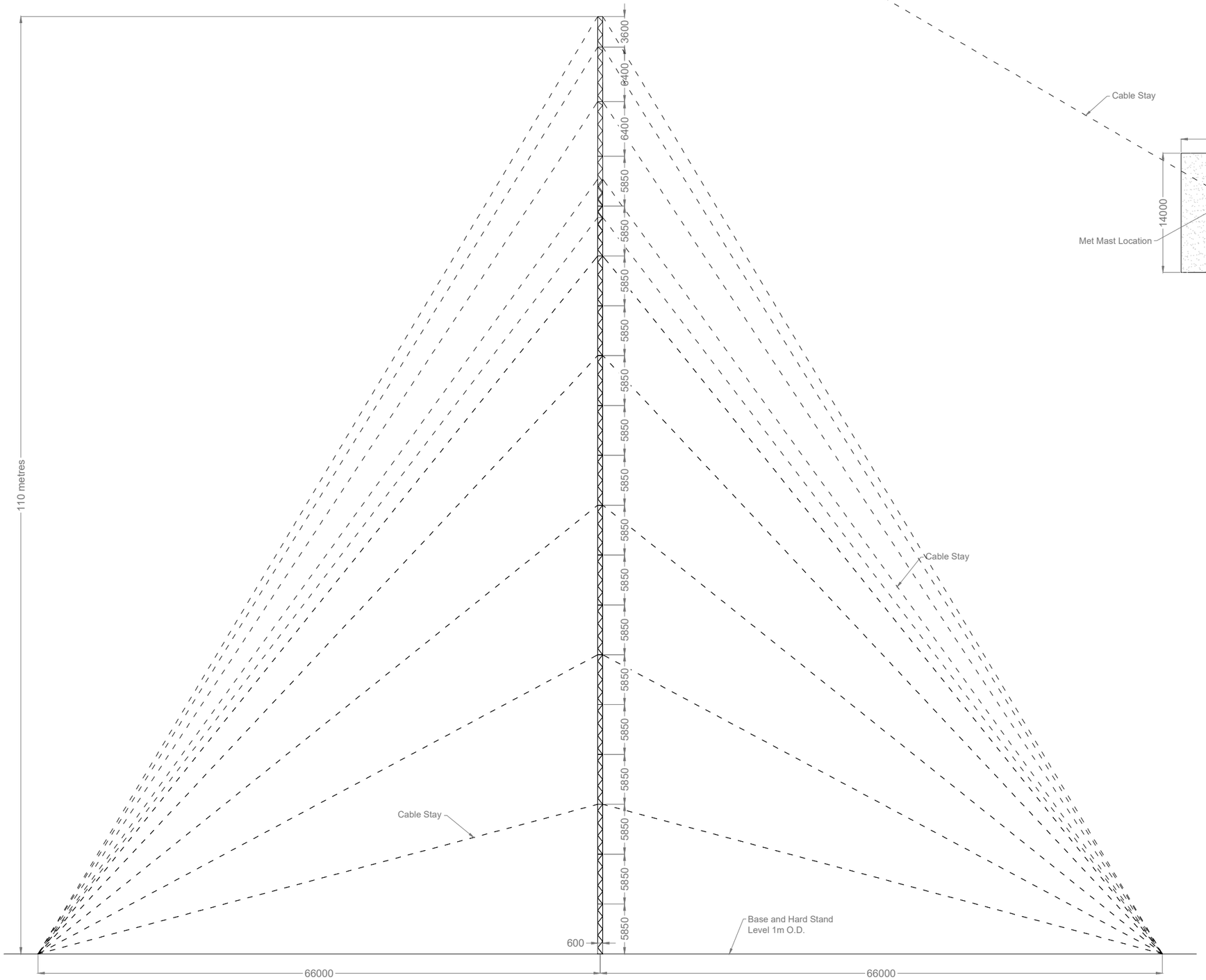
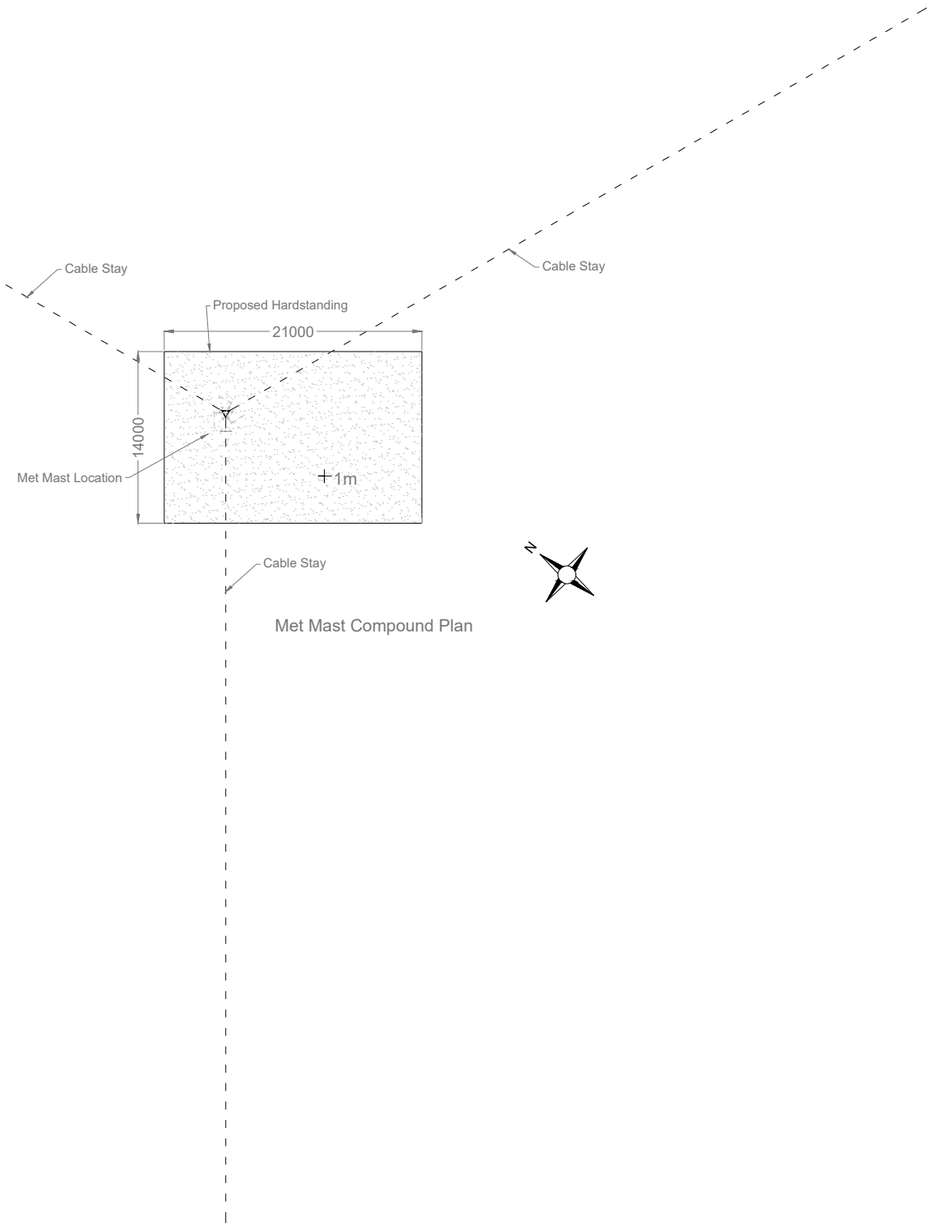
Website: www.mkoireland.ie

Drawing Notes

1. Met mast on site will either be guyed met mast or free standing met mast depending on site conditions. Both options shown only one will be used.



Met Mast Elevation



Met Mast Compound Plan

DRAWING TITLE:
Met Mast - Option 1 - Guyed Mast

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 34
SCALE: 1:500 @ A3	DATE: 23.11.2021

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Drawing Notes

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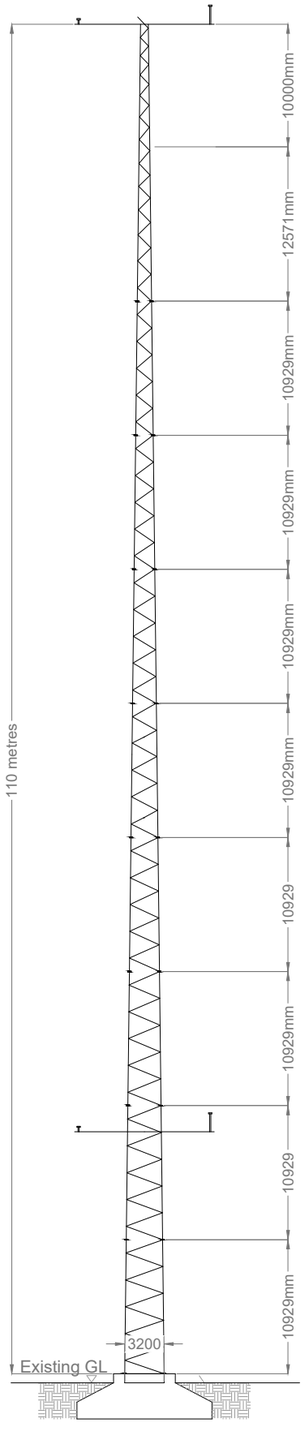

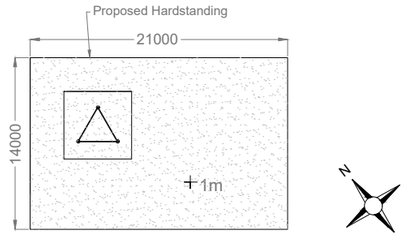

Met Mast Compound Plan

DRAWING TITLE:
Met Mast - Option 2 - Free Standing Mast

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY: Joseph O Brien	CHECKED BY: Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 35
SCALE: 1:500 @ A3	DATE: 23.11.2021

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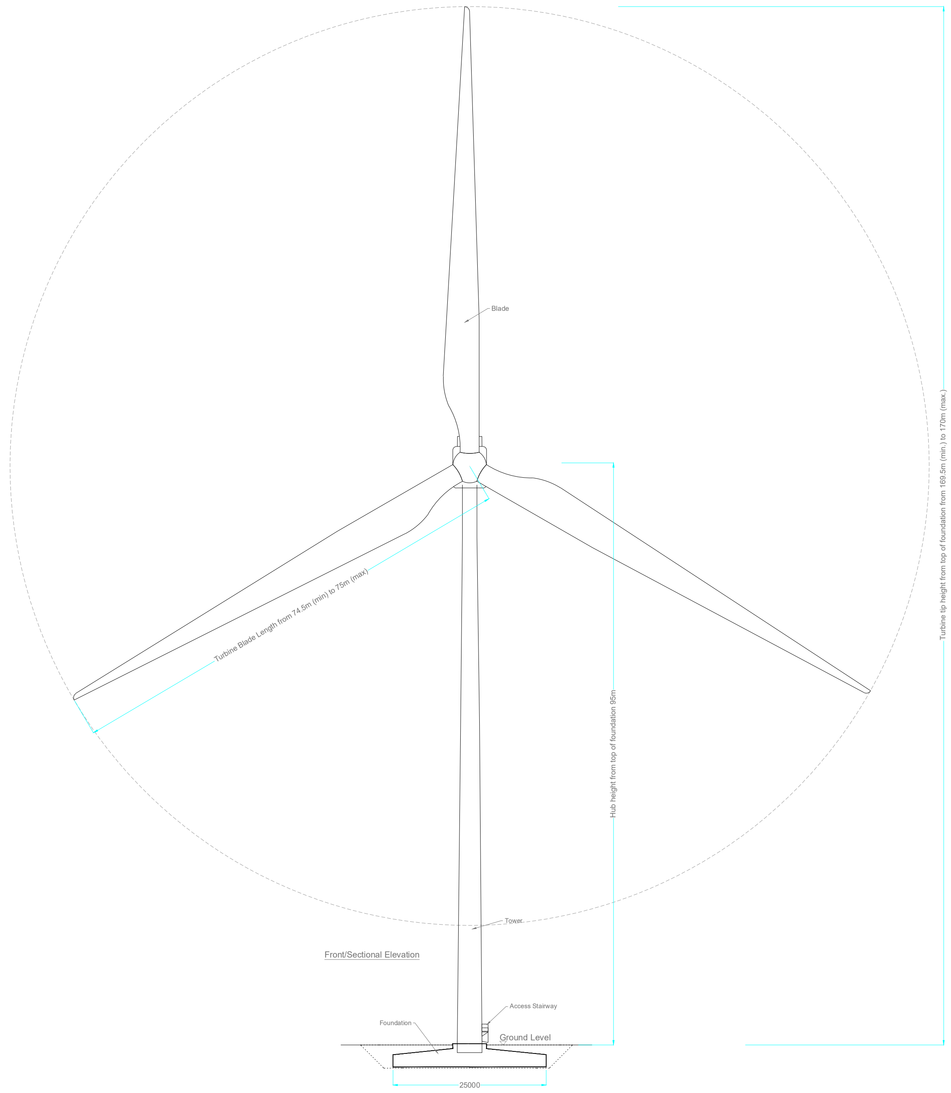

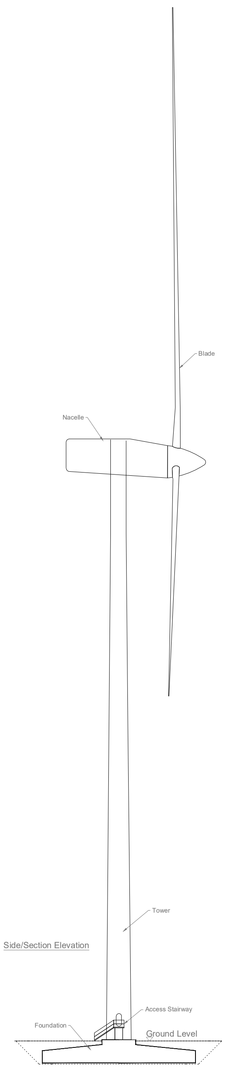

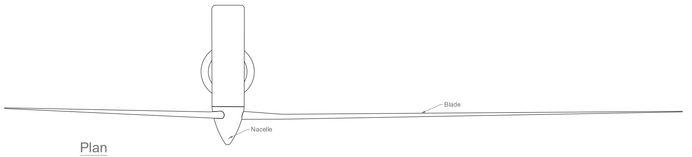

Drawing Notes

1. Drawing illustrates turbines with the maximum blade tip height of 170m.
2. Exact make and model of the turbine to be dictated by a competitive tender process.
3. Installed wind turbine not to exceed maximum size envelope set out above in any blade length and hub-height configuration.
4. Turbine Foundation to Manufacturers specifications
5. Ground level represents the top of turbine foundation.

DRAWING TITLE:

Wind Turbine Hardstanding & Elevations

PROJECT TITLE:

Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.	DRAWING No.
200512	200512 - 36
SCALE:	DATE:
1:500 @A1	23.11.2021

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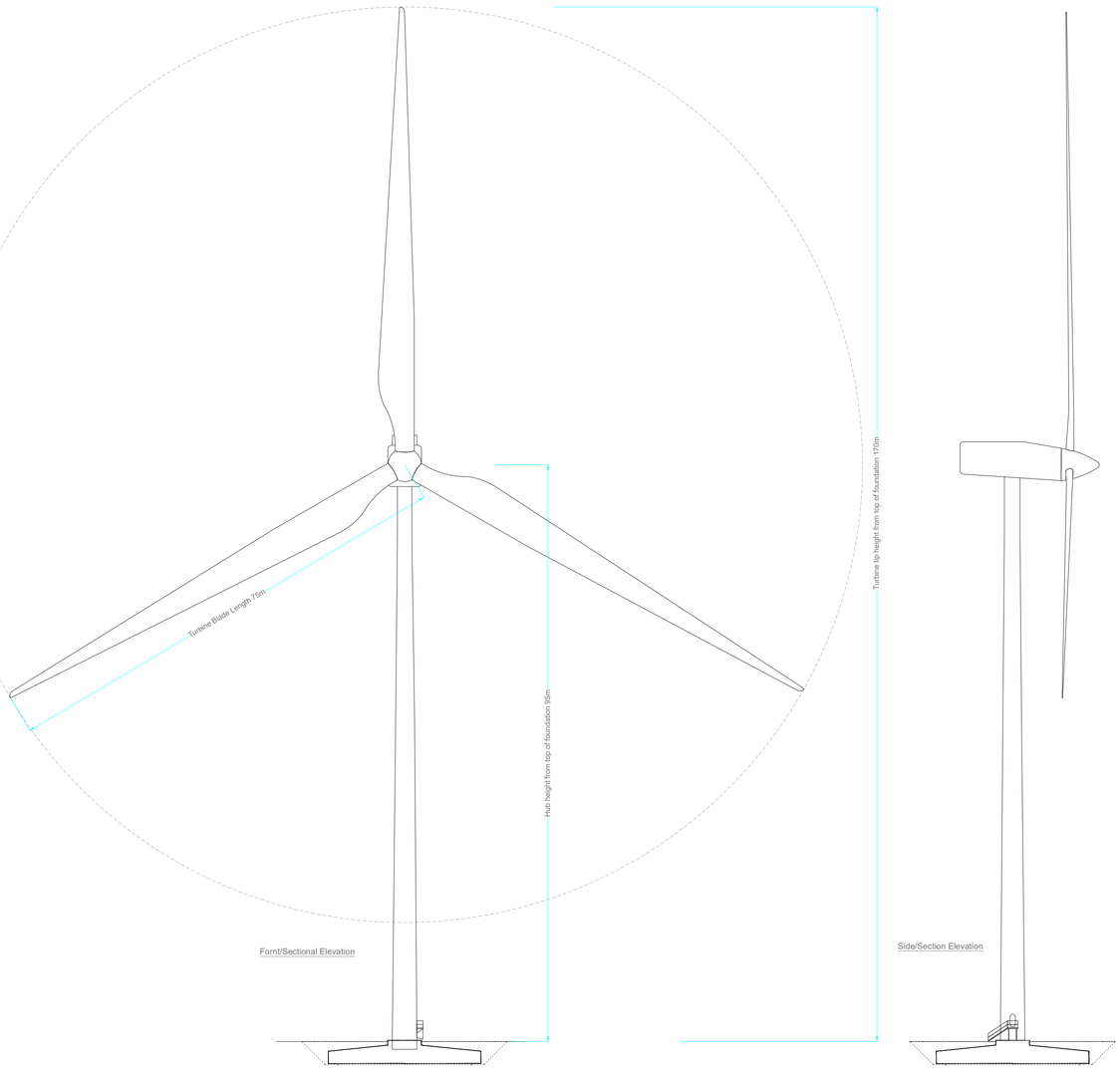

Drawing Notes

1. Proposed wind turbines to have a maximum ground to blade tip height of up to 170m.
2. Exact make and model of the turbine to be dictated by a competitive tender process.
3. Installed wind turbine not to exceed maximum size envelope set out above in any blade length and hub-height configuration.
4. Turbine foundation diameter may vary.
5. Ground level represents the top of turbine foundation.

DRAWING TITLE:
95m hub and 75m blade Wind Turbine Elevations & Plan

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY: **Joseph O Brien**	CHECKED BY: **Thomas Blackwell**
PROJECT No.: **200512**	DRAWING No.: **200512 - 37**
SCALE: **1:500 @A1**	DATE: **23.11.2021**

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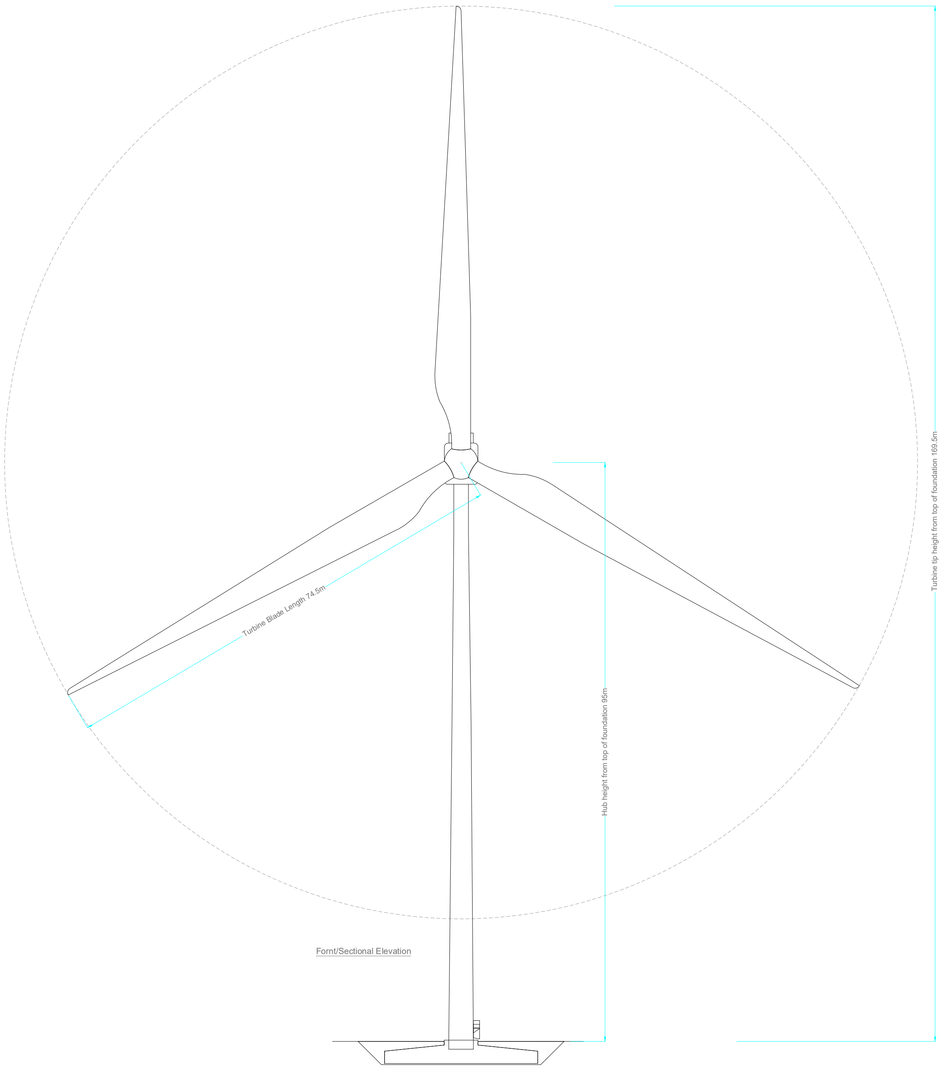
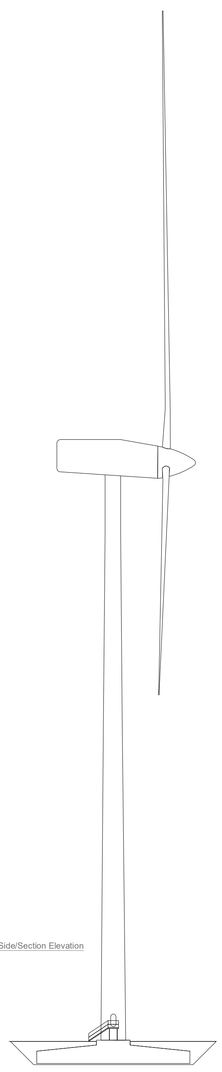


Fornt/Sectional Elevation



Side/Section Elevation

Plan

Drawing Notes

1. Proposed wind turbines to have a maximum ground to blade tip height of up to 170m.
2. Exact make and model of the turbine to be dictated by a competitive tender process.
3. Installed wind turbine not to exceed maximum size envelope set out above in any blade length and hub-height configuration.
4. Turbine foundation diameter may vary.
5. Ground level represents the top of turbine foundation.

DRAWING TITLE:
95m hub and 74.5m blade Wind Turbine Elevations & Plan

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY: **Joseph O Brien**	CHECKED BY: **Thomas Blackwell**
PROJECT No.: **200512**	DRAWING No.: **200512 - 38**
SCALE: **1:500 @A1**	DATE: **23.11.2021**

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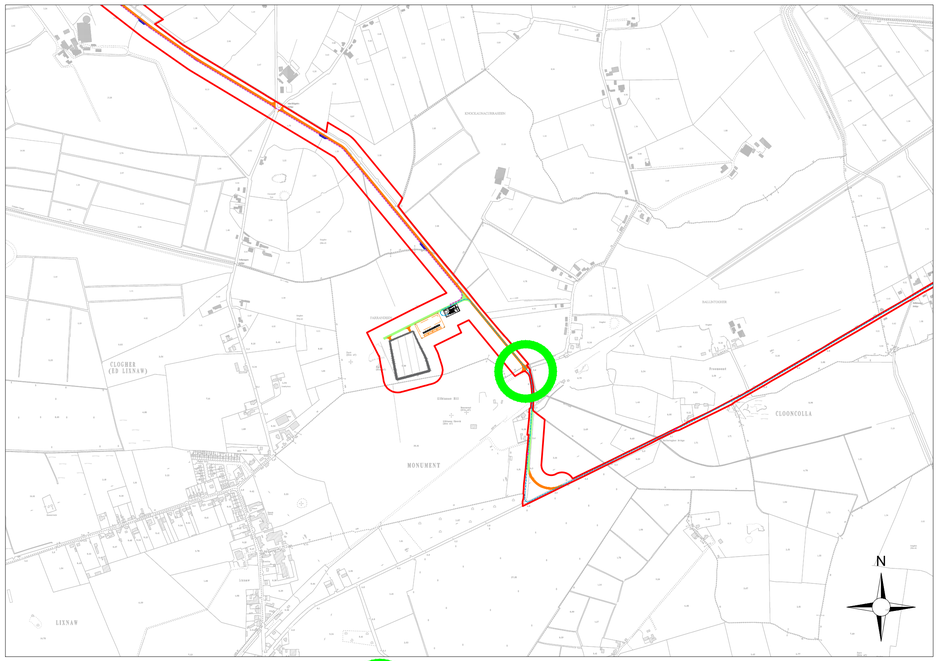
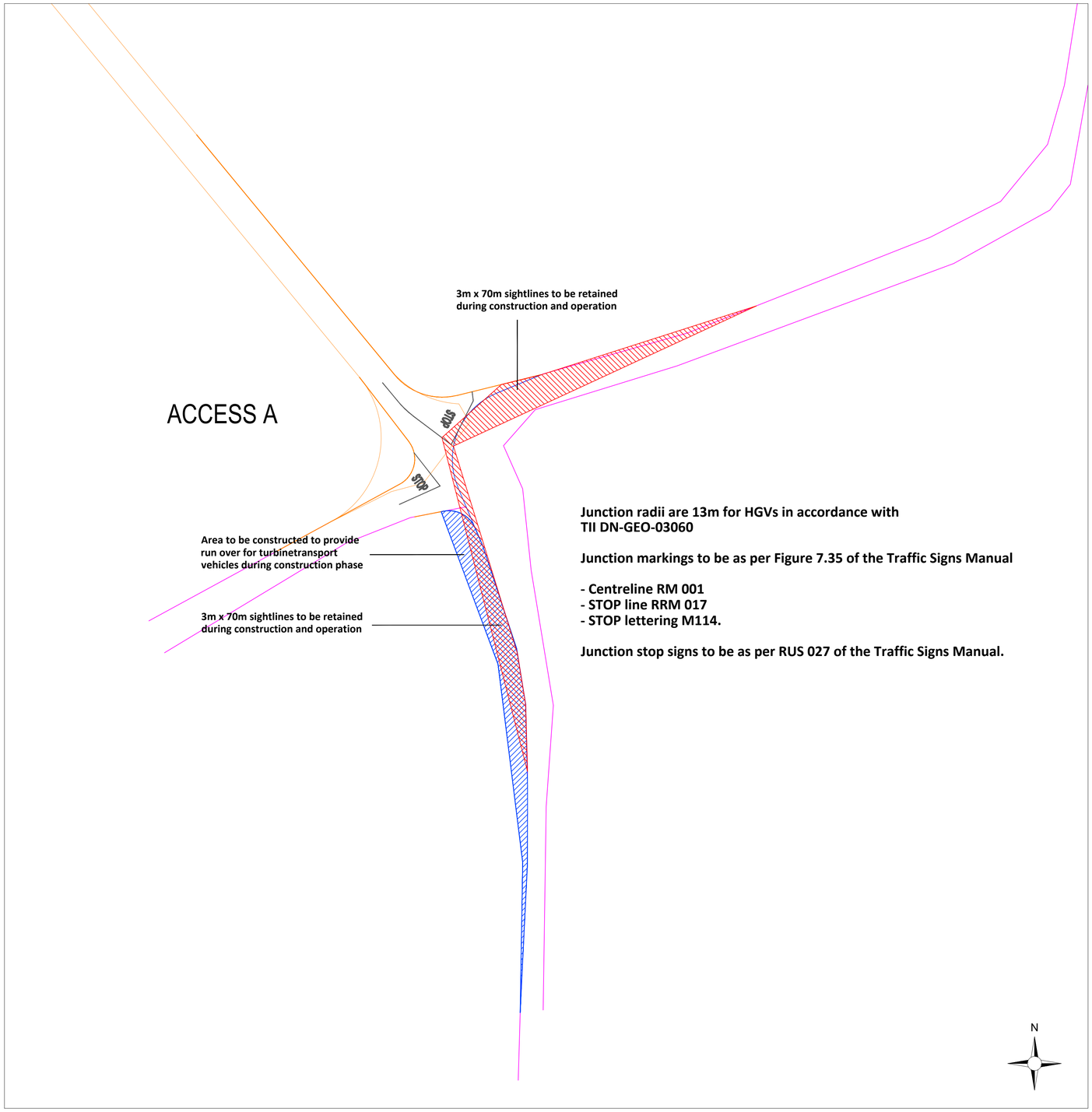
Drawing Legend

- Existing Road Edge
- Proposed New Road
- Transport Runover Area
- Sight Line



1:10,000 Location on Context Map



Junction radii are 13m for HGVs in accordance with TII DN-GEO-03060

Junction markings to be as per Figure 7.35 of the Traffic Signs Manual

- **Centreline RM 001**
- **STOP line RRM 017**
- **STOP lettering M114.**

Junction stop signs to be as per RUS 027 of the Traffic Signs Manual.

DRAWING TITLE:
Proposed Access Junction A

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 39
SCALE: 1:500 @ A1	DATE: 23.11.2021

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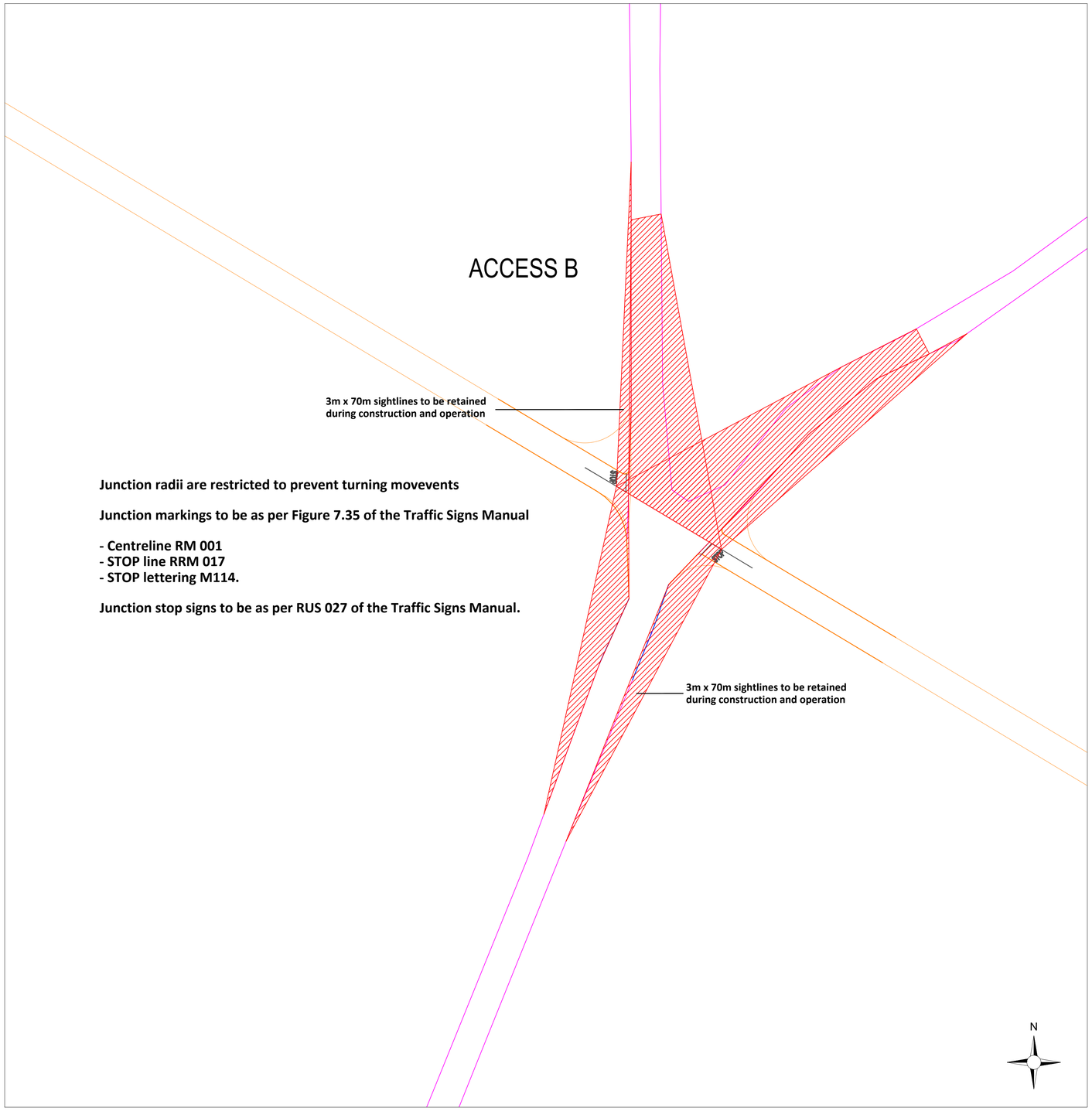
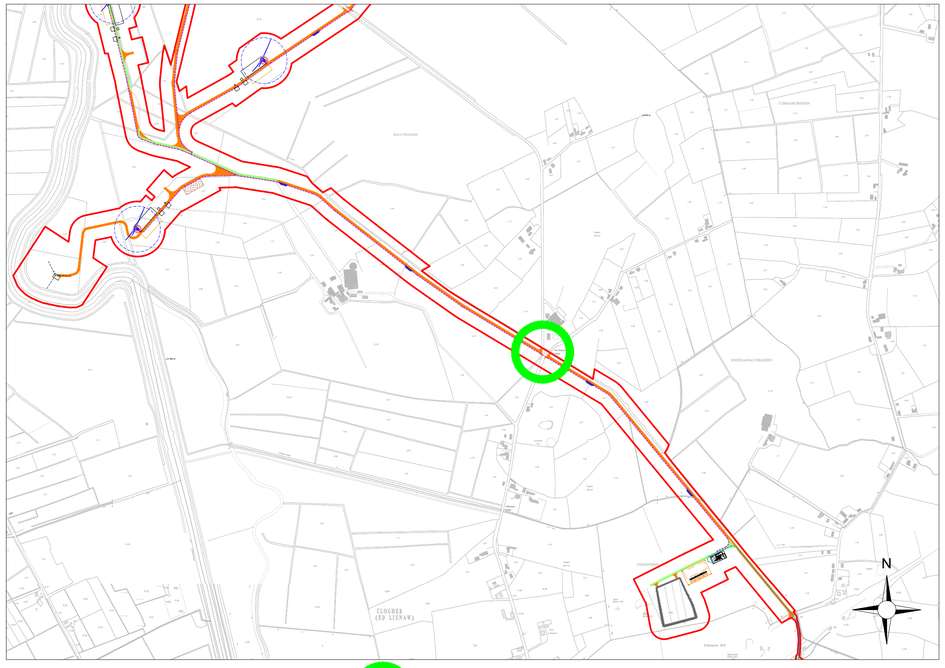
Drawing Legend

- Existing Road Edge
- Proposed New Road
- Sight Line





1:10,000 Location on Context Map

DRAWING TITLE:
Proposed Access Junction B

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY: Joseph O Brien	CHECKED BY: Thomas Blackwell
PROJECT No. 200512	DRAWING No. 200512 - 40
SCALE: 1:500 @ A1	DATE: 23.11.2021

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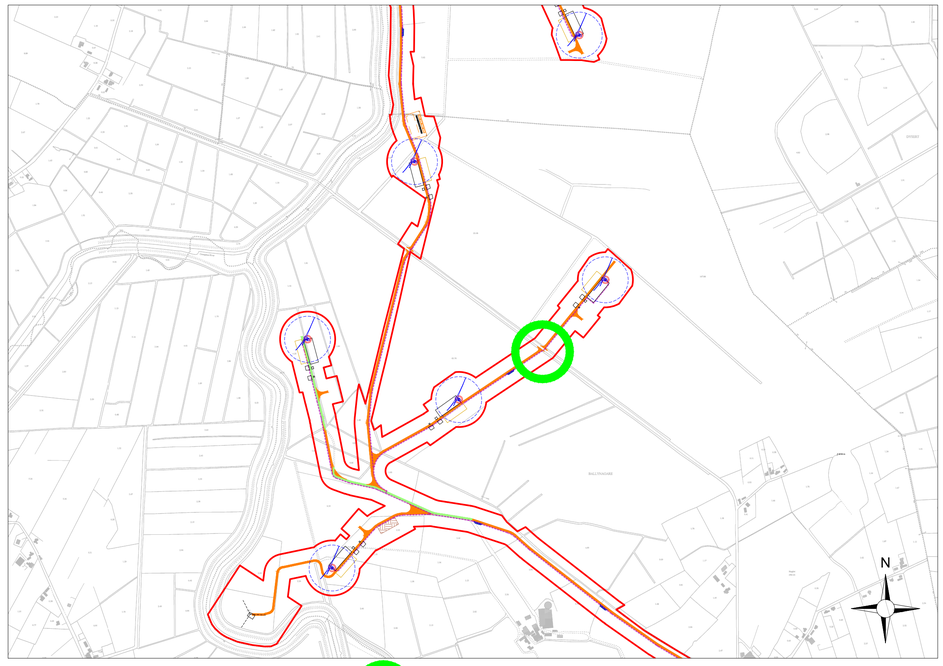
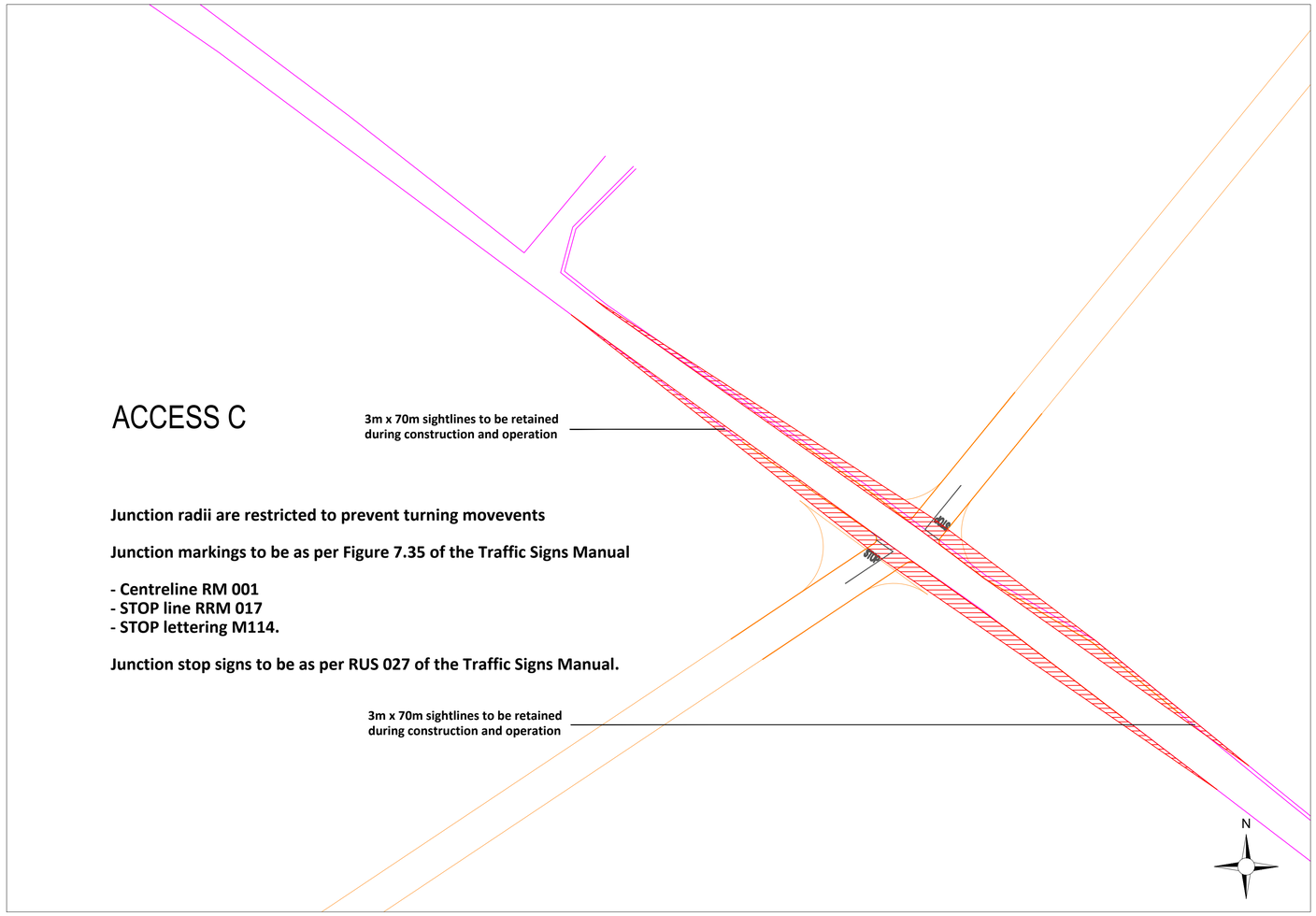
Drawing Legend

- Existing Road Edge
- Proposed New Road
- Sight Line



1:10,000 Location on Context Map



Junction radii are restricted to prevent turning movevents

Junction markings to be as per Figure 7.35 of the Traffic Signs Manual

- Centreline RM 001
- STOP line RRM 017
- STOP lettering M114.

Junction stop signs to be as per RUS 027 of the Traffic Signs Manual.

DRAWING TITLE:
Proposed Access Junction C

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 41
SCALE: 1:500 @ A1	DATE: 23.11.2021

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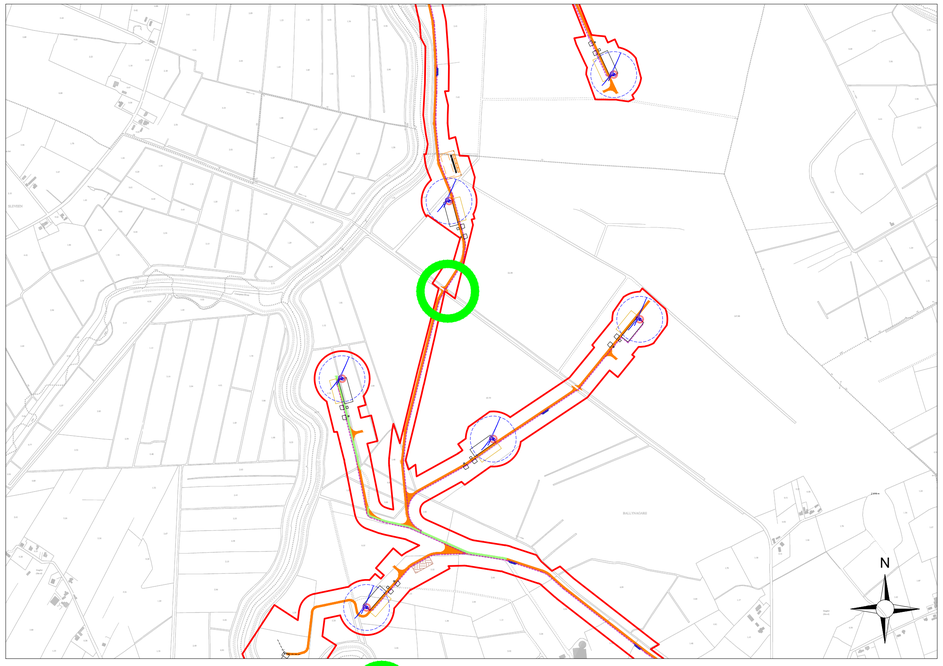
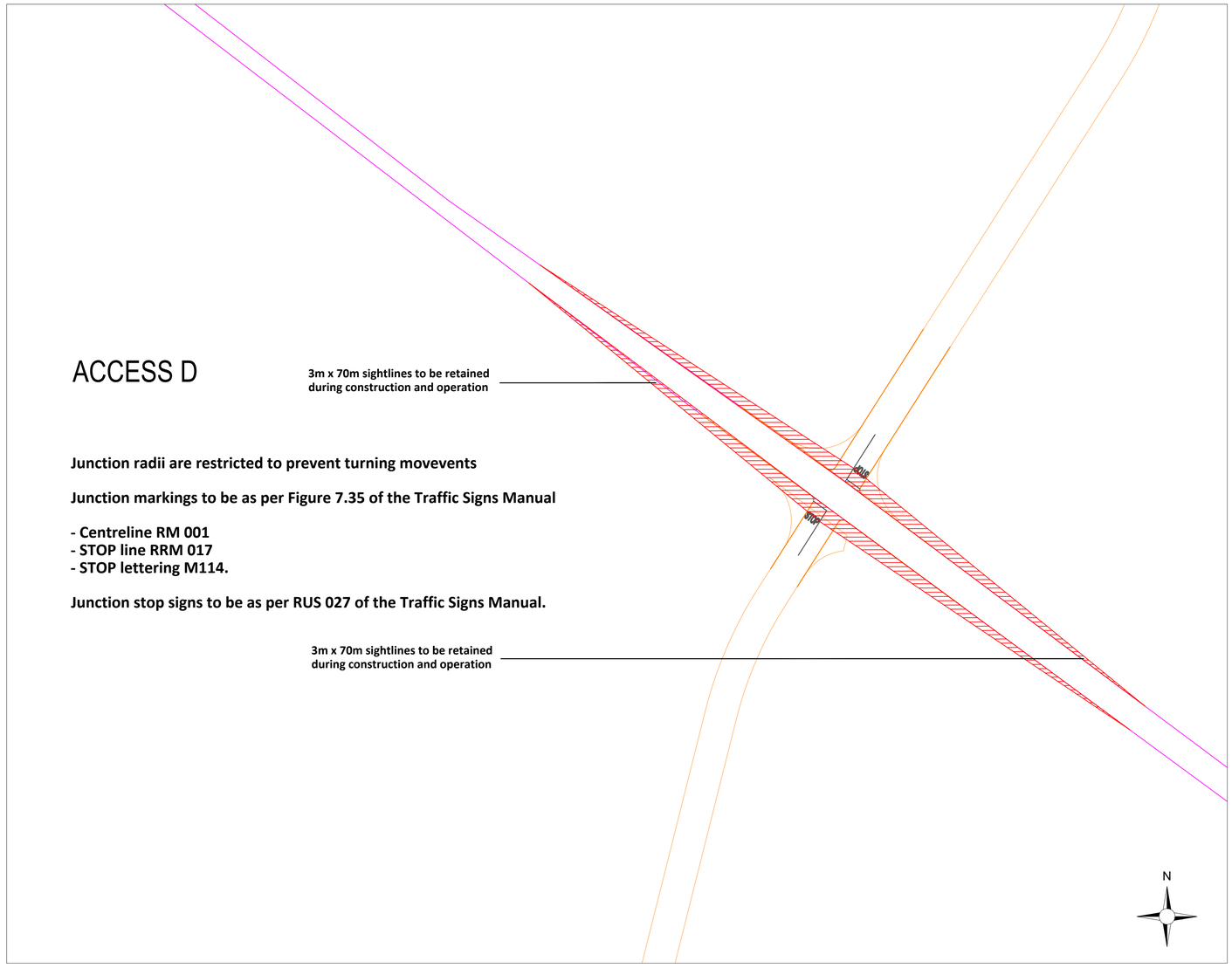
email: info@www.mkoireland.ie
Website: www.mkoireland.ie

Drawing Legend

- Existing Road Edge
- Proposed New Road
- Sight Line



1:10,000 Location on Context Map



DRAWING TITLE:
Proposed Access Junction D

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 42
SCALE: 1:500 @ A1	DATE: 23.11.2021

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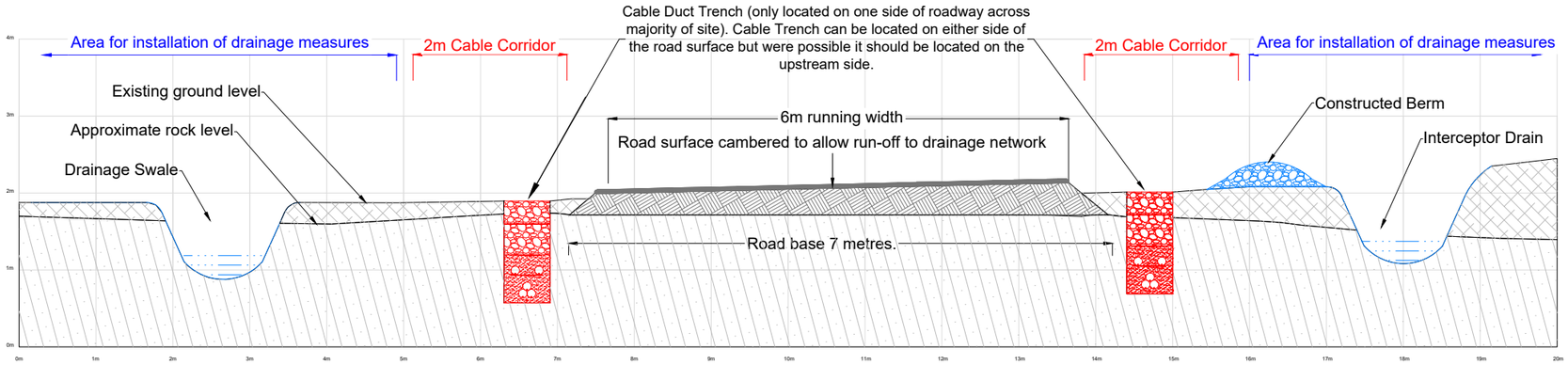
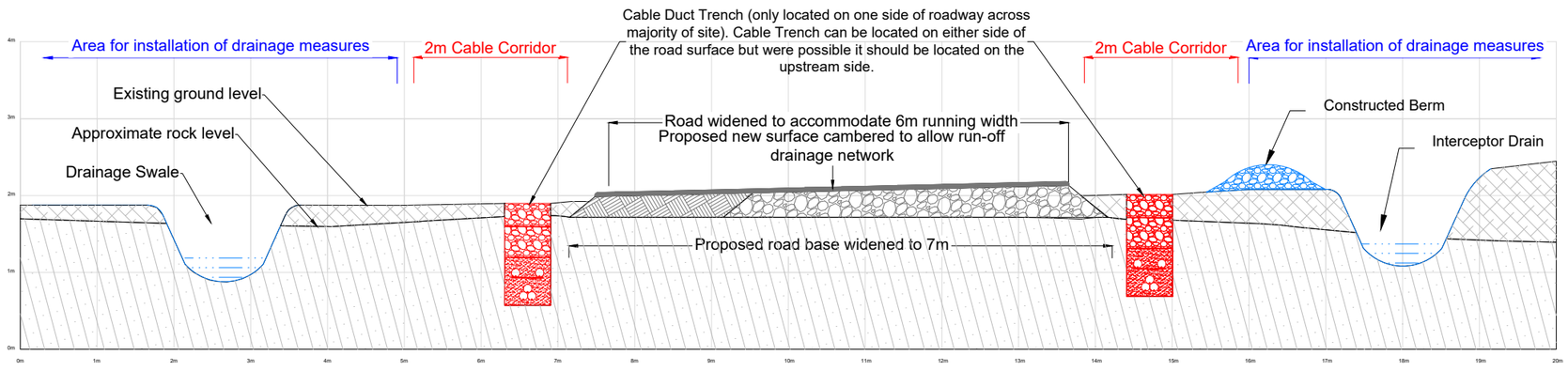
Website: www.mkoireland.ie

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.



Excavated road section.



Existing excavated road widening section.

DRAWING TITLE:
Excavated Road Sections

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 43
SCALE: 1:75@A3	DATE: 23.11.2021

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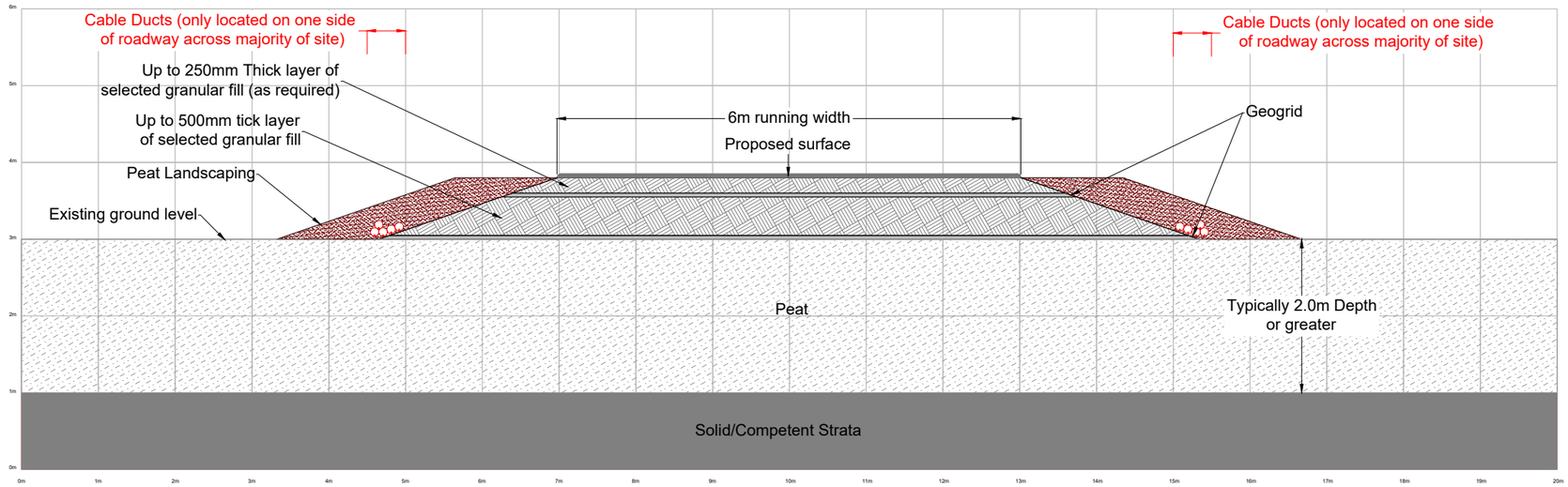
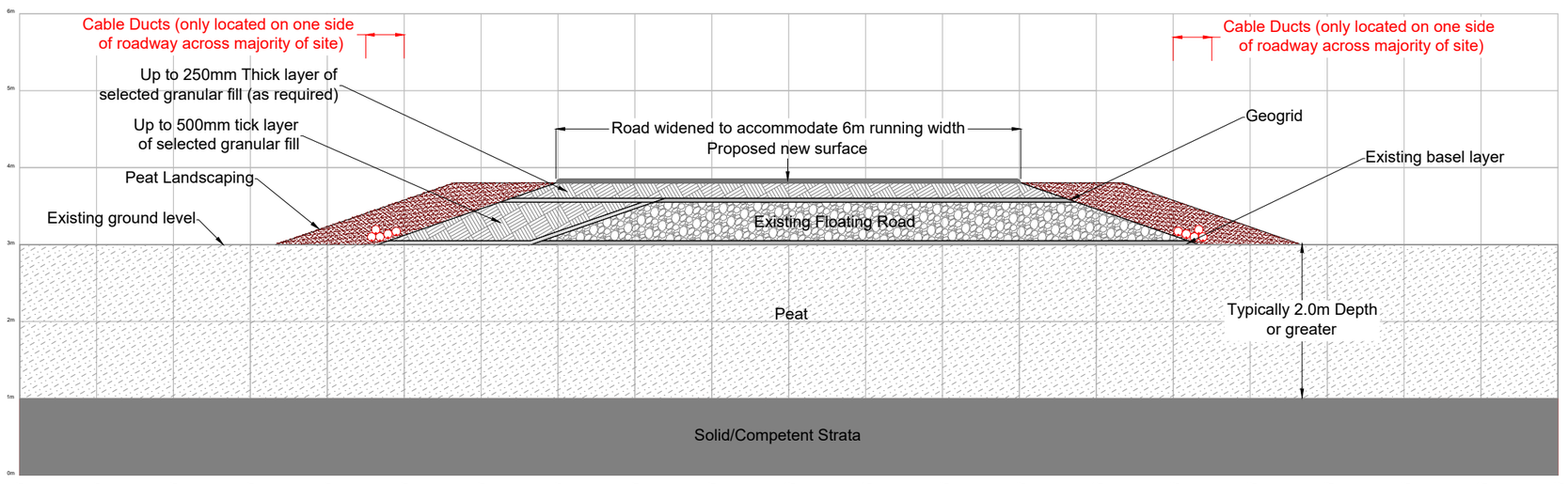
Drawing Notes

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.



Floating road section.



Floating road widening section.

DRAWING TITLE:
Floating Road Sections

PROJECT TITLE:
Ballynagare Wind Farm, Co. Kerry

DRAWING BY:	CHECKED BY:
Joseph O Brien	Thomas Blackwell
PROJECT No.: 200512	DRAWING No.: 200512 - 44
SCALE: 1:75 @A3	DATE: 23.11.2021

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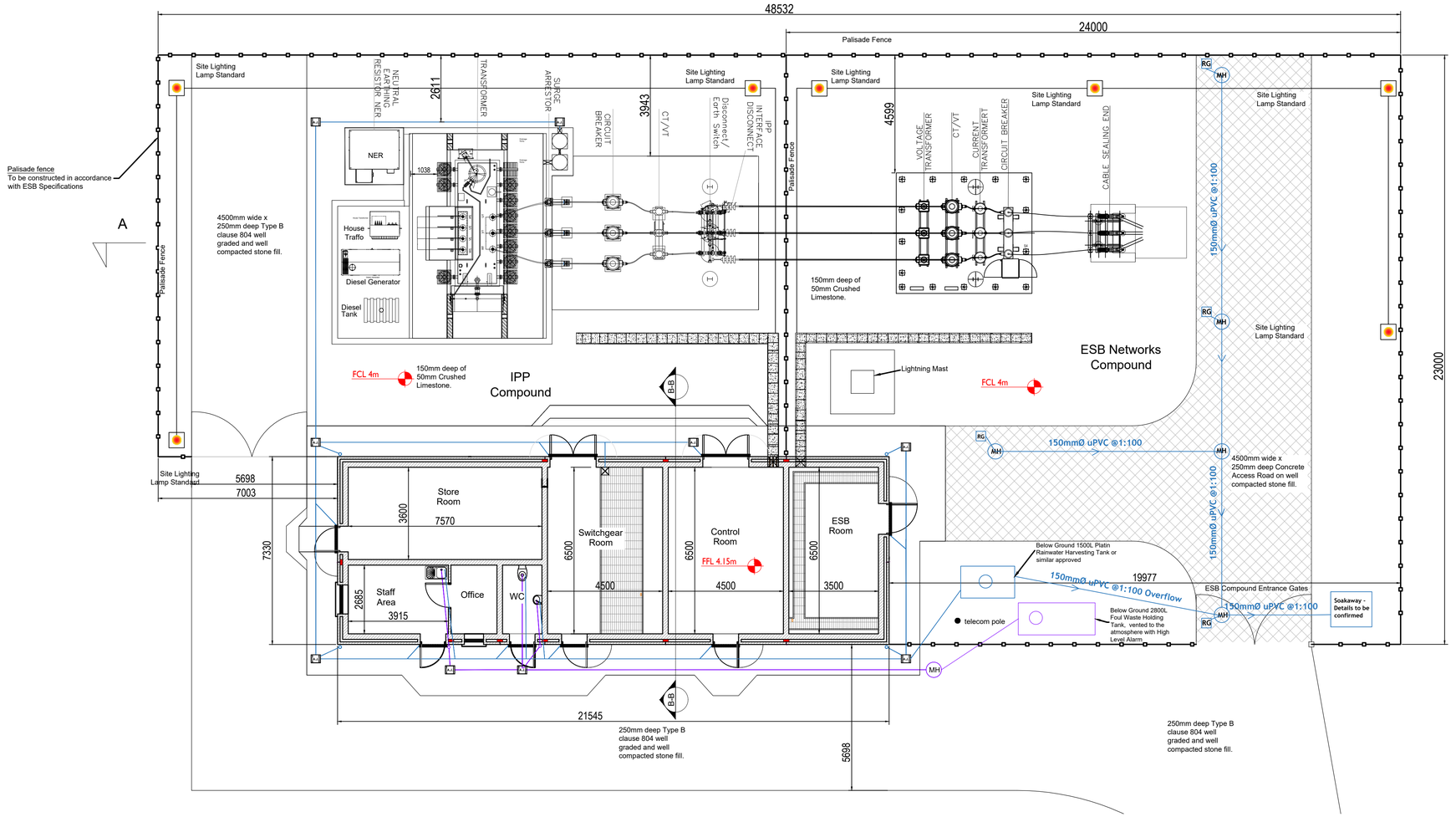
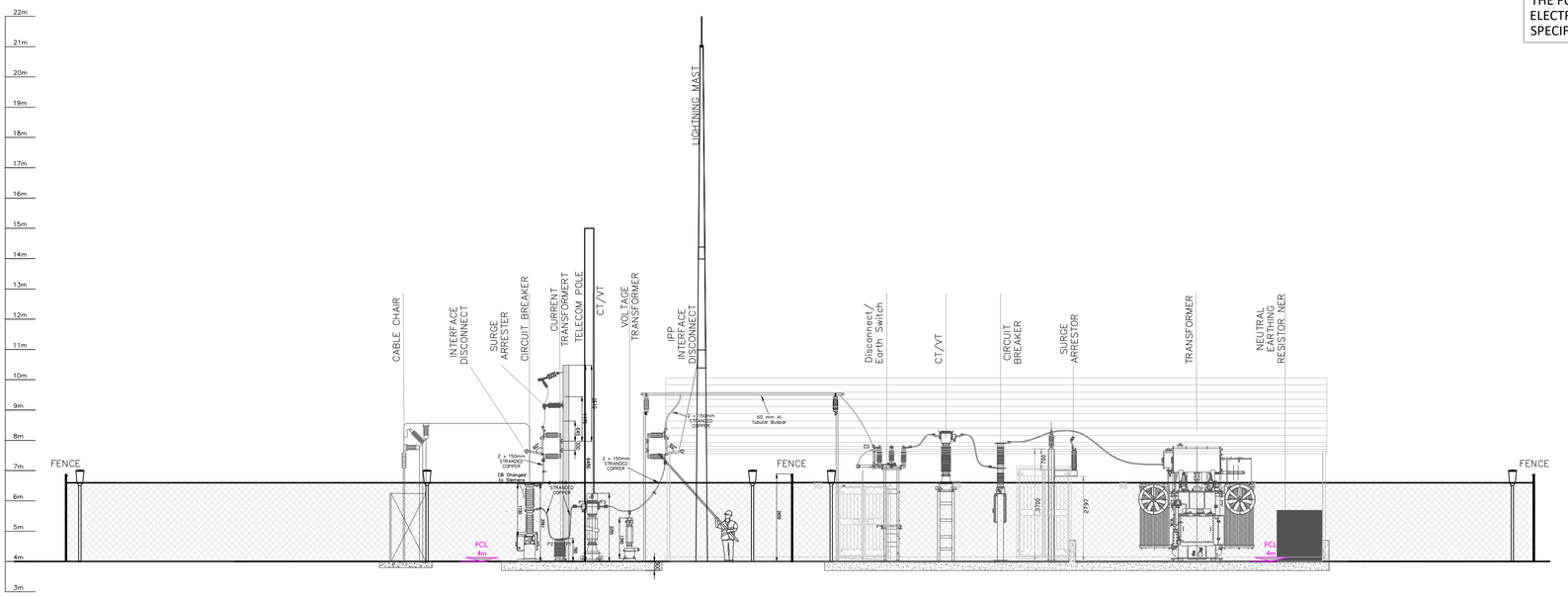
ISO A1 594mm x 841mm



Solar Farm-Substation Compound Layout

SCALE 1:100

PLEASE NOTE THAT THE SUBSTATION LAYOUT AND SUBSTATION COMPONENTS ILLUSTRATED ON THIS DRAWING ARE INDICATIVE ONLY. THE FULL SPECIFICATION AND DETAIL WILL BE DETERMINED FROM THE ELECTRICAL EQUIPMENT SUPPLIER AND ESB FUNCTIONAL SPECIFICATION.



Section A-A Through Substation Compound

SCALE 1:100

Project Management Initials: Designer: JC Checked: SK Approved: RG

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PROJECT

Ballynagare Wind Farm
38kV Substation

CLIENT

EMPower

CONSULTANTS

NOTES: -

- Configuration of substation equipment and infrastructure is subject to detailed design and ESB design approval.
- The proposed substation layout should be used for planning purposes only.
- This drawing is to be read in conjunction with relevant drawings, specifications and reports.
- Dimensions are in millimeters, unless noted otherwise.
- Drawings are not to be scaled use figured dimensions only.

LEGEND: -

- Surface water drainage shown thus
- Foul drainage shown thus
- Lamp Standard shown thus
- Proposed Levels Shown thus (Planning) FCL34.60m
- Proposed Levels Shown thus (Elevation and Sections) FCL 54.60m
- Concrete Access Road shown thus

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	27.08.21	Issued for Planning

PROJECT NUMBER

05-801

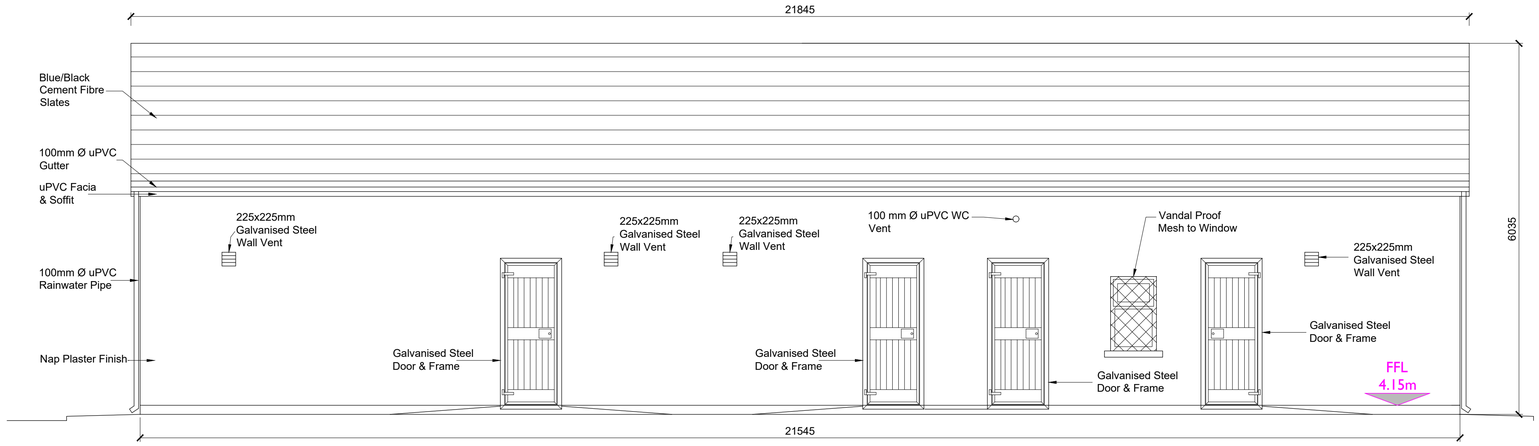
SHEET TITLE

38kV Substation Compound Layout & Section

SHEET NUMBER

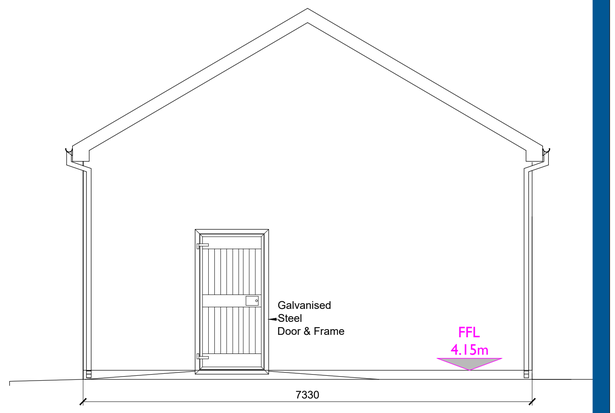
05801-DR-103

ISO A1 594mm x 841mm



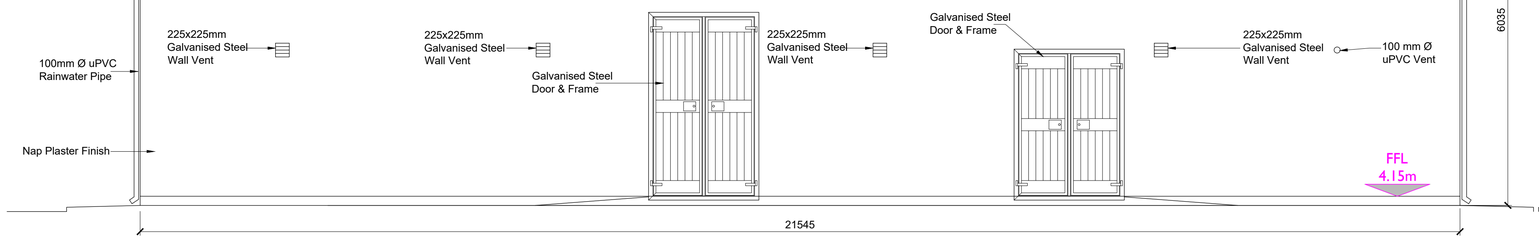
Front Elevation-East

SCALE 1:50



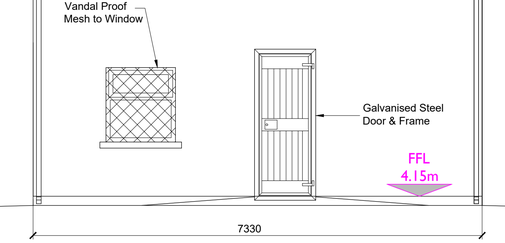
Side Elevation-North

SCALE 1:50



Rear Elevation-West

SCALE 1:50



Side Elevation-South

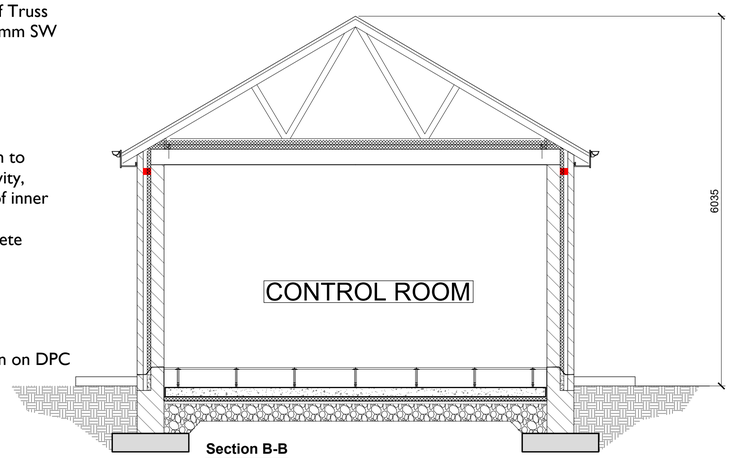
SCALE 1:50

Roof Construction:
Roof on,
treated SW Roof Battens on,
selected Breather Membrane on
selected SW Prefabricated Roof Truss system fixed to treated 100x75mm SW Wallplate.
Plasterboard internal ceiling.

Cavity Wall:
Flat Sand / Cement Plaster finish to 100mm Outer Leaf, 100mm Cavity, 215mm Inner Leaf. Inside face of inner leaf to remain fair-faced.
Cavity wall supported on concrete strip foundation.

Floor:
Raised Access Floor on
150mm Reinforced Concrete Floor Slab on Selected Insulation on DPC on Sand Blinding all supported off Well Compacted Hardcore.

NOTE : Control Building surfaces need to be non - combustible



Section B-B

SCALE 1:50

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PROJECT

Ballynagare Wind Farm
38kV Substation

CLIENT

EMPower

CONSULTANTS

NOTES: -

- Substation building is subject to detailed design and ESB design approval and should be used for planning purposes only.
- The proposed substation layout should be used for planning purposes only.
- This drawing is to be read in conjunction with relevant drawings, specifications and reports.
- Dimensions are in millimeters, unless noted otherwise.
- Drawings are not to be scaled use figured dimensions only.

LEGEND: -

Proposed Levels Shown thus (Elevation and Sections) FCL 54.60m

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	27.08.21	Issued for Planning

PROJECT NUMBER

05-801

SHEET TITLE

38kV Substation Building Elevations

SHEET NUMBER

05801-DR-104

Project Management Initials: Designer: JC Checked: SK Approved: RG

Project Management Initials: Designer: JC Checked: SK Approved: RG

Map Series:
Prime Data Vector

ITM Centre Point Co-ordinate:
X,Y = 587974,896360

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LEGEND: -

- Proposed UG Cable Route (Approx.9.9km)
- Wind Farm Substation & Infrastructure
- Planning Boundary

Ballynagare Wind Farm 38kV Substation

ESB Clahane 110kV Substation

05801-DR-111
05801-DR-112
05801-DR-110
05801-DR-109
05801-DR-108

R557

NOTES: -

- This drawing is to be used only for the purpose of the planning application and is subject to detailed design.
- Position of underground cable and location of joint bays, links boxes and comms chambers may vary depending on site conditions.
- Position of link boxes and comms chambers is to be agreed onsite with ESB.
- Other services may be encountered on the route.
- Position of HDD launch/reception shown points are indicative only and will be subject to site investigation works and detailed design.

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PROJECT

Ballynagare Wind Farm
38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P02	27.10.21	Issued For Planning
P01	01.10.21	Issued For Planning
P00	22.09.21	Issued For Planning

PROJECT NUMBER

05-801

SHEET TITLE

Overall Site Layout Plan

SHEET NUMBER

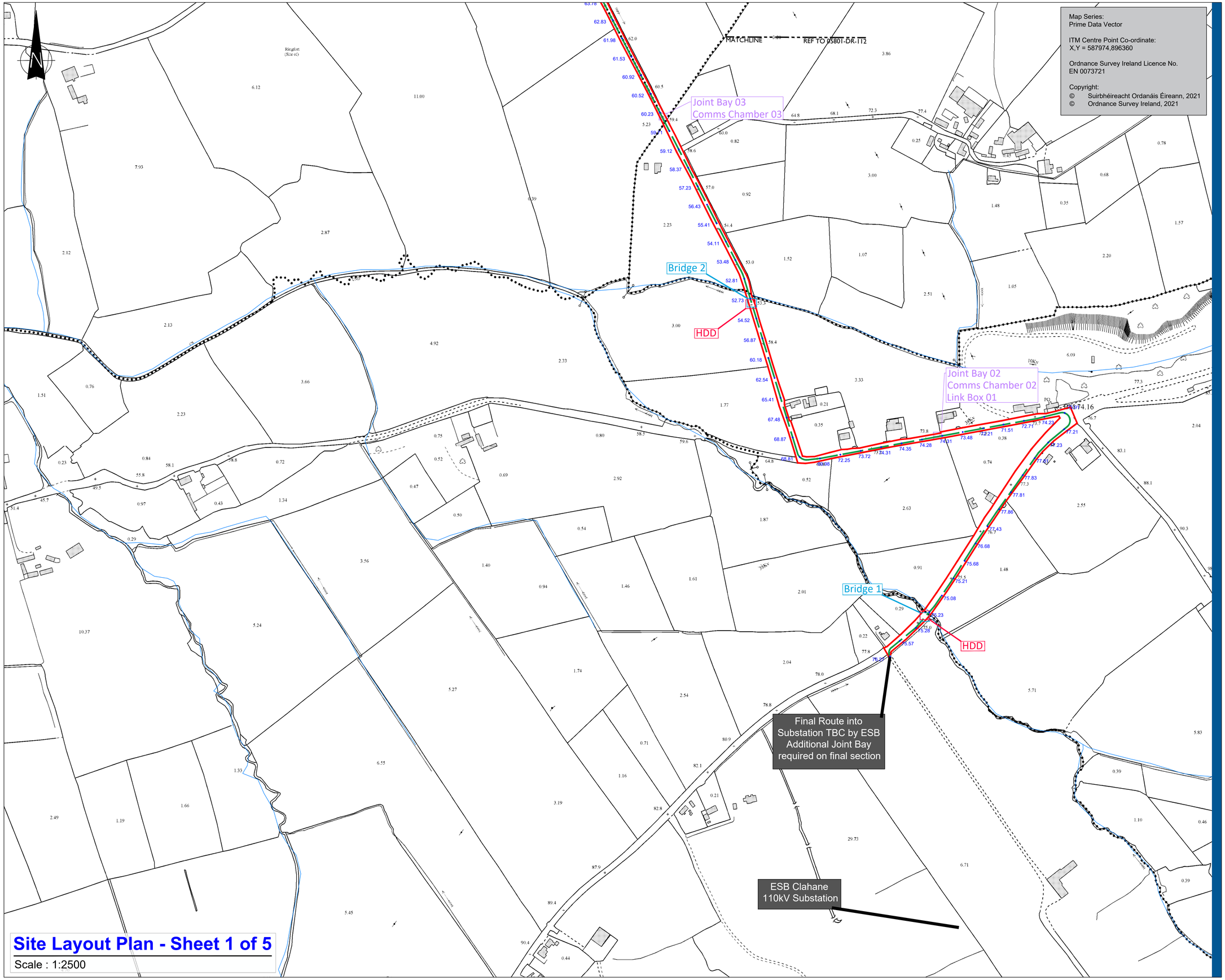
05801-DR-100

Overall Site Layout Plan

Scale : NTS

ISO A1 594mm x 841mm

ISO A1 594mm x 841mm



Map Series:
Prime Data Vector

ITM Centre Point Co-ordinate:
X,Y = 587974,896360

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Site Layout Plan - Sheet 1 of 5

Scale : 1:2500

Project Management Initials: Designer: JC Checked: SK Approved: RG

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PROJECT

Ballynagare Wind Farm
38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

- This drawing is to be used only for the purpose of the planning application and is subject to detailed design.
- Position of underground cable and location of joint bays, links boxes and comms chambers may vary depending on site conditions.
- Position of link boxes and comms chambers is to be agreed onsite with ESB.
- Other services may be encountered on the route.
- Position of HDD launch/reception shown points are indicative only and will be subject to site investigation works and detailed design.

LEGEND: -

- Proposed UG Cable Route (Approx.9.9km)
- Bridge
- Joint Bay
- HDD
- Existing Lake, River / Stream Network shown thus
- Planning Boundary
- Existing Ground Level Spot Heights ✦ 151.57

ISSUE/REVISION

P02	27.10.21	Issued For Planning
P01	01.10.21	Issued For Planning
P00	22.09.21	Issued for Planning
I/R	DATE	DESCRIPTION

PROJECT NUMBER

05-801

SHEET TITLE

Site Layout Plan
Sheet 1 of 5

SHEET NUMBER

05801-DR-108

ISO A1 594mm x 841mm

Project Management Initials:
Designer: JC
Checked: SK
Approved: RG

Map Series:
Prime Data Vector

ITM Centre Point Co-ordinate:
X,Y = 587974,896360

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Site Layout Plan - Sheet 2 of 5

Scale : 1:2500

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PROJECT

Ballynagare Wind Farm
38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

- This drawing is to be used only for the purpose of the planning application and is subject to detailed design.
- Position of underground cable and location of joint bays, links boxes and comms chambers may vary depending on site conditions.
- Position of link boxes and comms chambers is to be agreed onsite with ESB.
- Other services may be encountered on the route.
- Position of HDD launch/reception shown points are indicative only and will be subject to site investigation works and detailed design.

LEGEND: -

Proposed UG Cable Route (Approx.9.9km)	▬ ▬ ▬
Joint Bay	☐
Existing Lake, River / Stream Network shown thus	―
Planning Boundary	―
Existing Ground Level Spot Heights	⌖ 151.57

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P02	27.10.21	Issued For Planning
P01	01.10.21	Issued For Planning
P00	22.09.21	Issued for Planning

PROJECT NUMBER

05-801

SHEET TITLE

Site Layout Plan
Sheet 2 of 5

SHEET NUMBER

05801-DR-109

ISO A1 594mm x 841mm

Project Management Initials: Designer: JC Checked: SK Approved: RG

Site Layout Plan - Sheet 3 of 5

Scale : 1:2500

BALLYHORGAN EAST

IRRAMORE

LISSAHANE

MATCHLINE — REF TO 05801-DR-109

MATCHLINE — REF TO 05801-DR-111

Joint Bay 07
Comms Chamber 07

Joint Bay 06
Comms Chamber 06
Link Box 03

Culvert

Map Series:
Prime Data Vector

ITM Centre Point Co-ordinate:
X,Y = 587974,896360

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Tel: 00 44 1256406664

PROJECT

Ballynagare Wind Farm
38kV Grid Connection

CLIENT

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CONSULTANTS

NOTES: -

- This drawing is to be used only for the purpose of the planning application and is subject to detailed design.
- Position of underground cable and location of joint bays, links boxes and comms chambers may vary depending on site conditions.
- Position of link boxes and comms chambers is to be agreed onsite with ESB.
- Other services may be encountered on the route.
- Position of HDD launch/reception shown points are indicative only and will be subject to site investigation works and detailed design.

LEGEND: -

- Proposed UG Cable Route (Approx.9.9km)
- Joint Bay
- Culvert
- Existing Lake, River / Stream Network shown thus
- Planning Boundary
- Existing Ground Level Spot Heights 151.57

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P02	27.10.21	Issued For Planning
P01	01.10.21	Issued For Planning
P00	22.09.21	Issued for Planning

PROJECT NUMBER

05-801

SHEET TITLE

Site Layout Plan
Sheet 3 of 5

SHEET NUMBER

05801-DR-110

ISO A1 594mm x 841mm

Map Series:
Prime Data Vector

ITM Centre Point Co-ordinate:
X,Y = 587974,896360

Joint Bay 09
Comms Chamber 09

Joint Bay 10
Comms Chamber 10
Link Box 05

Joint Bay 08
Comms Chamber 08
Link Box 04

BALLYHORGAN WEST

MATCHLINE - REF TO 05801-DR-108

MATCHLINE - REF TO 05801-DR-110

Site Layout Plan - Sheet 4 of 5

Scale : 1:2500

Project Management Initials: Designer: JC Checked: SK Approved: RG

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PROJECT

Ballynagare Wind Farm
38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

- This drawing is to be used only for the purpose of the planning application and is subject to detailed design.
- Position of underground cable and location of joint bays, links boxes and comms chambers may vary depending on site conditions.
- Position of link boxes and comms chambers is to be agreed onsite with ESB.
- Other services may be encountered on the route.
- Position of HDD launch/reception shown points are indicative only and will be subject to site investigation works and detailed design.

LEGEND: -

Proposed UG Cable Route (Approx.9.9km)
Joint Bay
Existing Lake, River / Stream Network shown thus
Planning Boundary
Existing Ground Level Spot Heights ✦ 151.57

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P02	27.10.21	Issued For Planning
P01	01.10.21	Issued For Planning
P00	22.09.21	Issued for Planning

PROJECT NUMBER

05-801

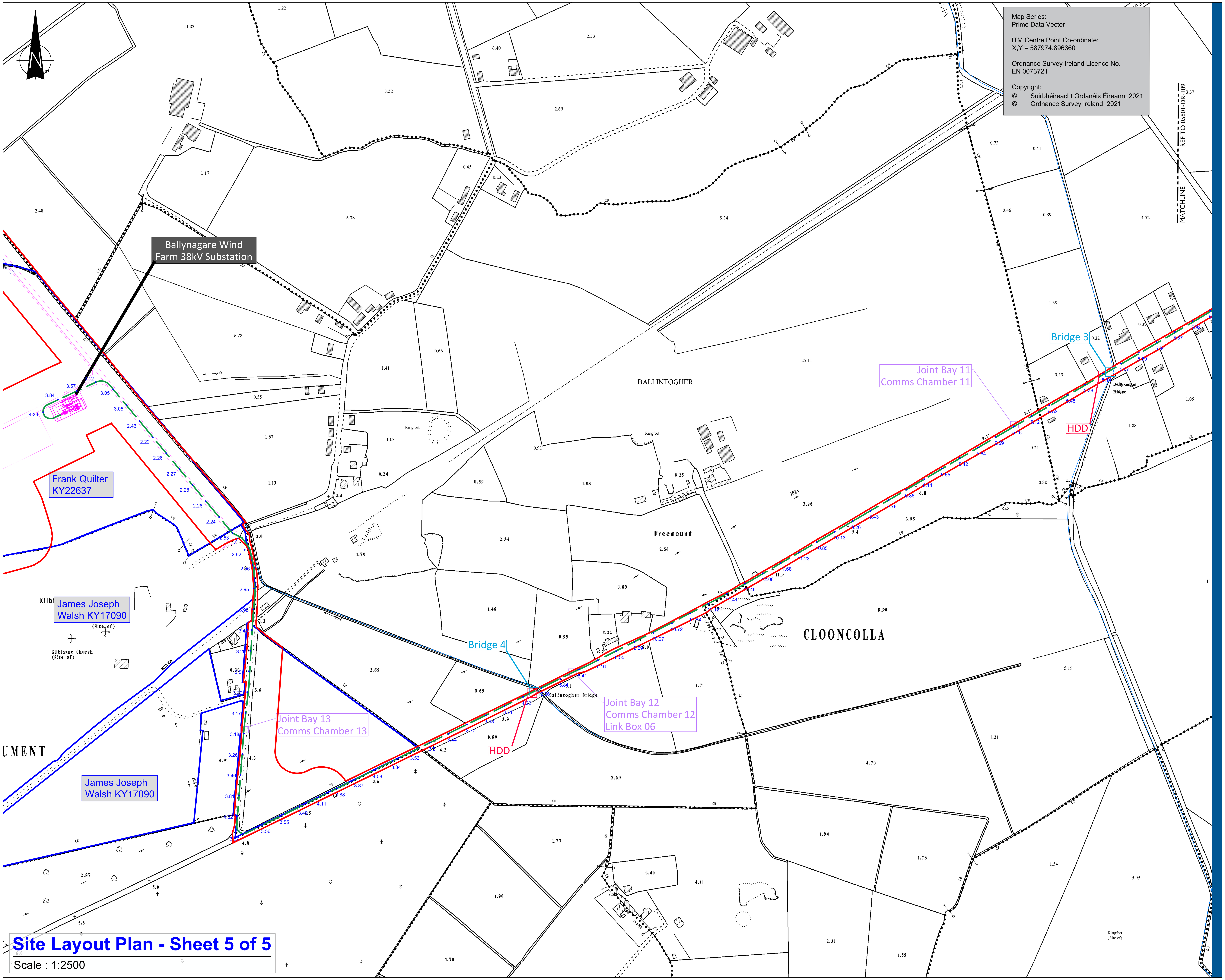
SHEET TITLE

Site Layout Plan
Sheet 4 of 5

SHEET NUMBER

05801-DR-111

ISO A1 594mm x 841mm



Project Management Initials: Designer: JC Checked: SK Approved: RG

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PROJECT

Ballynagare Wind Farm 38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

- This drawing is to be used only for the purpose of the planning application and is subject to detailed design.
- Position of underground cable and location of joint bays, links boxes and comms chambers may vary depending on site conditions.
- Position of link boxes and comms chamber is to be agreed onsite with ESB.
- Other services may be encountered on the route.
- Position of HDD launch/reception shown points are indicative only and will be subject to site investigation works and detailed design.

LEGEND: -

- Proposed UG Cable Route (Approx.9.9km)
- Wind Farm Substation & Infrastructure
- Bridge
- Joint Bay
- HDD
- Existing Lake, River / Stream Network shown thus
- Planning Boundary
- Landowner Boundary
- Existing Ground Level Spot Heights ✦ 151.57

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P02	27.10.21	Issued For Planning
P01	01.10.21	Issued For Planning
P00	22.09.21	Issued for Planning

PROJECT NUMBER

05-801

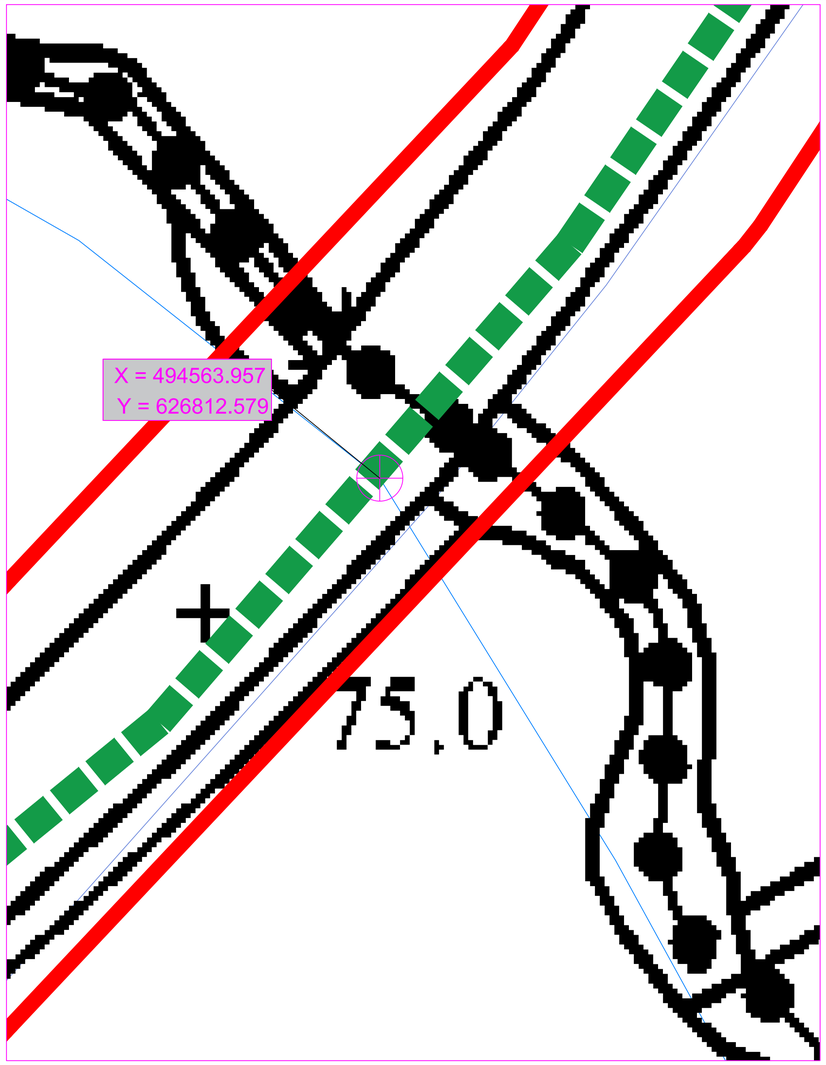
SHEET TITLE

Site Layout Plan
Sheet 5 of 5

SHEET NUMBER

05801-DR-112

ISO A1 594mm x 841mm

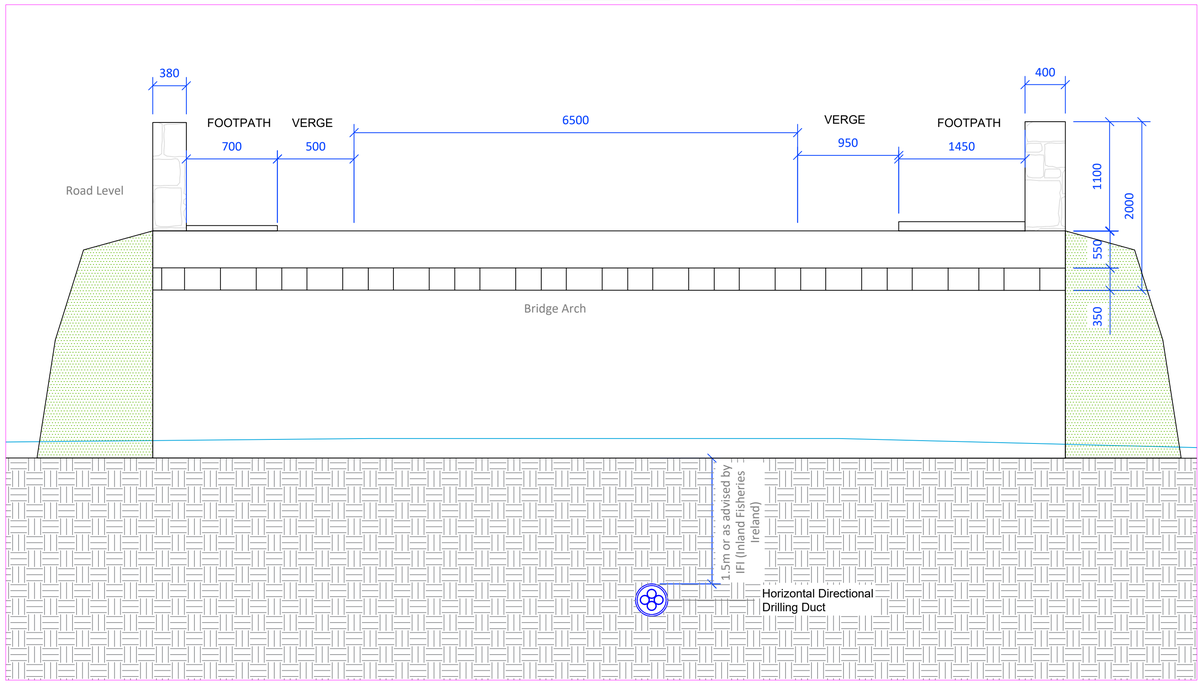


Plan View Bridge No 1
Scale : 1:200

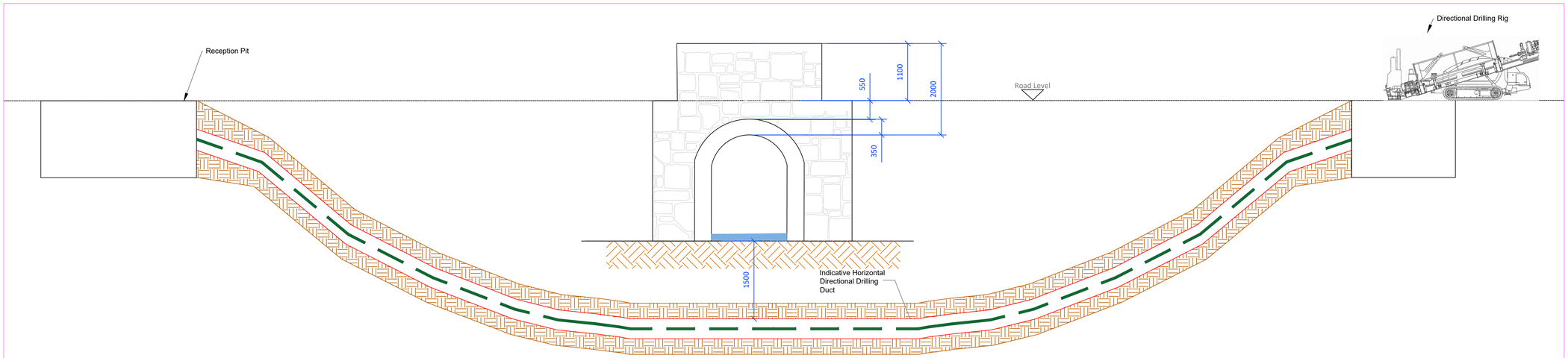
Notes:
1. This drawing is to be used for Planning approval only and is not to be used for construction.
2. This drawing is to be read in conjunction with all other relevant information.
3. Do not scale from this drawing, use only printed dimensions.
4. All dimensions are in millimetres unless noted otherwise.
5. Any existing utility service information shown on this plan is a general guide and the accuracy thereof cannot be guaranteed. No liability is accepted for any discrepancy, omission or deviation and the actual position of individual services must be verified and established on site before commencing the works.
6. No excavation shall commence until the contractor has consulted up to date services drawings and carried out an electromagnetic locator (eml) scan.
7. Hand dig only within 500mm of existing services.
8. All co-ordinates are referenced to ITM.
9. The Contractor is responsible for the design and construction of any temporary work required.
10. HDD launch and reception pits locations to be determined following site investigations works.
11. Final HDD design to be completed by Specialist Drilling Contractor in conjunction with the Cable Designer.
12. Transition couplers to be utilised to transition to standard power ducting after HDD. Comms ducts do not require a transition coupler and will be coupled directly using a chamfer between the two ducts.
13. All interstitial space between ducts and borehole to be bentonited thoroughly to maintain cable rating.
14. Where transition pits are used the ducts shall approach the chamber in a straight alignment (horizontal & Vertical) for a minimum of 3 meters before the wall opening.

Photo 1 - Bridge 1

Photo 2 - Bridge 1



Section A-A
Scale : N.T.S



Section B-B
Scale : NTS

Project Management Initials: Designer: JC Checked: SK Approved: RG

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PROJECT

Ballynagare Wind Farm 38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

LEGEND: -

- Proposed UG Cable Route 1 (Approx.9.9km)
- Existing Lake, River / Stream Network shown thus
- Water Lines
- Planning Boundary

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	22.09.21	Issued for Planning

PROJECT NUMBER

05-801

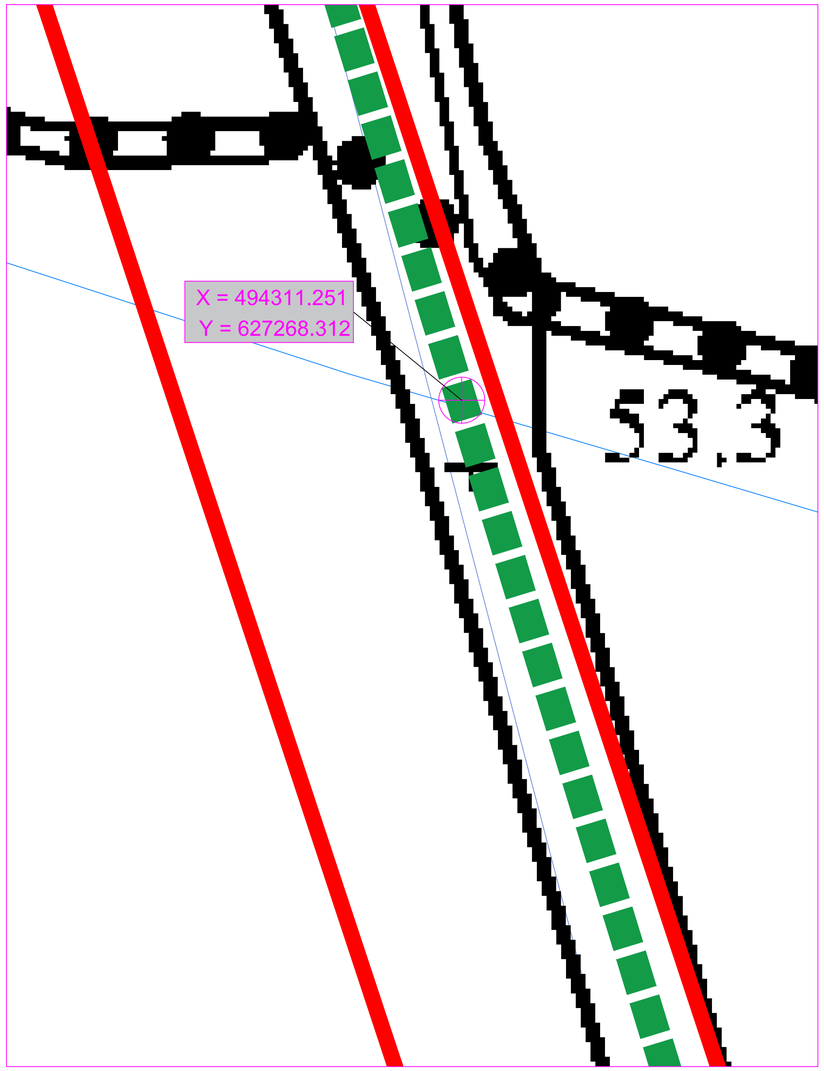
SHEET TITLE

Bridge Crossing 1

SHEET NUMBER

05801-DR-127

ISO A1 594mm x 841mm

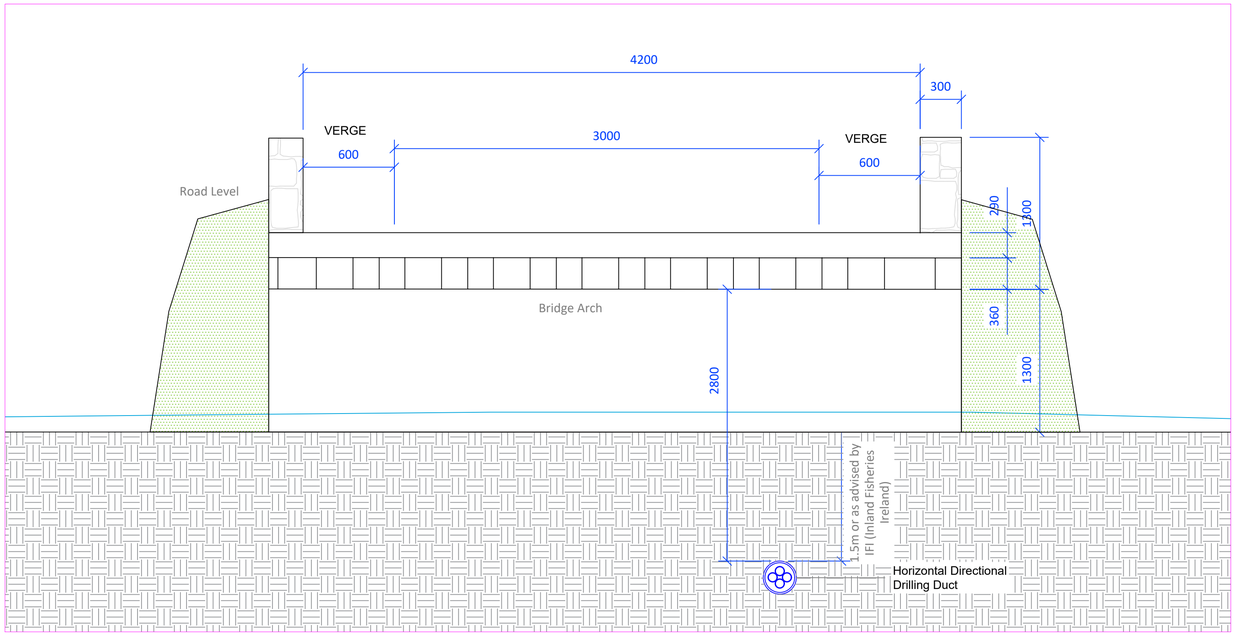


Plan View Bridge No 2
Scale : 1:200

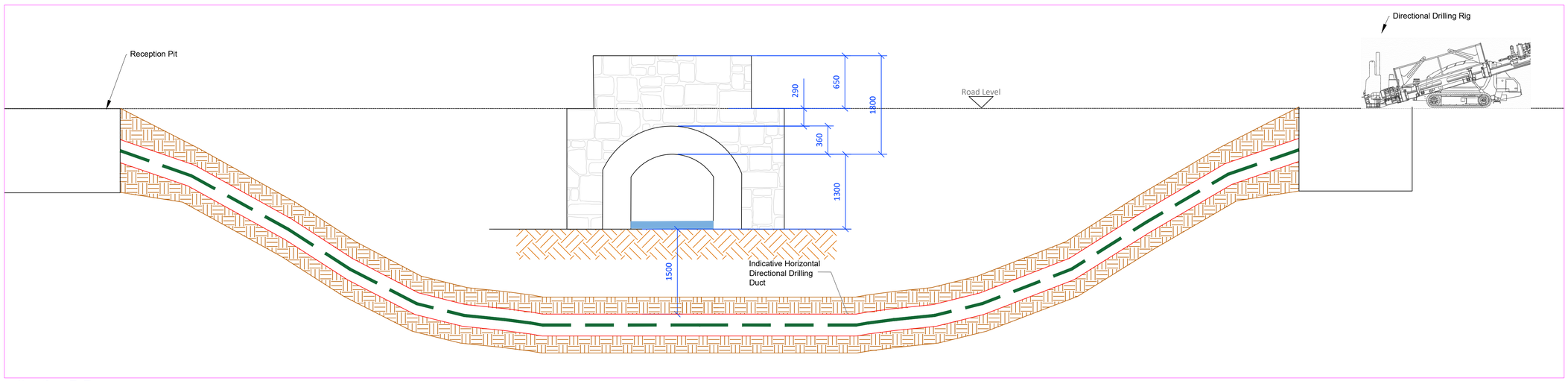
Notes:
1. This drawing is to be used for Planning approval only and is not to be used for construction.
2. This drawing is to be read in conjunction with all other relevant information.
3. Do not scale from this drawing, use only printed dimensions.
4. All dimensions are in millimetres unless noted otherwise.
5. Any existing utility service information shown on this plan is a general guide and the accuracy thereof cannot be guaranteed. No liability is accepted for any discrepancy, omission or deviation and the actual position of individual services must be verified and established on site before commencing the works.
6. No excavation shall commence until the contractor has consulted up to date services drawings and carried out an electromagnetic locator (eml) scan.
7. Hand dig only within 500mm of existing services.
8. All co-ordinates are referenced to ITM.
9. The Contractor is responsible for the design and construction of any temporary work required.
10. HDD launch and reception pits locations to be determined following site investigations works.
11. Final HDD design to be completed by Specialist Drilling Contractor in conjunction with the Cable Designer.
12. Transition couplers to be utilised to transition to standard power ducting after HDD. Comms ducts do not require a transition coupler and will be coupled directly using a chamfer between the two ducts.
13. All interstitial space between ducts and borehole to be bentonited thoroughly to maintain cable rating.
14. Where transition pits are used the ducts shall approach the chamber in a straight alignment (horizontal & Vertical) for a minimum of 3 meters before the wall opening.

Photo 1 - Bridge 2

Photo 2 - Bridge 2



Section A-A
Scale : N.T.S



Section B-B
Scale : NTS

Project Management Initials: Designer: JC Checked: SK Approved: RG

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PROJECT

Ballynagare Wind Farm 38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

LEGEND: -

Proposed UG Cable Route 1 (Approx.9.9km)
Existing Lake, River / Stream Network shown thus
Water Lines
Planning Boundary

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	22.09.21	Issued for Planning

PROJECT NUMBER

05-801

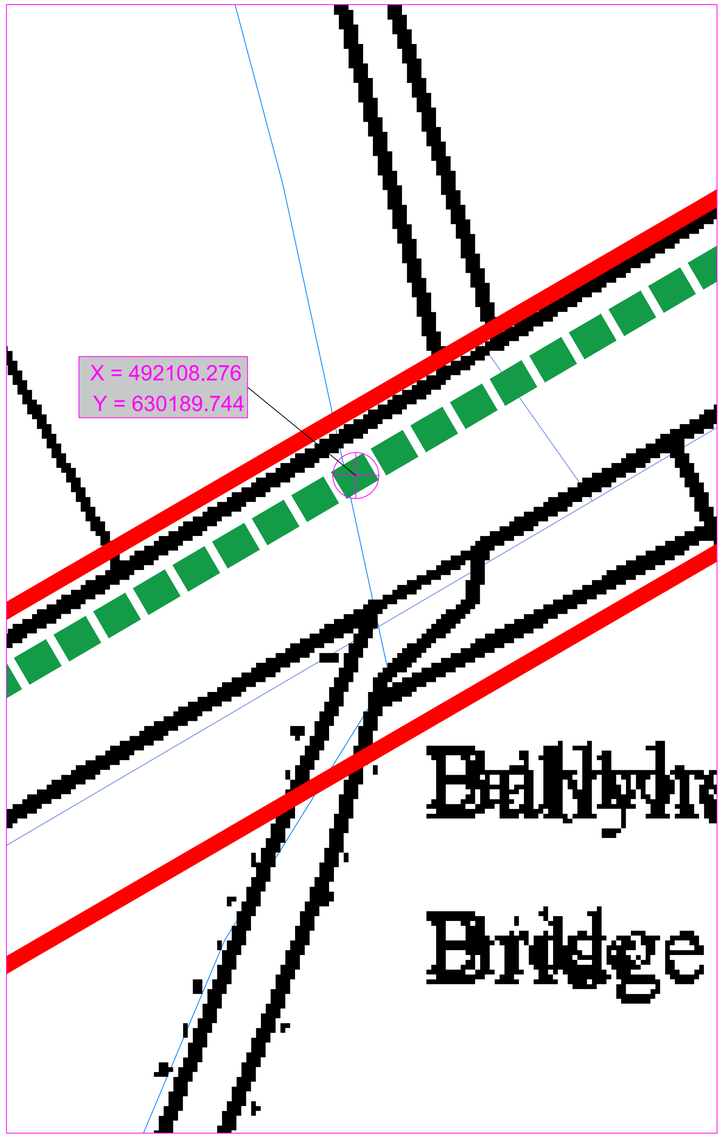
SHEET TITLE

Bridge Crossing 2

SHEET NUMBER

05801-DR-128

ISO A1 594mm x 841mm



Plan View Bridge No 3
Scale : 1:200

Notes:
1. This drawing is to be used for Planning approval only and is not to be used for construction.
2. This drawing is to be read in conjunction with all other relevant information.
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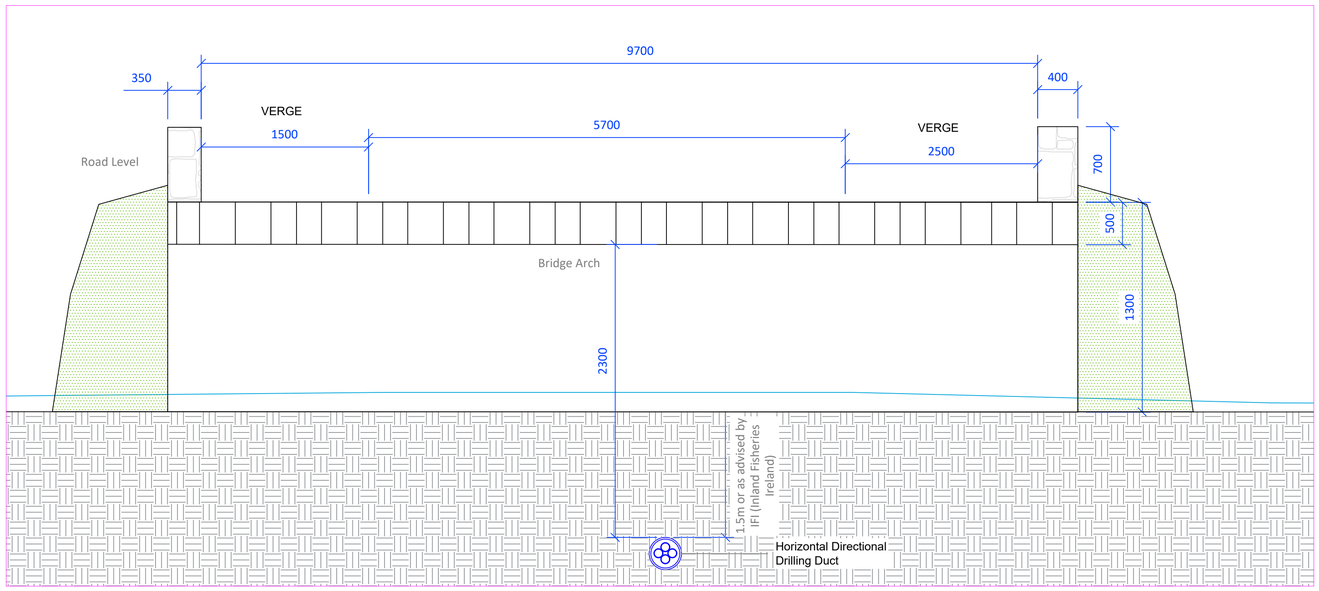
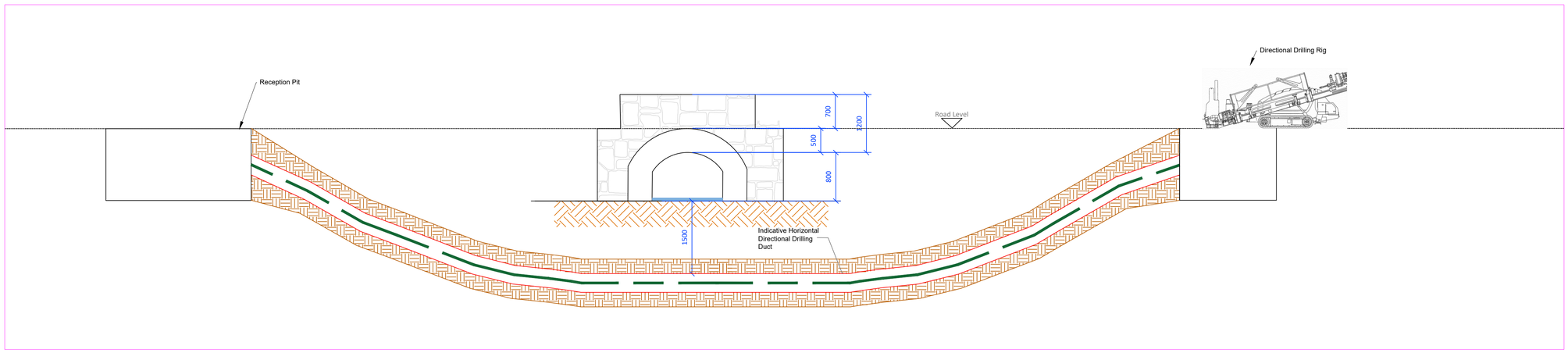
6. No excavation shall commence until the contractor has consulted up to date services drawings and carried out an electromagnetic locator (eml) scan.
7. Hand dig only within 500mm of existing services.
8. All co-ordinates are referenced to ITM.
9. The Contractor is responsible for the design and construction of any temporary work required.
10. HDD launch and reception pits locations to be determined following site investigations works.
11. Final HDD design to be completed by Specialist Drilling Contractor in conjunction with the Cable Designer.
12. Transition couplers to be utilised to transition to standard power ducting after HDD. Comms ducts do not require a transition coupler and will be coupled directly using a chamfer between the two ducts.
13. All interstitial space between ducts and borehole to be bentonited thoroughly to maintain cable rating.
14. Where transition pits are used the ducts shall approach the chamber in a straight alignment (horizontal & Vertical) for a minimum of 3 meters before the wall opening.

Photo 1 - Bridge 3

Photo 2 - Bridge 3



Section A-A
Scale : N.T.S



Section B-B
Scale : NTS

Project Management Initials:
Designer: JC
Checked: SK
Approved: RG

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PROJECT

Ballynagare Wind Farm
38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

LEGEND: -

- Proposed UG Cable Route 1 (Approx.9.9km)
- Existing Lake, River / Stream Network shown thus
- Water Lines
- Planning Boundary

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	22.09.21	Issued for Planning

PROJECT NUMBER

05-801

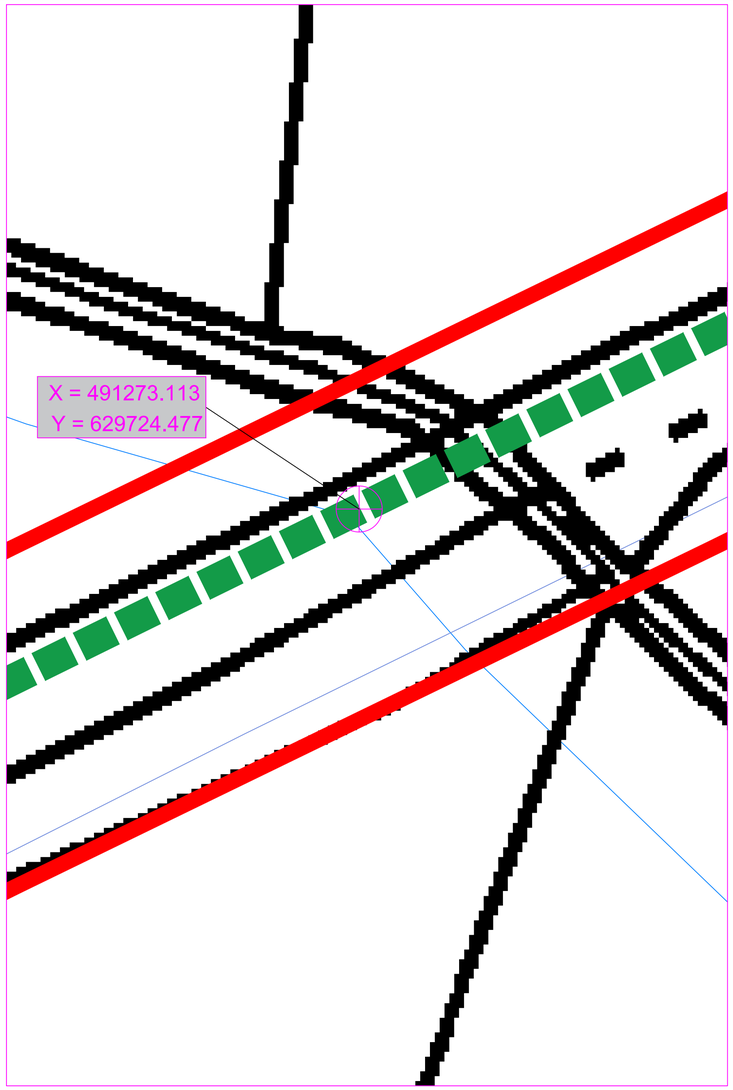
SHEET TITLE

Bridge Crossing 3

SHEET NUMBER

05801-DR-129

ISO A1 594mm x 841mm



Plan View Bridge No 1

Scale : 1:200

Notes:

1. This drawing is to be used for Planning approval only and is not to be used for construction.
2. This drawing is to be read in conjunction with all other relevant information.
3. Do not scale from this drawing, use only printed dimensions.
4. All dimensions are in millimetres unless noted otherwise.
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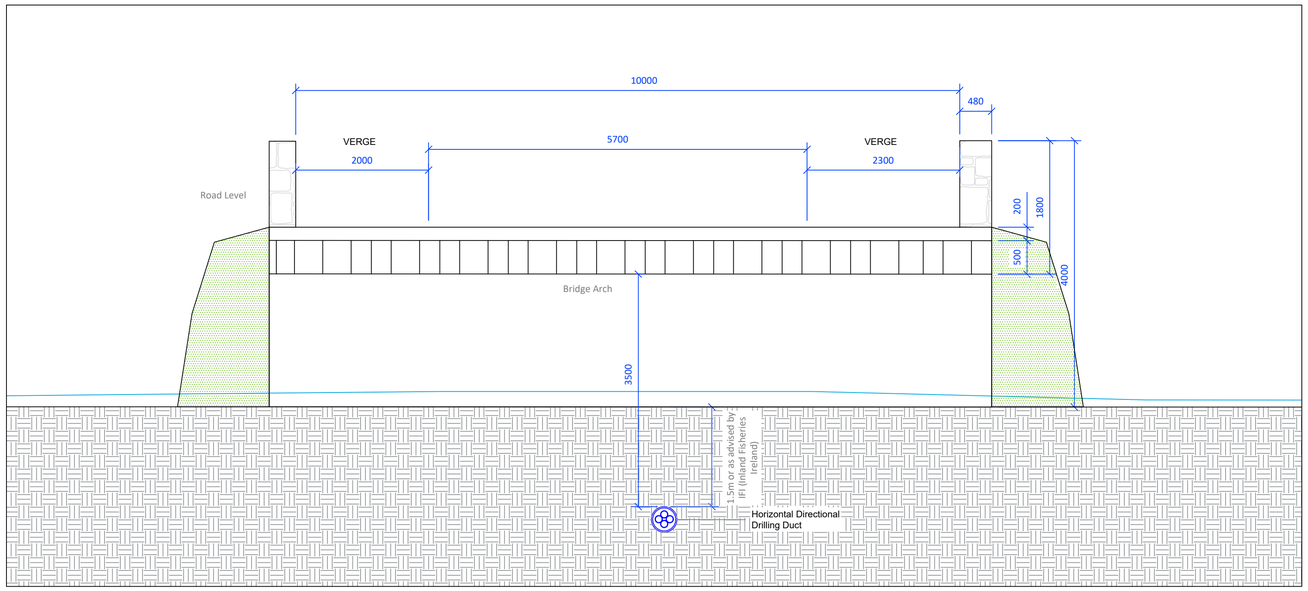
8. All co-ordinates are referenced to ITM.
9. The Contractor is responsible for the design and construction of any temporary work required.
10. HDD launch and reception pits locations to be determined following site investigations works.
11. Final HDD design to be completed by Specialist Drilling Contractor in conjunction with the Cable Designer.
12. Transition couplers to be utilised to transition to standard power ducting after HDD. Comms ducts do not require a transition coupler and will be coupled directly using a chamfer between the two ducts.
13. All interstitial space between ducts and borehole to be bentonited thoroughly to maintain cable rating.
14. Where transition pits are used the ducts shall approach the chamber in a straight alignment (horizontal & Vertical) for a minimum of 3 meters before the wall opening.

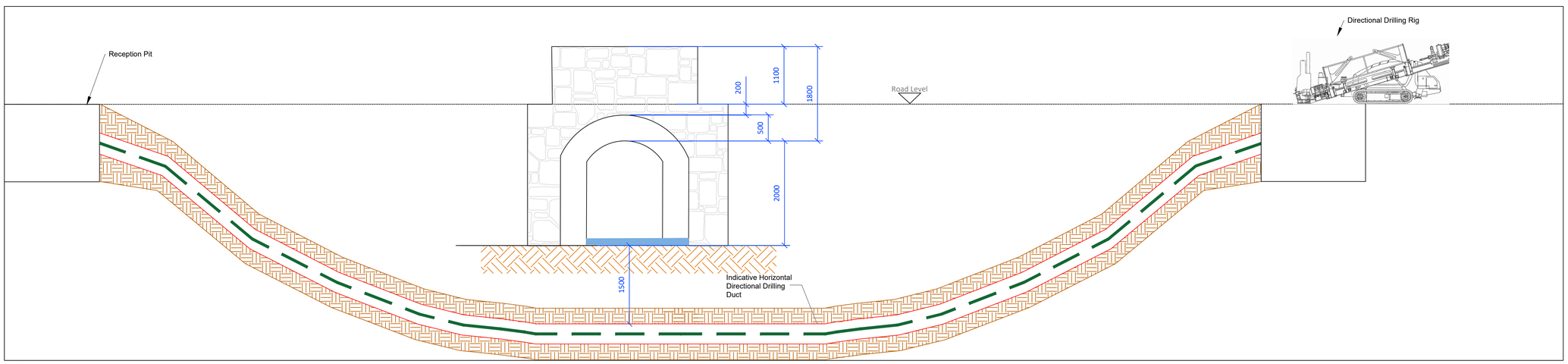
Photo 1 - Bridge 4

Photo 2 - Bridge 4



Section A-A

Scale : N.T.S



Section B-B

Scale : NTS

Project Management Initials: Designer: JC Checked: SK Approved: RG

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PROJECT

Ballynagare Wind Farm 38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

LEGEND: -

- Proposed UG Cable Route 1 (Approx.9.9km)
- Existing Lake, River / Stream Network shown thus
- Water Lines
- Planning Boundary

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	22.09.21	Issued for Planning

PROJECT NUMBER

05-801

SHEET TITLE

Bridge Crossing 4

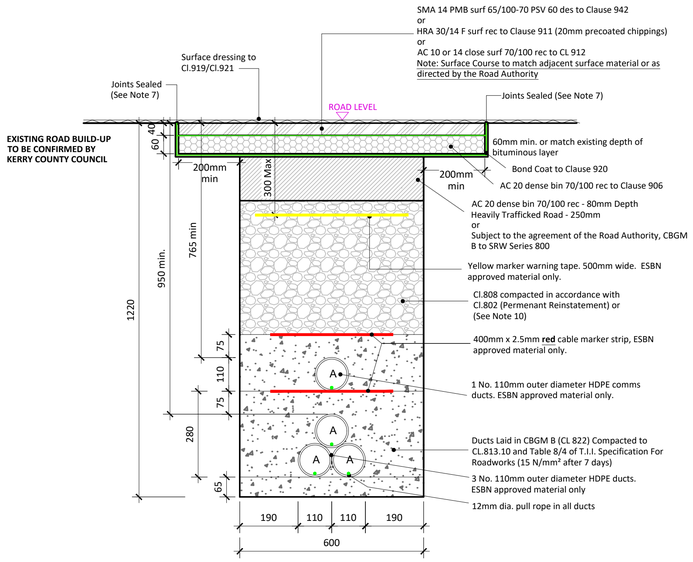
SHEET NUMBER

05801-DR-130

ISO A1 594mm x 841mm

Permanent Reinstatement

Reinstatement details based on Guidelines for Managing Openings in Public Roads - SD4

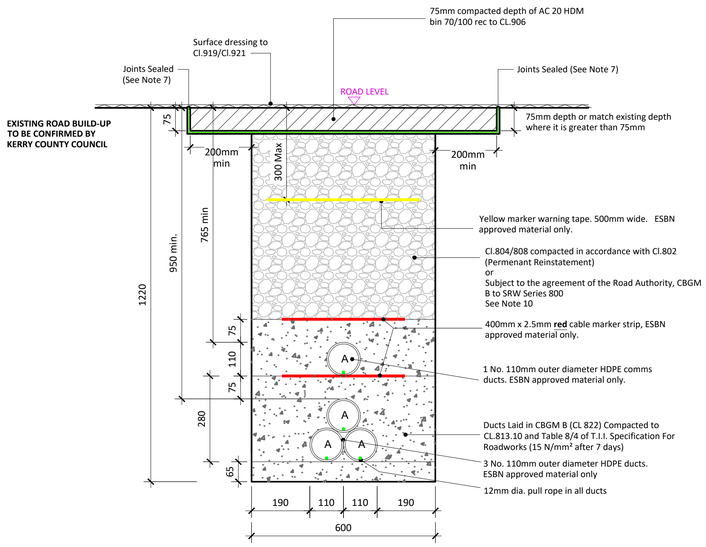


A =110mm:Outer diameter HDPE ESB Approved Duct, SDR=17.6;

Typical Section Through Permanent Reinstatement of Longitudinal Opening in Roadway

SCALE 1:10

Reinstatement details based on Guidelines for Managing Openings in Public Roads - SD5



A =110mm:Outer diameter HDPE ESB Approved Duct, SDR=17.6;

Typical Section Through Permanent Reinstatement of Longitudinal Opening in Dressed Rural Unbound Roadway

SCALE 1:10

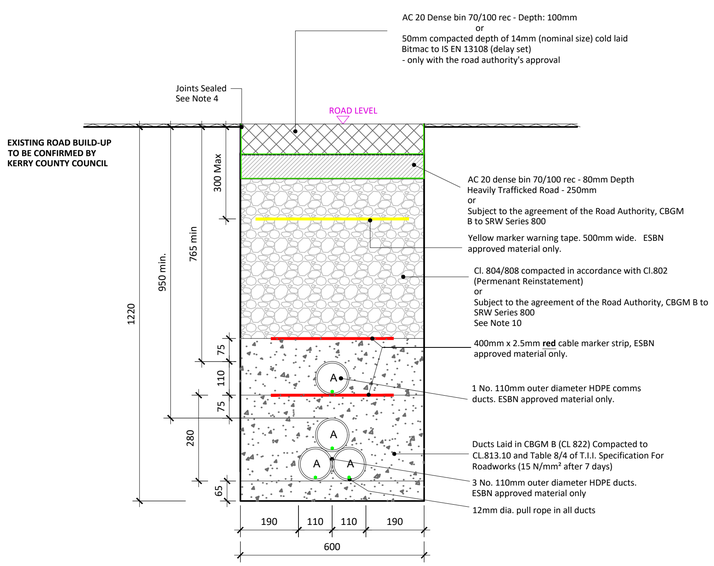
ALL REINSTATEMENT WORKS ARE TO BE IN ACCORDANCE WITH LOCAL AREA ENGINEERS REQUIREMENTS AND GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS

Note:

1. Refer to Guidelines for managing Openings in Public Roads (Purple Book - April 2017), Chapter 6 'Specifications' for guidance on Duct type / colour and Marker Tape type / colour.
2. All bound edges shall be saw cut to expose the full vertical thickness of each layer prior to excavation. All edges shall be essentially straight, smooth and vertical.
3. Where a temporary surface has been used, material shall be planed out to the depth specified in this drawing. The new permanent surface shall be machined laid and mechanically compacted with a vibrating roller.
4. Where the trimmed edge of excavation is within 400mm* of a joint / edge, ironwork or other reinstatement, this trimmed edge shall be extended to include same and the area of reinstatement shall be extended accordingly (* increase to 800mm where this is pre-existing practice).
5. Any damaged area adjacent to the opening and resulting from the excavation operation shall be included within the area to be reinstated.
6. Clause 808 or Cement Bound Granular Material surface to be sprayed per clause 920 prior to application of Asphalt Concrete Layer.
7. Joint sealer shall be a hot 50 pen bitumen binder or cold thixtropic bitumen 50 -70 pen to be applied to all vertical cuts in accordance with B.S.594987 prior to application of bituminous materials.
8. For roads without asphalt concrete surface (e.g. may be Cl.804 with double surface dressing), the road authority may as its discretion permit the temporary reinstatement surface of asphalt concrete to be regulated in lieu of excavation and reinstatement; and subsequently surface dressed.
9. On highly trafficked roads services must have a minimum cover of 750mm.
10. Where required by the Road authority the trench may be reinstated with a Cement Bound Granular Material.

Temporary Reinstatement

Reinstatement details based on Guidelines for Managing Openings in Public Roads - SD1

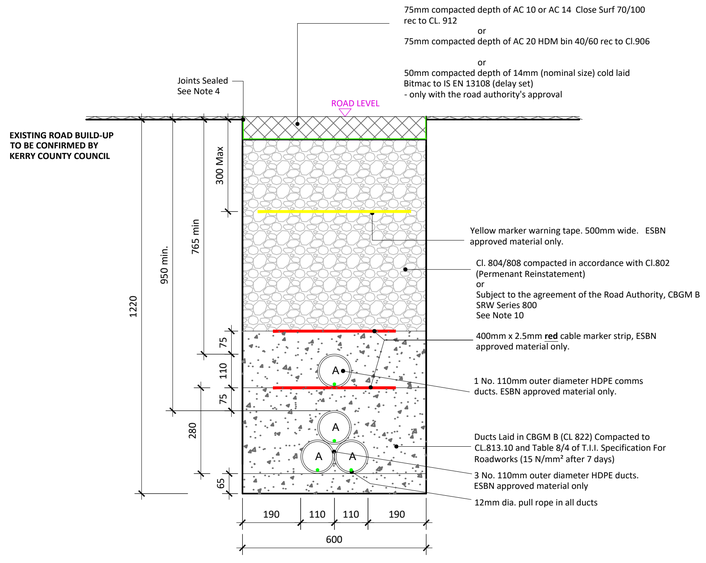


A =110mm:Outer diameter HDPE ESB Approved Duct, SDR=17.6;

Typical Section Through Temporary Reinstatement of Longitudinal Opening in Roadway

SCALE 1:10

Reinstatement details based on Guidelines for Managing Openings in Public Roads - SD2



A =110mm:Outer diameter HDPE ESB Approved Duct, SDR=17.6;

Typical Section Through Temporary Reinstatement of Longitudinal Opening in Dressed Rural Unbound Roadway

SCALE 1:10

ALL REINSTATEMENT WORKS ARE TO BE IN ACCORDANCE WITH LOCAL AREA ENGINEERS REQUIREMENTS AND GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS

Note:

1. Refer to 'Guidelines for managing Openings in Public Roads (Purple Book - April 2017)', Chapter 6 'Specifications' for guidance on Duct type / colour and Marker Tape type / colour.
2. All bound edges shall be saw cut to expose the full vertical thickness of each layer prior to excavation. All edges shall be essentially straight, smooth and vertical.
3. Clause 808 surface to be sprayed per clause 920 prior to application of Asphalt Concrete Layer.
4. Joint sealer shall be a hot 50 pen bitumen binder or cold thixotropic bitumen 50-70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
5. Licence holder must maintain temporary reinstatement to a safe and acceptable standard.
6. Any damaged area adjacent to the opening and resulting from the excavation operation shall be included within the area to be reinstated.
7. Temporary Road Surface warning signs must be used in accordance with the Traffic Signs Manual (Chaper 8 - Temporary Traffic Measures and Signs for Roadworks).
8. Refer to detail Permanent Reinstatement of Road for advice on permanent reinstatement - all permanent reinstatement shall be carried out when adequate settlement has occurred as determined by the Road Authority.

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PROJECT

Ballynagare Wind Farm
38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

- This drawing is to be read in conjunction with relevant drawings, specifications and reports.
- Dimensions are in millimeters, unless noted otherwise. Drawings are not to be scaled use figured dimensions only.
- Existing road build up and reinstatement requirements to be confirmed with Kerry County Council.
- Geogrid may be implemented along the cable trench route where deemed necessary by the contractor or as required by Kerry County Council.

LEGEND: -

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	22.09.21	Issued For Planning

PROJECT NUMBER

05-801

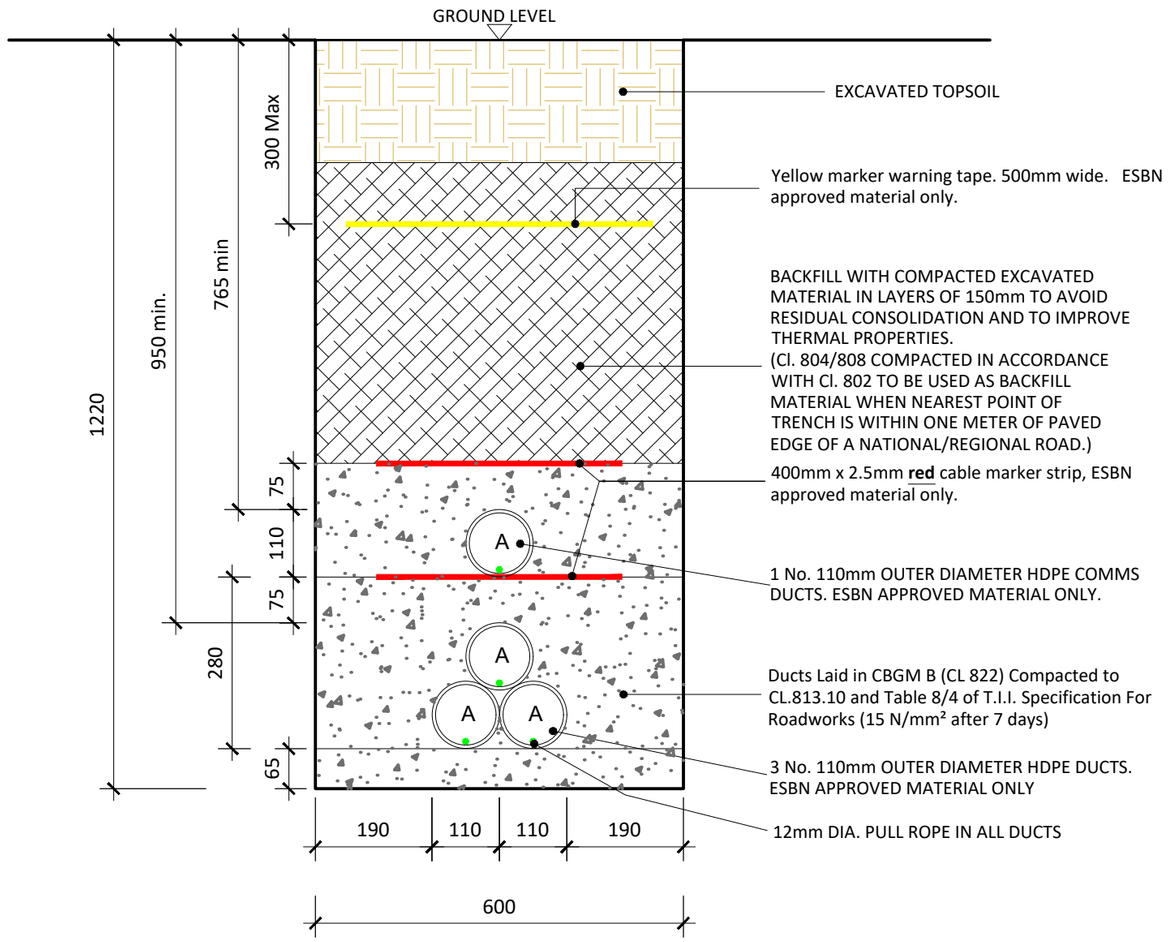
SHEET TITLE

Typical 38kV Ducting Through Regional / Local Roadways

SHEET NUMBER

05801-DR-113

Project Management Initials: Designer: JC Checked: SK Approved: RG



A =110mm:Outer diameter HDPE ESB Approved Duct, SDR=17.6;

Typical Section Through Off Road

SCALE 1:10

Note:
- This drawing is to be read in conjunction with relevant drawings, specifications and reports
- Dimensions are in millimeters, unless noted otherwise
- Drawings are not to be scaled use figured dimensions only

ALL REINSTATEMENT WORKS ARE TO BE IN ACCORDANCE WITH LANDOWNERS/KERRY COUNTY COUNCIL REQUIREMENTS

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CLIENT
EMPower

PROJECT
Ballynagare Wind Farm
38kV Grid Connection

PROJECT NUMBER
05-801

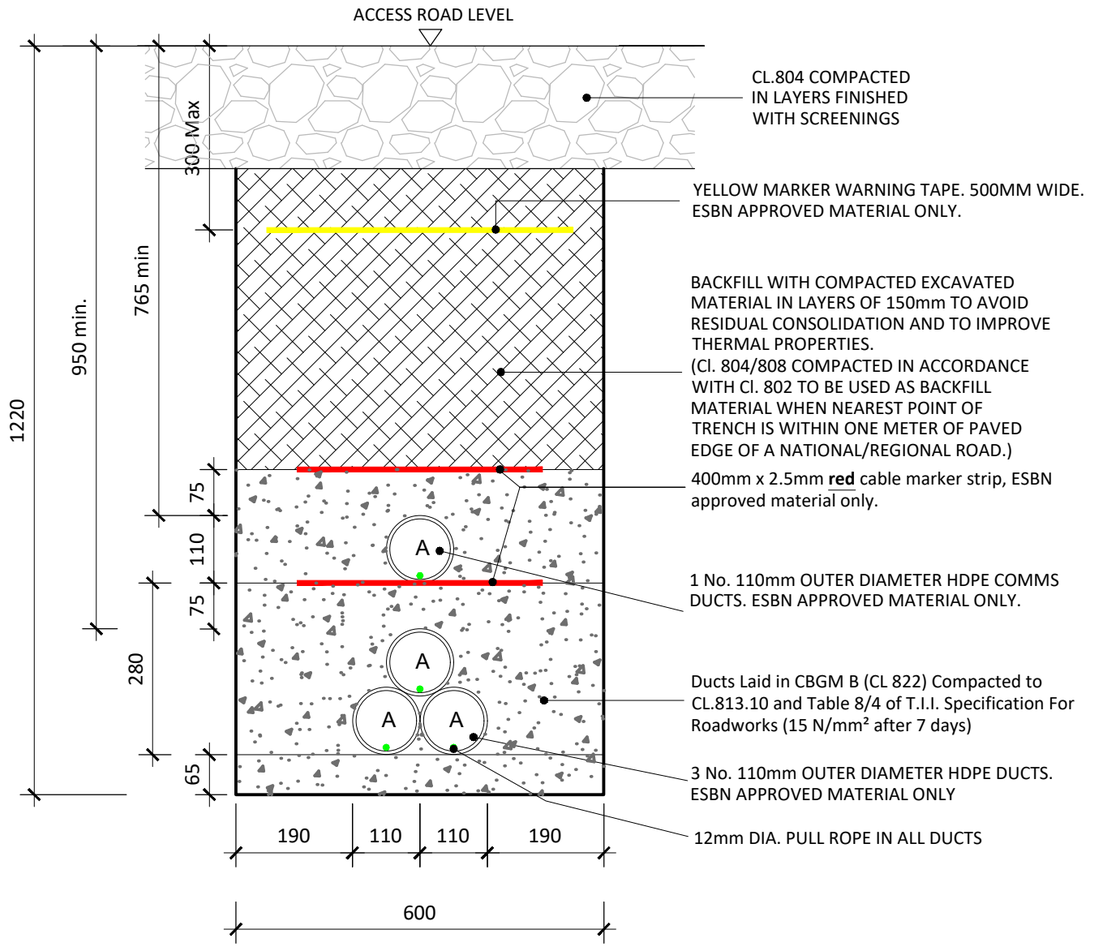
SHEET NUMBER
05801-DR-114

SHEET TITLE
Typical 38kV Ducting through Off Road Section

DRAWING STATUS
Issued For Planning

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	22.09.21	Issued For Planning



A =110mm:Outer diameter HDPE ESB Approved Duct, SDR=17.6;

Typical Section Through Access Road

SCALE 1:10

Note:
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- Dimensions are in millimeters, unless noted otherwise
- Drawings are not to be scaled use figured dimensions only

ALL REINSTATEMENT WORKS ARE TO BE IN ACCORDANCE WITH LANDOWNERS/KERRY COUNTY COUNCIL REQUIREMENTS

tli GROUP
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CLIENT
EMPower

PROJECT
Ballynagare Wind Farm
38kV Grid Connection

PROJECT NUMBER
05-801

SHEET NUMBER
05801-DR-115

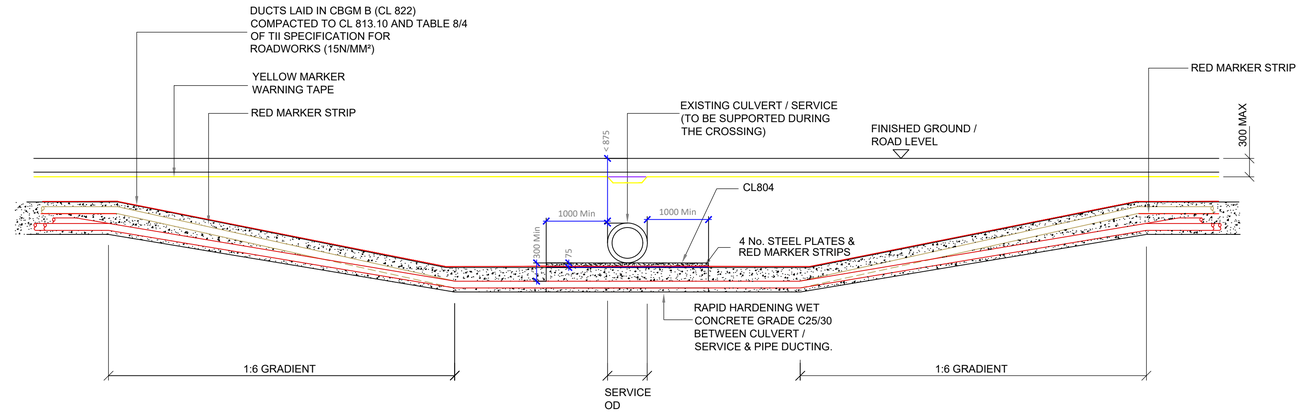
SHEET TITLE
Typical 38kV Ducting through Access Road

DRAWING STATUS
Issued For Planning

ISSUE/REVISION

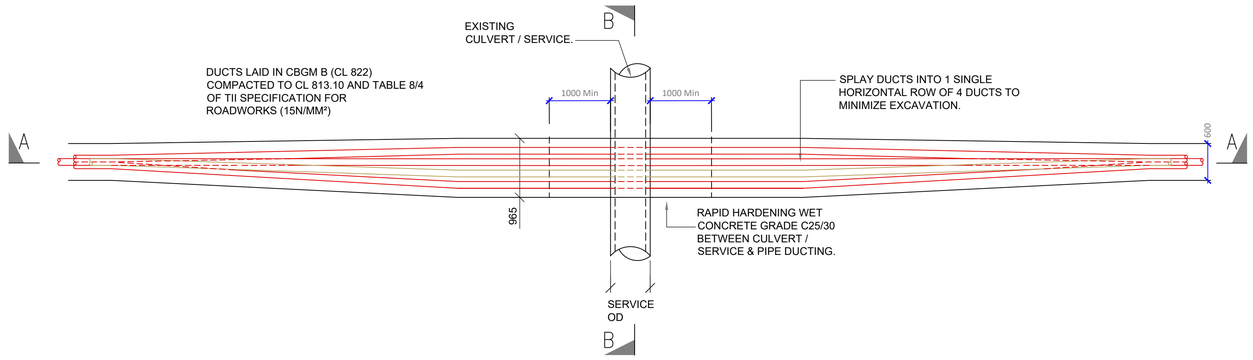
I/R	DATE	DESCRIPTION
P00	22.09.21	Issued For Planning

ISO A1 594mm x 841mm



SECTION A-A

SCALE 1:50



PLAN VIEW

SCALE 1:50

1. SERVICE/CULVERT UNDERCROSSING

LEGEND

- 110mm Ø HDPE POWER DUCT WITH 12mm DIAMTER PULL ROPE
- 110mm Ø HDPE COMMUNICATION DUCT WITH 12mm DIAMTER PULL ROPE
- RED MARKER STRIP OR STEEL PLATES
- YELLOW MARKER WARNING TAPE
- 6mm GALVANISED STEEL PLATE
- EXISTING SERVICE TAPE

NOTES

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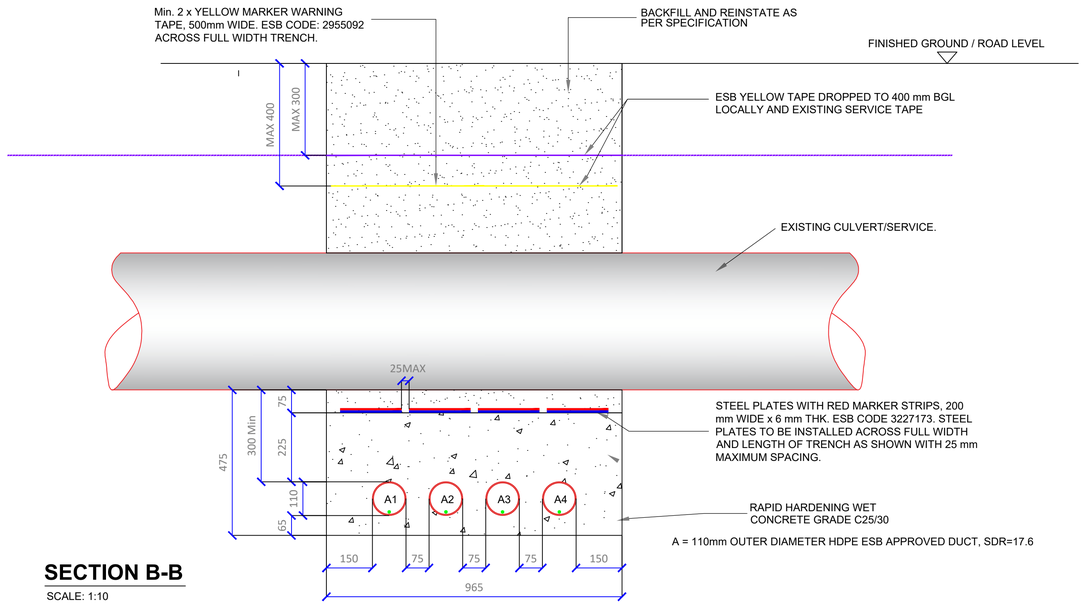
3. All dimensions are in millimetres, all chainages, levels and co-ordinates are in metres unless defined otherwise.
4. This drawing is to be read in conjunction with the project Health & Safety file for any identified potential risks.
5. No excavation shall commence until the contractor has consulted up to date services drawings and carried out an Electromagnetic Locator (EML) Scan.
6. Hand dig only within 500mm of existing services.
7. If compacting CBGM B could cause damage to the culvert / service below, use rapid hardening cement grade C25/30 following engineers prior approval.
8. For standard trench cross section drawings and minimum horizontal separation to existing services, see 05801-DR-113 (TREFOIL).
9. Where depths exceed 3000mm to the top of duct the contractor shall consult the cable system design engineer for phase spacing requirements.
10. For Watermain crossings, see 05801-DR-120/121



SECTION B-B

SCALE: 1:10

Project Management Initials: Designer: JC Checked: SK Approved: RG

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PROJECT

Ballynagare Wind Farm 38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

- See notes in drawing window

LEGEND: -

ISSUE/REVISION

P00	22.09.21	Issued For Planning
I/R	DATE	DESCRIPTION

PROJECT NUMBER

05-801

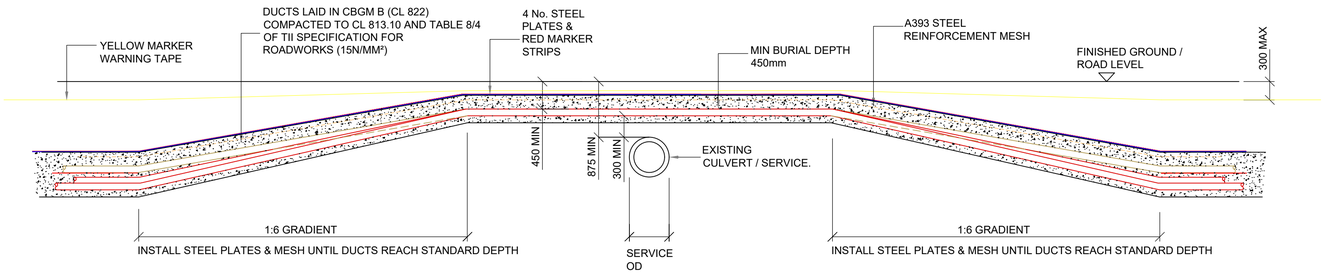
SHEET TITLE

Typical 38kV Ducting Service/ Culvert Undercrossing Detail

SHEET NUMBER

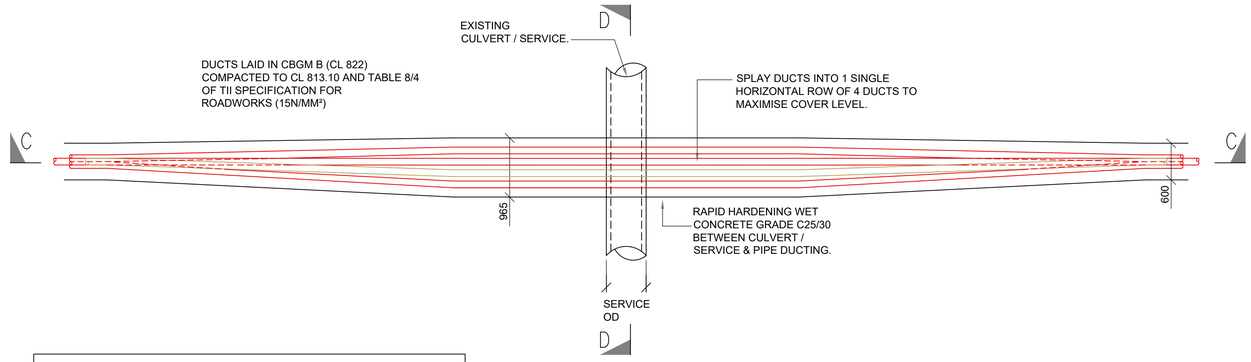
05801-DR-116

ISO A1 594mm x 841mm



SECTION C-C

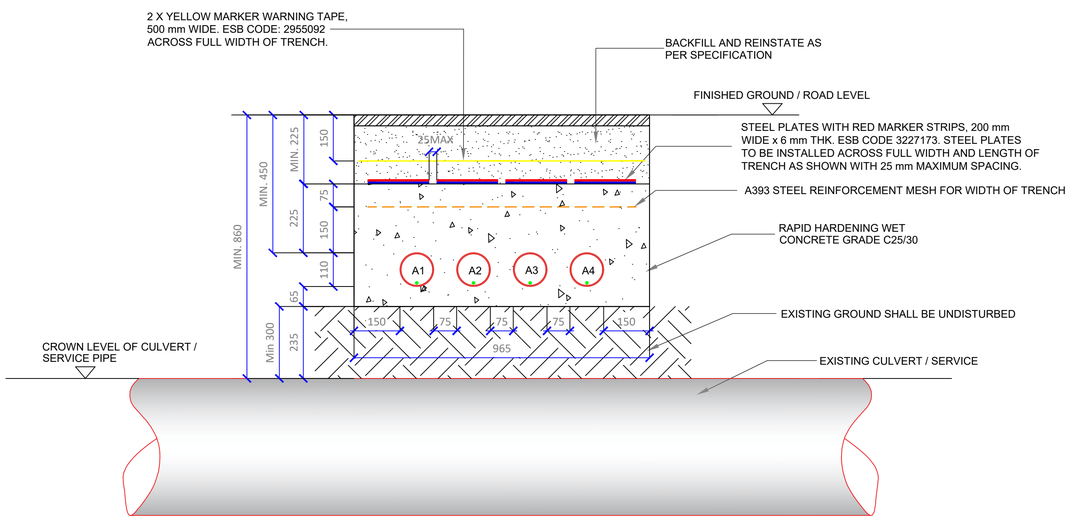
SCALE 1:50



2. SERVICE/CULVERT OVERCROSSING

PLAN VIEW

SCALE 1:50



* ALL EXISTING SERVICES WITH COVER LESS THAN MIN. DIMENSIONS ABOVE SHALL BE CROSSED BY UNDERCROSSING METHOD

A = 110mm OUTER DIAMETER HDPE ESB APPROVED DUCT, SDR=17.6

SECTION D-D

SCALE: 1:10

LEGEND

- 110mm Ø HDPE POWER DUCT WITH 12mm DIAMTER PULL ROPE
- 110mm Ø HDPE COMMUNICATION DUCT WITH 12mm DIAMTER PULL ROPE
- RED MARKER STRIP OR STEEL PLATES
- YELLOW MARKER WARNING TAPE
- A393 STEEL REINFORCEMNET MESH
- 6mm GALVANISED STEEL PLATE
- EXISTING SERVICE TAPE

NOTES

1. This drawing is to be read in conjunction with all other relevant documentation.
2. Do not scale from this drawing use only printed dimensions.
3. All dimensions are in millimetres, all chainages, levels and co-ordinates are in metres unless defined otherwise.
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5. No excavation shall commence until the contractor has consulted up to date services drawings and carried out an Electromagnetic Locator (EML) Scan.
6. Hand dig only within 500mm of existing services.
7. If compacting CBGM B could cause damage to the culvert / service below, use rapid hardening cement grade C25/30 following engineers prior approval.
8. For standard trench cross section drawings and minimum horizontal separation to existing services, see 05801-DR-113 (TREFOIL).
9. Where depths exceed 3000mm to the top of duct the contractor shall consult the cable system design engineer for phase spacing requirements.
10. For Watermain crossings, see 05801-DR-120/121
11. **ESB's preference is to cross under existing culverts/services where possible.**

Project Management Initials: Designer: JC Checked: SK Approved: RG

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PROJECT

Ballynagare Wind Farm
38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

- See notes in drawing window

LEGEND: -

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	22.09.21	Issued For Planning

PROJECT NUMBER

05-801

SHEET TITLE

Typical 38kV Ducting Service/
Culvert Overcrossing Detail

SHEET NUMBER

05801-DR-117

NOTES:
- This drawing is to be read in conjunction with relevant drawings, specifications and reports.
- Dimensions are in millimeters, unless noted otherwise.
- Drawings are not to be scaled, use figured dimensions only.
- Road-markings to be agreed with the county council and reinstated.
- Road surfacing build-up and tie in with non floating road sections to be agreed with the county council.
- Geogrid may be implemented along the cable trench route where deemed necessary by the contractor or as required by Donegal County Council and/or TII.
- This design may be used on any sections of floating road identified on the cable route.

LEGEND:
GEOGRID
GEOTEXTILE

BASE COURSE WITH WEARING COURSE

NEW ROAD BUILD-UP AND REINSTATEMENT AS PER DONEGAL CO. COUNCIL / TII REQUIREMENT AND DESIGN

YELLOW MARKER WARNING TAPE. MUST BE FULL WIDTH OF TRENCH ESBN APPROVED MATERIAL ONLY

GEOTEXTILE

GEOGRID

EXISTING DRAINAGE DITCH

1:1

EXISTING GROUND

EXISTING DRAINAGE DITCH

1:1

PEAT

PEAT

EXCAVATED TOPSOIL

Yellow marker warning tape. 500mm wide. ESBN approved material only.

TENSAR Tx160 GEOGRID TO BE LAID UNDER PROPOSED TRENCH AND LAPPED 1.0m OVER EXISTING ROAD

BACKFILL IN LAYERS OF 150mm TO AVOID RESIDUAL CONSOLIDATION AND TO IMPROVE THERMAL PROPERTIES

400mm x 2.5mm **red** cable marker strip, ESBN approved material only.

1 No. 110mm OUTER DIAMETER HDPE COMMS DUCTS. ESBN APPROVED MATERIAL ONLY.

Ducts Laid in CBGM B (CL 822) Compacted to CL.813.10 and Table 8/4 of T.I.I. Specification For Roadworks (15 N/mm² after 7 days)

3 No. 110mm OUTER DIAMETER HDPE DUCTS. ESBN APPROVED MATERIAL ONLY

12mm DIA. PULL ROPE IN ALL DUCTS

300 Max
750
935
1215
75
110
75
280
65
190
110
110
190
600

EXISTING FLOATING ROAD (BUILD-UP TBC BY KERRY CO.CO.)

EXISTING FLOATING ROAD (BUILD-UP TBC BY KERRY CO.CO.)

CABLE TRENCH SECTION

Scale: 1:16

A = 125mm: Outer Diameter HDPE ESB Approved Duct, SDR=17.6 [ESB Code: 9317552]

PEAT

ALL REINSTATEMENT WORKS ARE TO BE IN ACCORDANCE WITH LOCAL AREA ENGINEERS / LANDOWNER REQUIREMENTS

PEAT

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CLIENT
EMPower

PROJECT
Ballynagare Wind Farm
38kV Grid Connection

PROJECT NUMBER
05-801

SHEET NUMBER
05801-DR-118

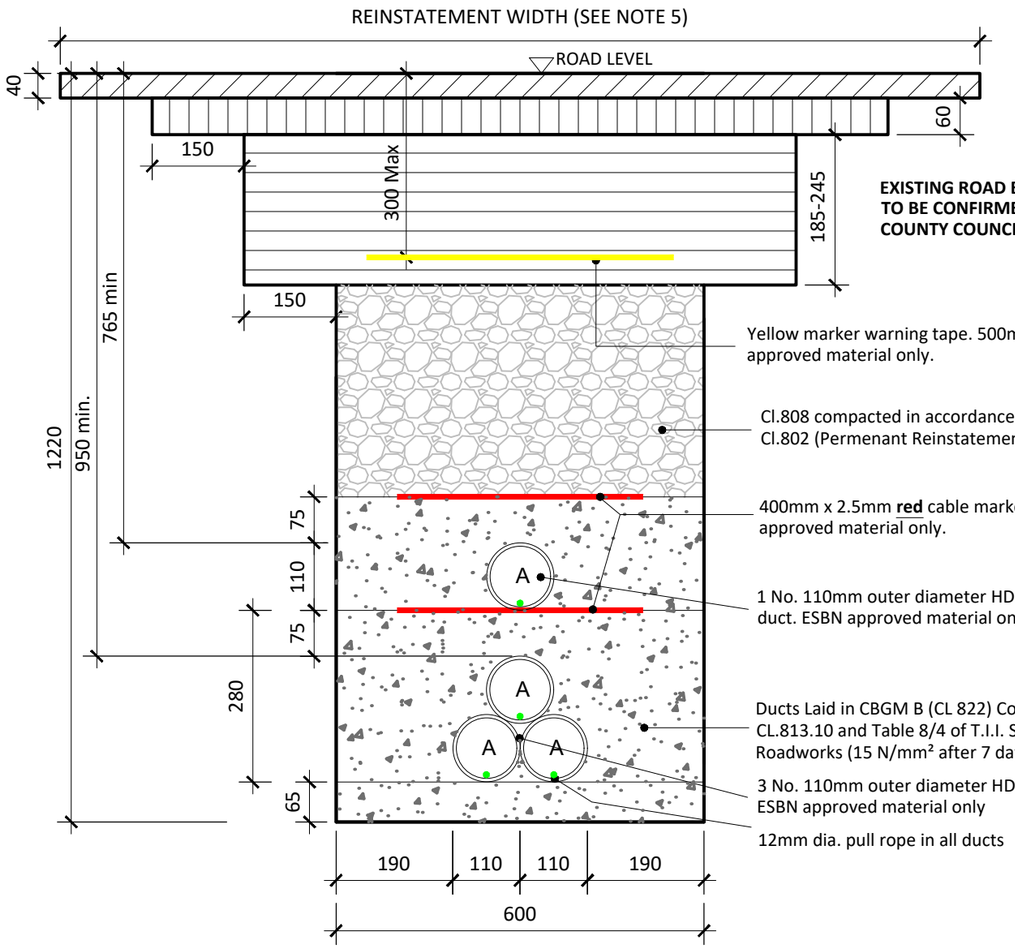
SHEET TITLE
38kV Single Circuit - Ducting Through Floating Road / Peat

DRAWING STATUS
Issued For Planning

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	22.09.21	Issued For Planning

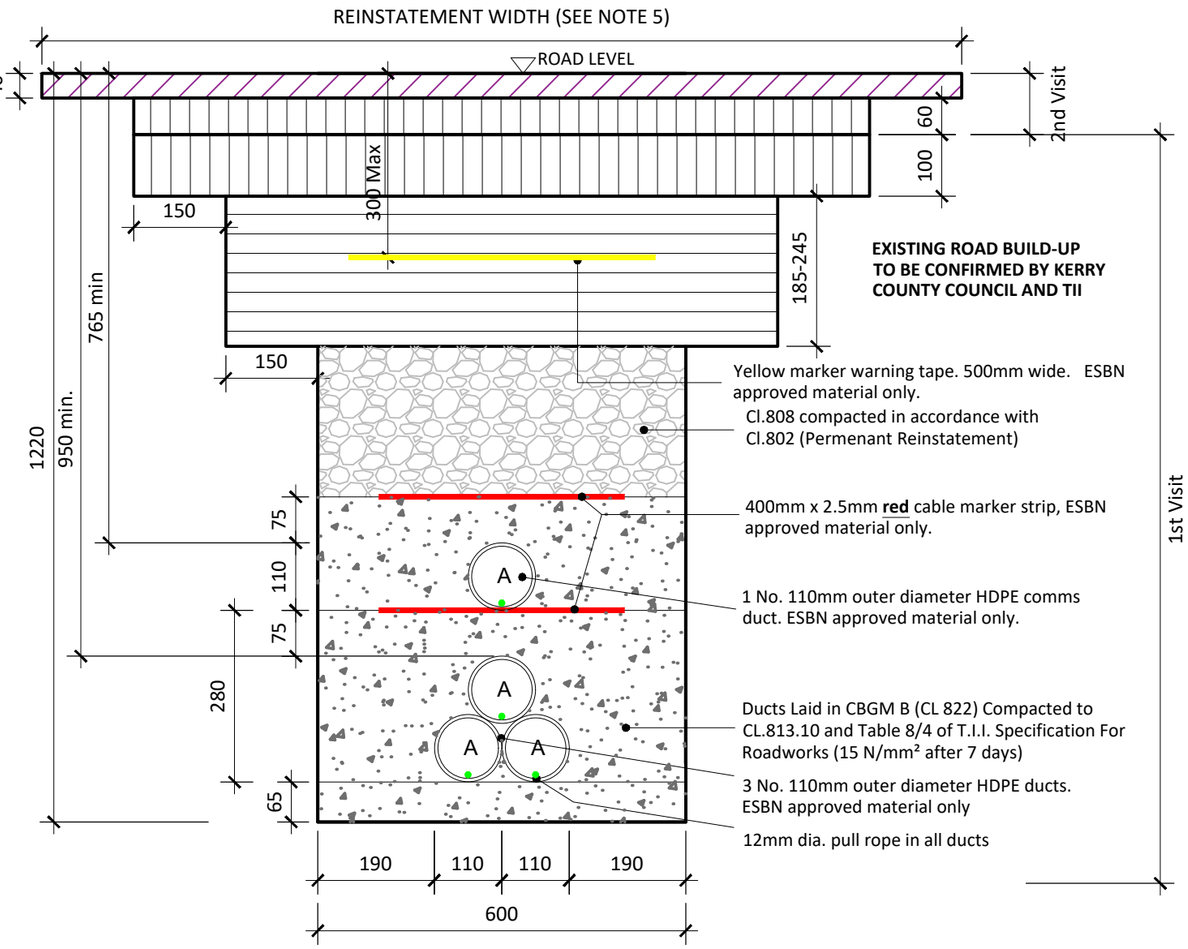
SCALE 1:10



A =110mm:Outer diameter HDPE ESB Approved Duct, SDR=17.6;

All Permanent Reinstatement (Flexible Road)

SCALE 1:10



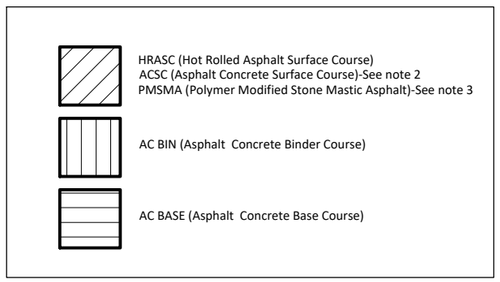
A =110mm:Outer diameter HDPE ESB Approved Duct, SDR=17.6;

Permanent Binder Course Reinstatement (Flexible Road)

NOTES:

Ref. Specification for the reinstatement of openings in National Roads CC-SPW04007

1. Sub-base in accordance with appendix A3.3
2. AC surface course not permitted on high speed roads (refer to A2.3).
3. Where 10mm PMSMA is used on the surface course the thickness is reduced to 30mm and the binder course increased accordingly.
4. Refer to figure S6.4 for further details on surface course reinstatement and stepped joints at binder course level
5. Refer to figure A3.4 of this appendix for details on reinstatement requirements at locations where existing surface course material is greater than 5 years old.
6. For alternative reinstatement materials refer to appendix A9



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APPLICANT

EMPower

PROJECT
Ballynagare Wind Farm
38kV Grid Connection

PROJECT NUMBER
05-801

SHEET NUMBER
05801-DR-119

SHEET TITLE
Typical 38kV National Ducting
Flexible Road Reinstatement

DRAWING STATUS
Issued For Planning

ISSUE/REVISION

I/R	DATE	DESCRIPTION
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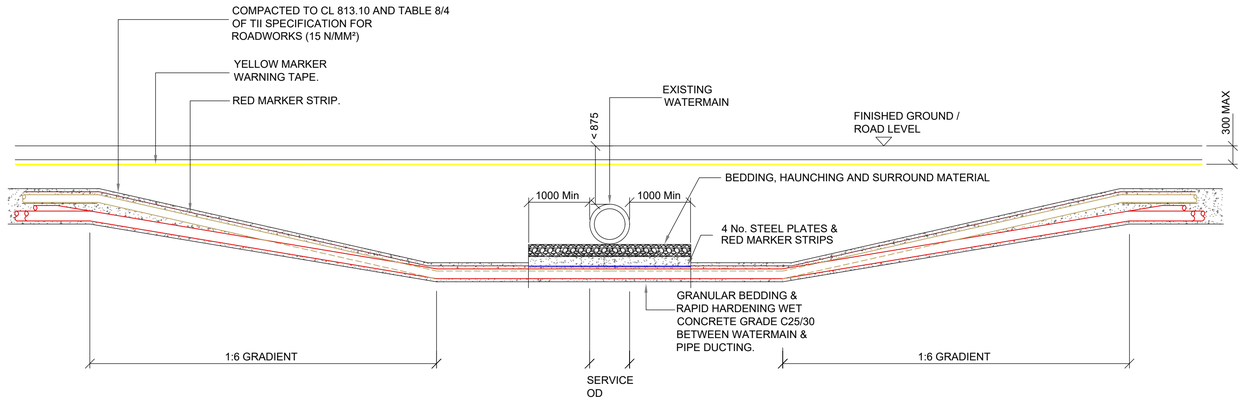
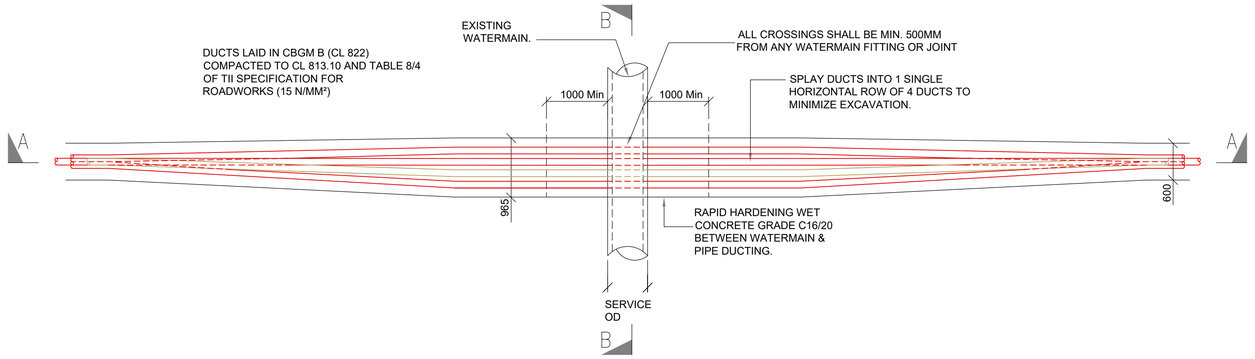
ISO A1 594mm x 841mm



SECTION A-A

SCALE 1:50



PLAN VIEW

SCALE 1:50

1. WATERMAIN UNDERCROSSING

LEGEND

- 110mm Ø HDPE POWER DUCT WITH 12mm DIAMTER PULL ROPE
- 110mm Ø HDPE COMMUNICATION DUCT WITH 12mm DIAMTER PULL ROPE
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- 6mm GALVANISED STEEL PLATE

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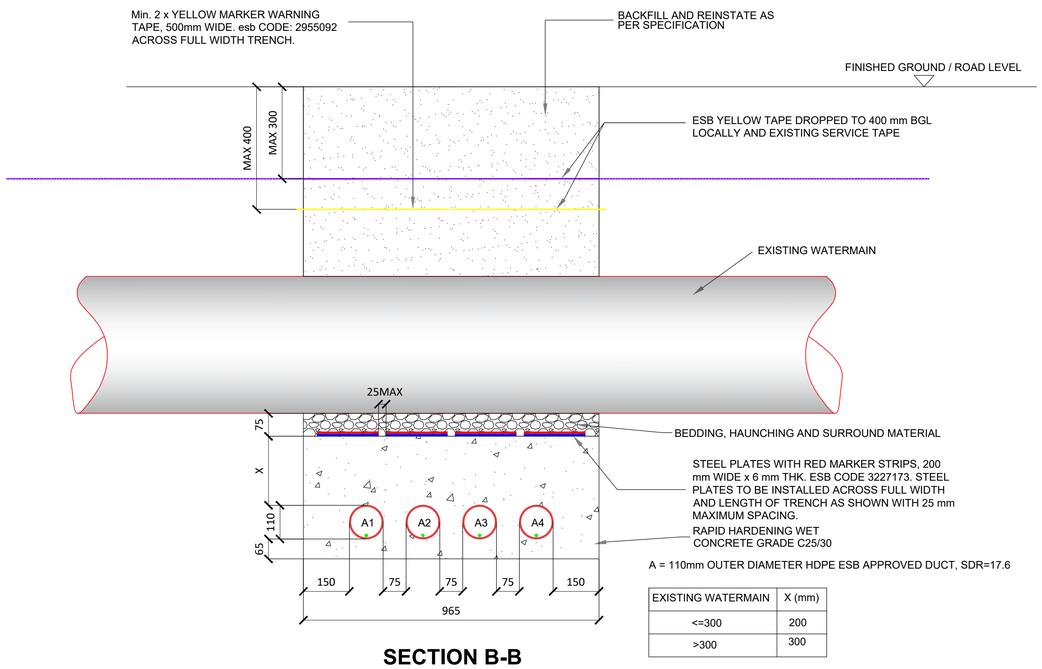
8. For standard trench cross section drawings and minimum horizontal separation to existing services, see 05801-DR-113 (TREFOIL).
9. Where depths exceed 3000mm to the top of duct the contractor shall consult the cable system design engineer for phase spacing requirements.
10. All works shall be in accordance with Irish Water code of practice for infrastructure.
11. Backfill as per guidelines for the opening, backfilling and reinstatement of openings in public roads (2015)
12. As per WIS 4-08-02 & IGN 4-08-01 granular material shall be 14mm to 5mm graded aggregate or 10mm single sized aggregate
13. **ESB's preference is to cross under existing services where possible.**



A = 110mm OUTER DIAMETER HDPE ESB APPROVED DUCT, SDR=17.6

EXISTING WATERMAIN	X (mm)
<=300	200
>300	300

SECTION B-B

SCALE: 1:10

Project Management Initials: Designer: JC Checked: SK Approved: RG

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PROJECT

Ballynagare Wind Farm 38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

- See notes in drawing window

LEGEND: -

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	22.09.21	Issued For Planning

PROJECT NUMBER

05-801

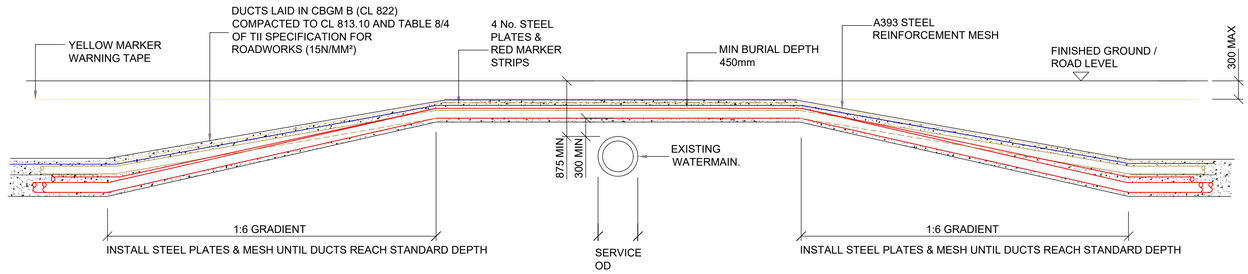
SHEET TITLE

Typical 38kV Ducting Watermain / Wastewater Crossing Detail

SHEET NUMBER

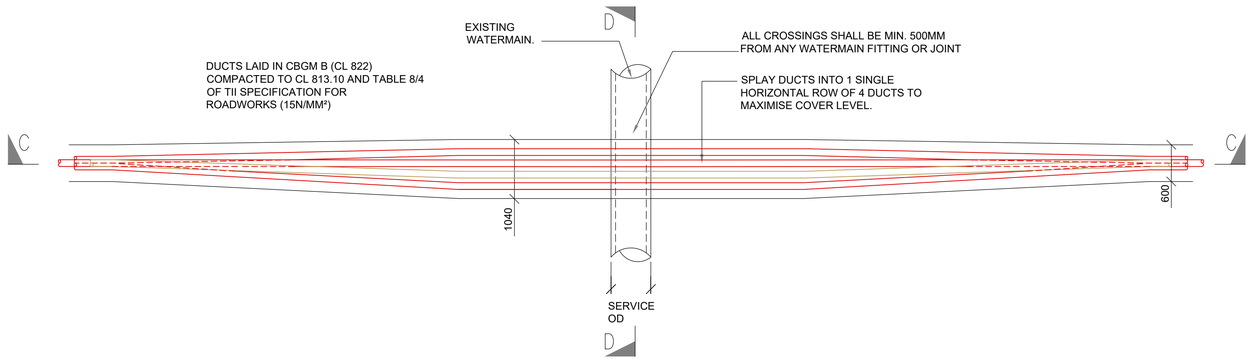
05801-DR-120

ISO A1 594mm x 841mm



SECTION C-C

SCALE 1:50



2. WATERMAIN OVERCROSSING

PLAN VIEW

SCALE 1:50

LEGEND

- 110mm Ø HDPE POWER DUCT WITH 12mm DIAMTER PULL ROPE
- 110mm Ø HDPE COMMUNICATION DUCT WITH 12mm DIAMTER PULL ROPE
- RED MARKER STRIP OR STEEL PLATES
- YELLOW MARKER WARNING TAPE
- A393 STEEL REINFORCEMNET MESH
- 6mm GALVANISED STEEL PLATE

NOTES

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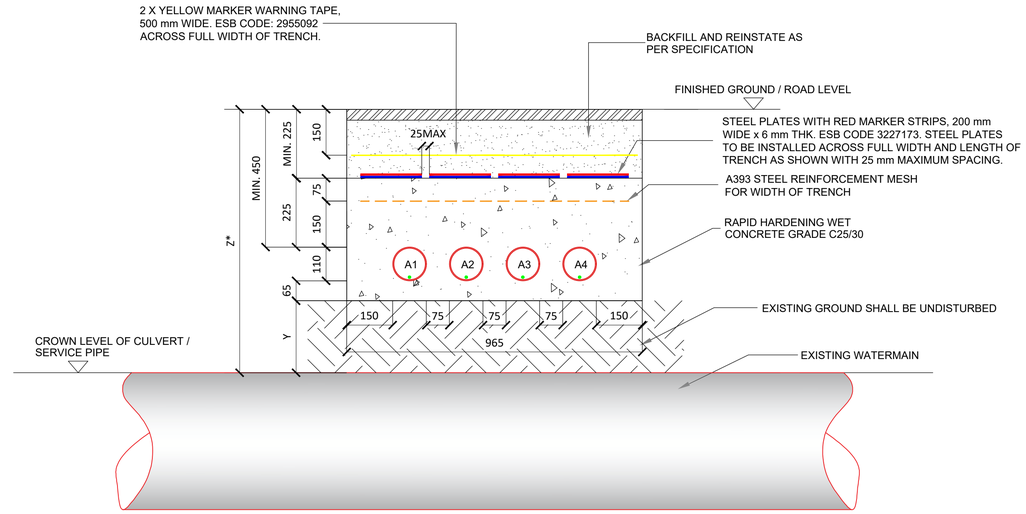
10. All works shall be in accordance with Irish Water code of practice for infrastructure.
11. Backfill as per guidelines for the opening, backfilling and reinstatement of openings in public roads (2015)
12. As per WIS 4-08-02 & IGN 4-08-01 granular material shall be 14mm to 5mm graded aggregate or 10mm single sized aggregate
13. **ESB's preference is to cross under existing services where possible.**



* ALL EXISTING SERVICES WITH COVER LESS THAN MIN. DIMENSIONS ABOVE SHALL BE CROSSED BY UNDERCROSSING METHOD

SECTION D-D

SCALE: 1:10

A = 110mm OUTER DIAMETER HDPE ESB APPROVED DUCT, SDR=17.6

EXISTING WATERMAIN	Y (mm)	Z* (mm)
<=300	235	885 MIN
>300	435	1085 MIN

Project Management Initials: Designer: JC Checked: SK Approved: RG

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PROJECT

Ballynagare Wind Farm
38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -

- See notes in drawing window

LEGEND: -

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	22.09.21	Issued For Planning

PROJECT NUMBER

05-801

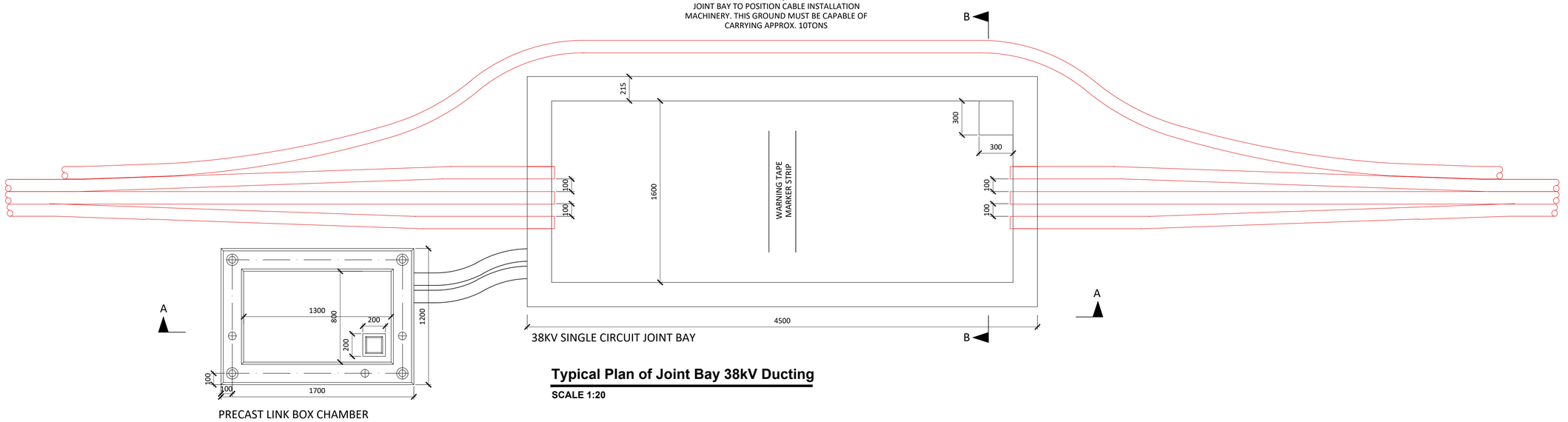
SHEET TITLE

Typical 38kV Ducting Watermain / Wastewater Crossing Detail

SHEET NUMBER

05801-DR-121

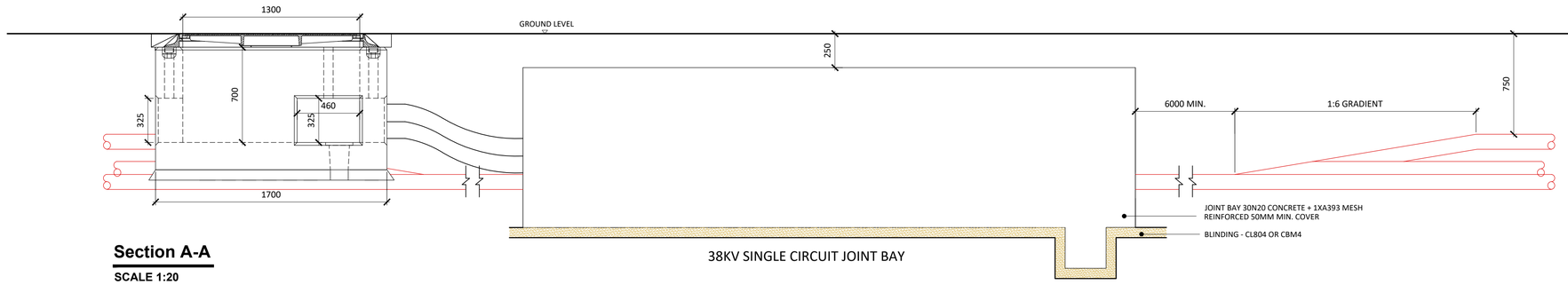
ISO A1 594mm x 841mm



PRECAST LINK BOX CHAMBER

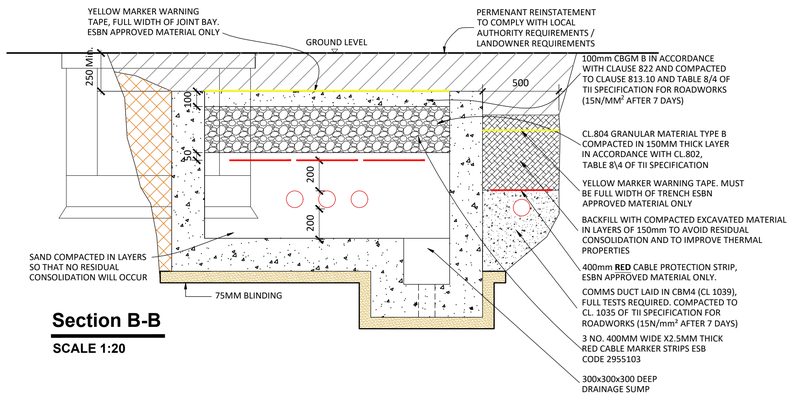
Typical Plan of Joint Bay 38kV Ducting

SCALE 1:20



Section A-A

SCALE 1:20



Section B-B

SCALE 1:20

NOTES:
- This drawing is to be read in conjunction with relevant drawings, specifications and reports.
- Dimensions are in millimeters, unless noted otherwise.
- Drawings are not to be scaled use figured dimensions only.
- Suitability of standard joint bay foundations can only be confirmed following ground investigation. Standard foundations are based on the formation at the base of the excavation shown being suitable for a minimum bearing pressure of 100N/m2. Where this is not achievable and where peat is encountered, the contractor shall refer to the Engineer for guidance.

Project Management Initials: Designer: JC Checked: SK Approved: RG

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PROJECT

Ballynagare Wind Farm 38kV Grid Connection

CLIENT

EMPower

CONSULTANTS

NOTES: -
- See notes in drawing window

LEGEND: -

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	22.09.21	Issued For Planning

PROJECT NUMBER

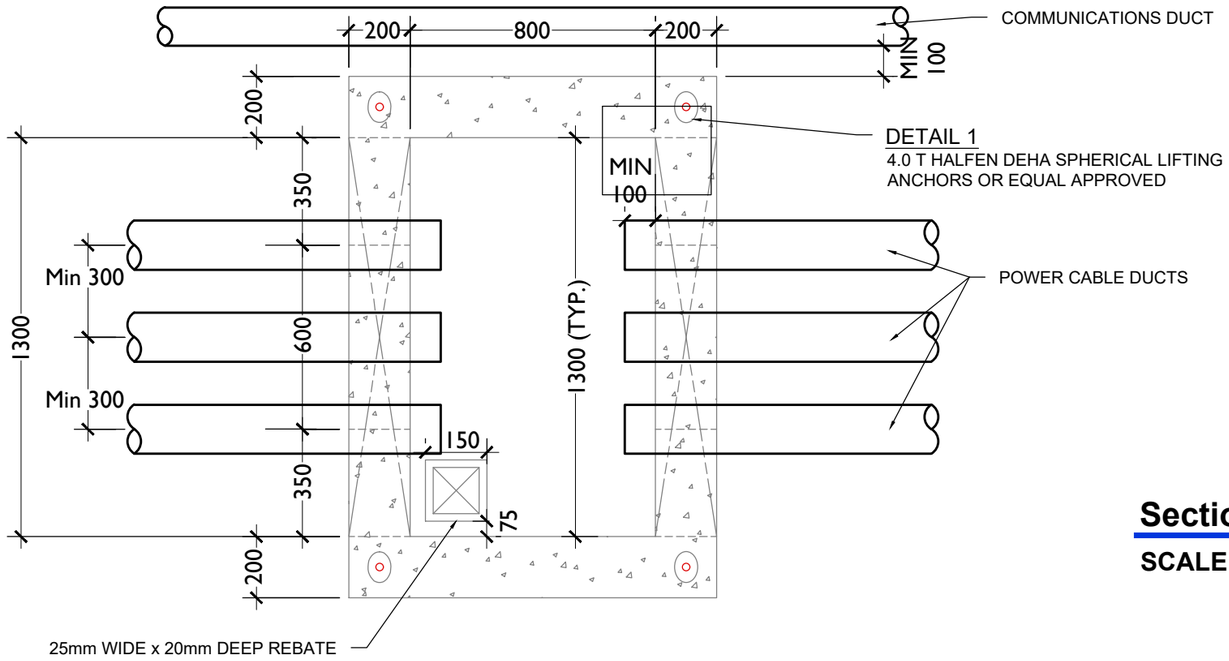
05-801

SHEET TITLE

General 38kV Joint Bay Arrangement

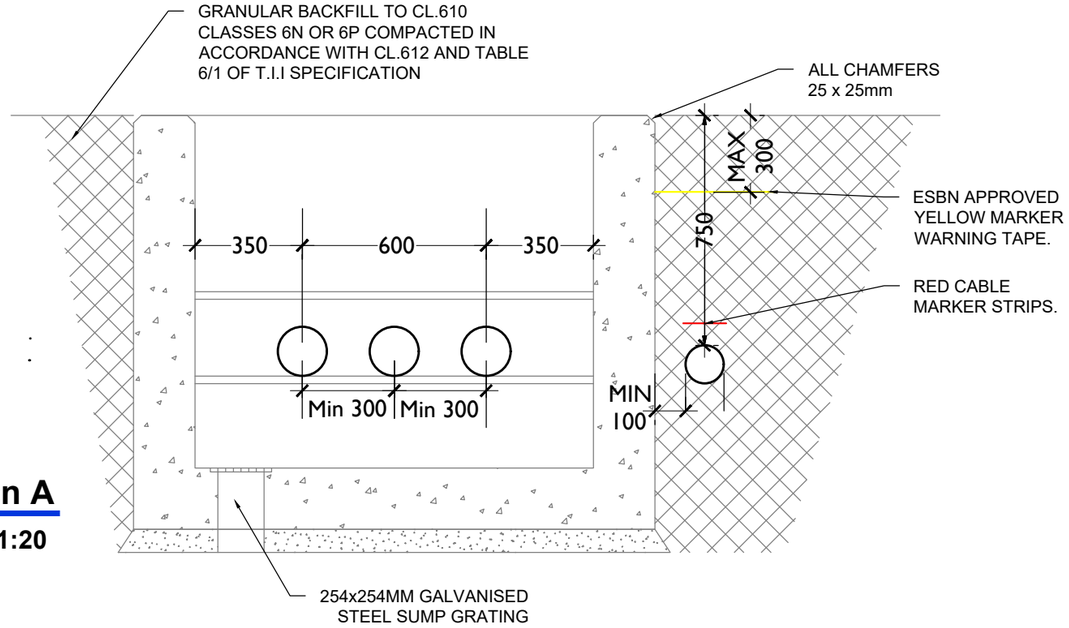
SHEET NUMBER

05801-DR-122



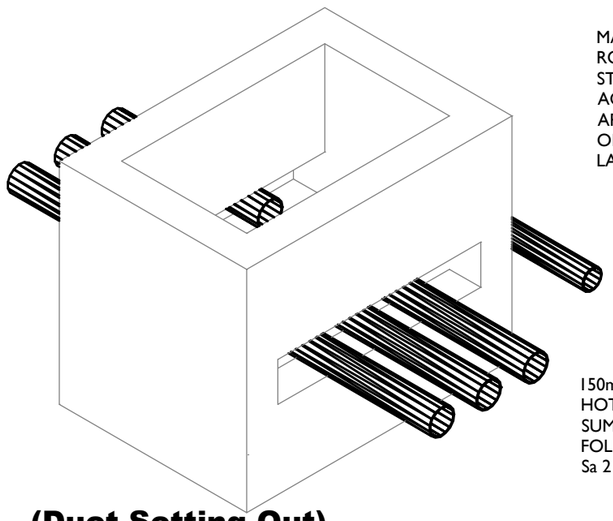
Plan - Transition Chamber

SCALE 1:20

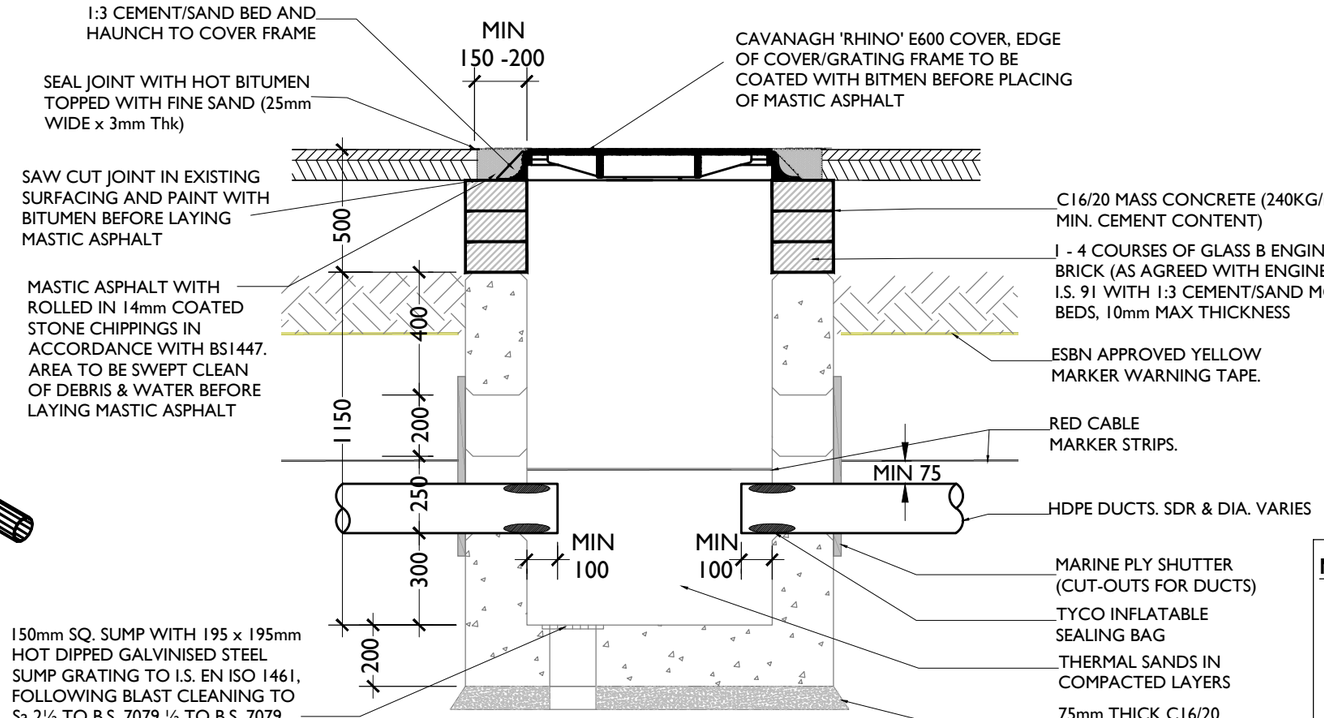


Section A

SCALE 1:20

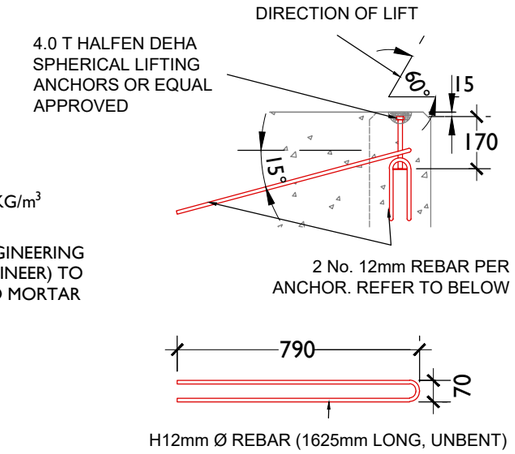


(Duct Setting Out)



Section B

SCALE 1:20



Detail 1

NOTES:

1. This drawing is to be read in conjunction with relevant drawings, specifications and reports.
2. Dimensions are in millimetres, unless noted otherwise.
3. Drawings are not to be scaled use figured dimensions only.
4. Telecomunication ducts not to be routed through Transition chamber
5. If Transition chamber is used to interface with a HDD section, Then the telecoms duct SDR 17.6 should be chamfered when coupled with SDR 11 ducts

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Tel: 00353 66 7135710

CLIENT

EMPower

PROJECT
Ballynagare Wind Farm
38kV Grid Connection

PROJECT NUMBER
05-801

SHEET NUMBER
05801-DR-124

SHEET TITLE
Typical Transition Chamber Details

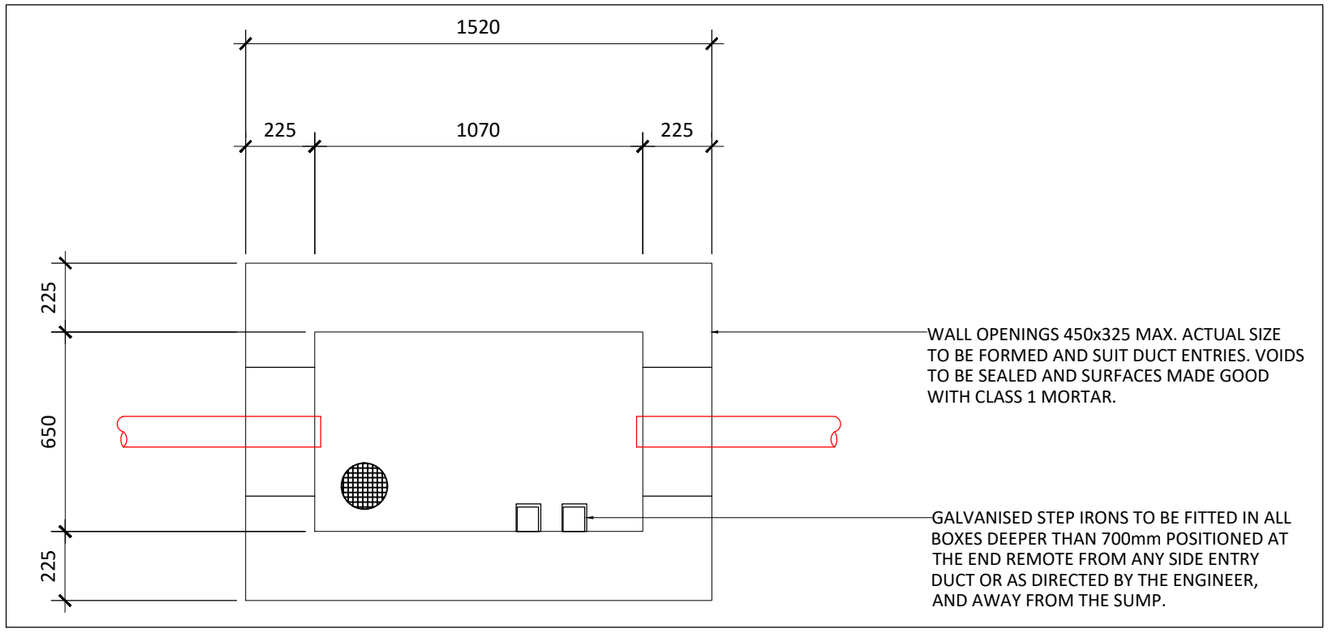
DRAWING STATUS
Issued For Planning

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P00	22.09.21	Issued for Planning

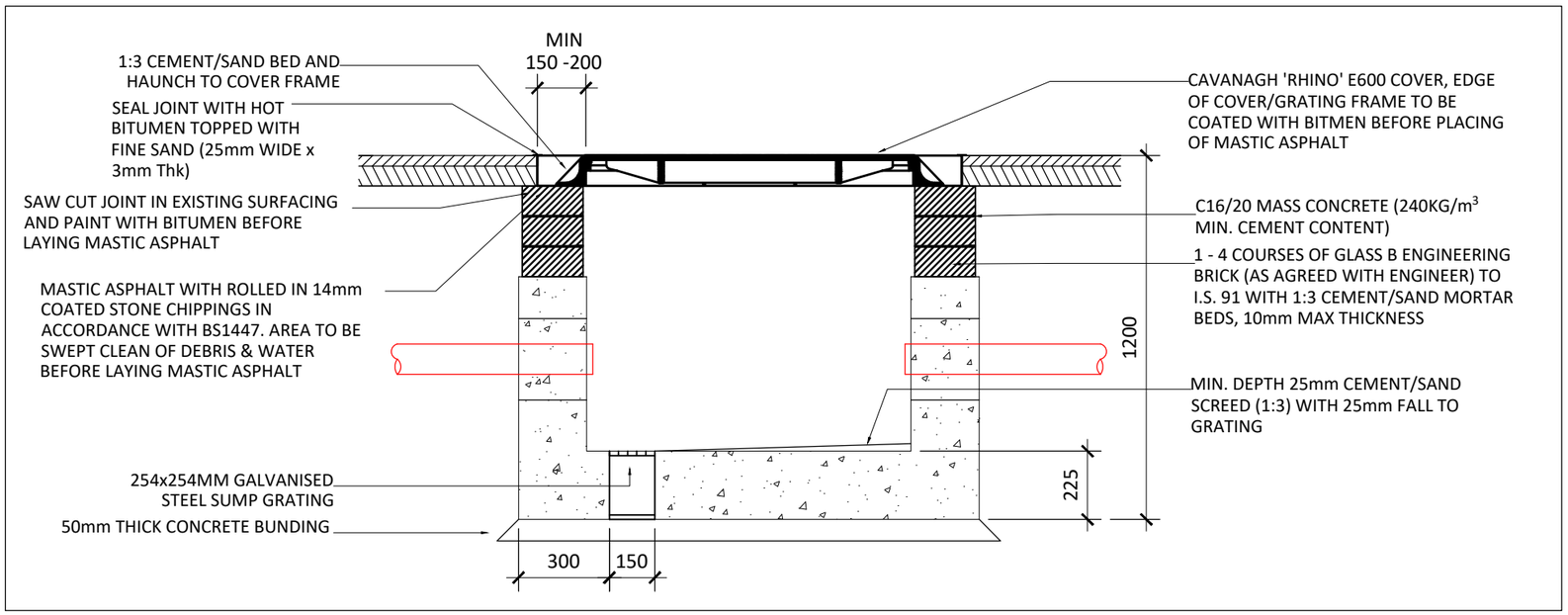
NOTES:

- The following design is subject to ESB approval and should be used for planning purposes only.
- This drawing is to be read in conjunction with relevant drawings, specifications and reports.
- Dimensions are in millimetres, unless noted otherwise.
- Drawings are not to be scaled use figured dimensions only.



Plan View - Typical Communications Chamber

SCALE 1:20



Section Through Typical Communications Chamber

SCALE 1:20

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Typical Communications Chamber Details

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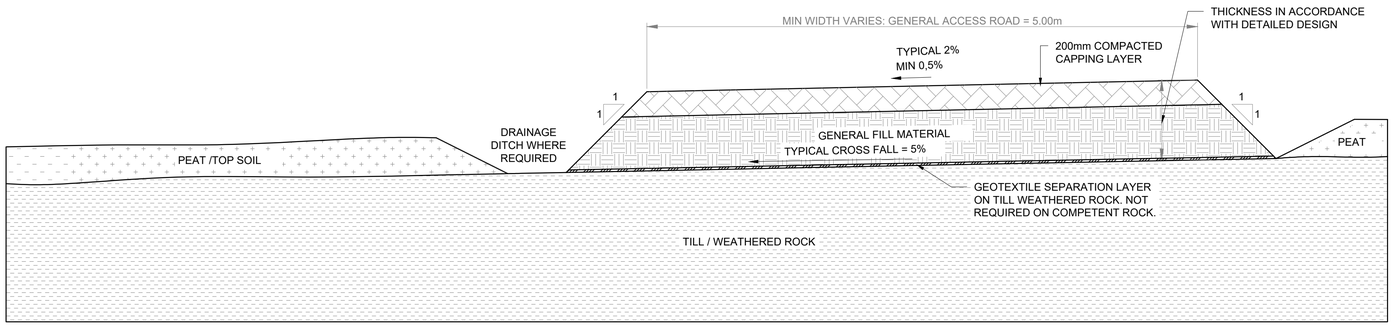
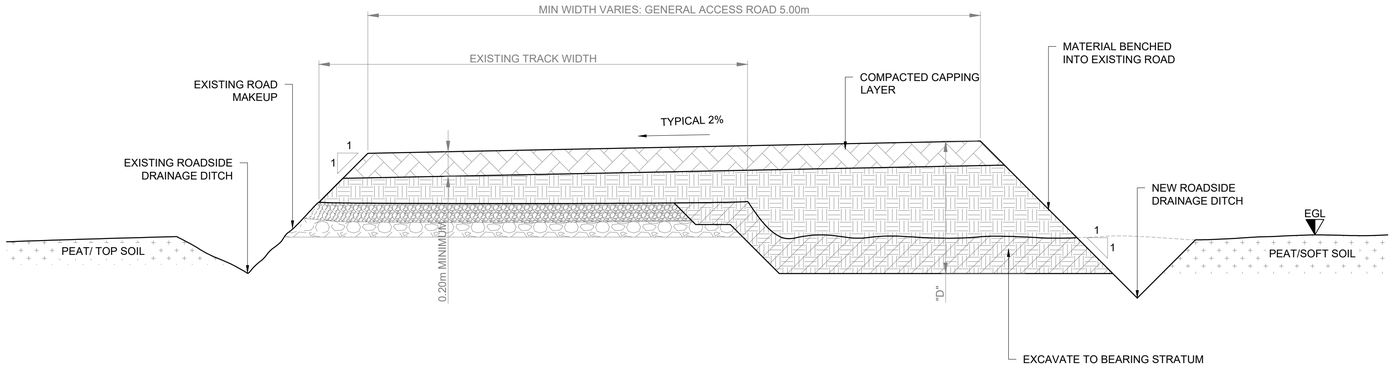


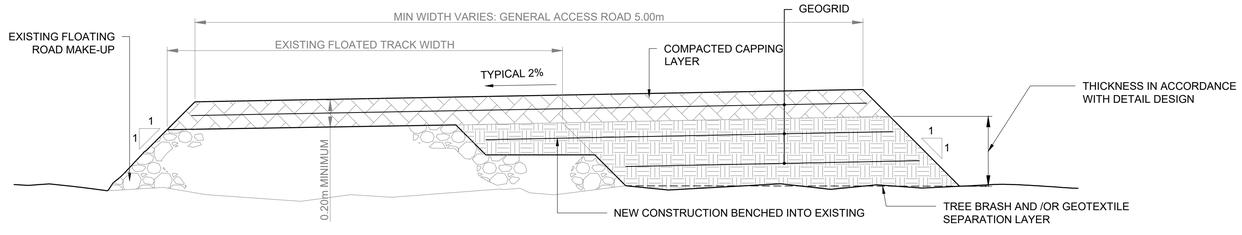
TYPICAL SECTON THROUGH ACCESS ROADS NEW CONSTRUCTION-DETAIL A

SCALE 1:25



TYPICAL CROSS SECTON WIDENING OF EXISTING TRACK:FOUNDED-DETAIL B

SCALE 1:25



TYPICAL CROSS SECTON WIDENING OF EXISTING TRACK:FLOATED-DETAIL C

SCALE 1:25

NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED
2. USE DIMENSIONS ON DRAWINGS (DO NOT SCALE FROM DRAWINGS).
3. THE STRENGTH OF THE SUBFORMATION SOILS MUST BE ASSESSED BY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF FILL.
4. DRAINAGE TO BE PROVIDED TO PREVENT WATER DEGRADATION OF THE SUBFORMATION SOILS.

HEALTH & SAFETY:

1. NO OPERATIVES TO ACCESS ANY UNSUPPORTED TRENCHES. TRENCHES TO BE ADEQUATELY BATTERED BACK OR SUPPORTED WHERE NECESSARY. SAFE TEMPORARY BATTER ANGLES TO BE ASSESSED IN ACCORDANCE WITH CIRIA REPORT 97 "TRENCHING PRACTICE".

REV:	FI -00	DATE:	17/06/21	DRAWN BY:	CJM	CHECKED BY:	L.B
DESCRIPTION:	ISSUED FOR INFORMATION						

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ISSUED AS: FOR INFORMATION

CLIENT: MKO

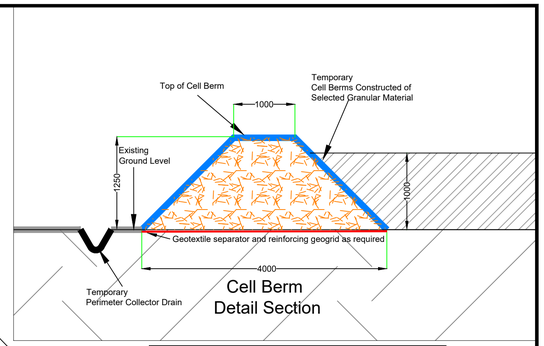
PROJECT TITLE: BALLNGARE WIND FARM

DRAWING No: 20260-GDG-XX-XX-DR-G-0200

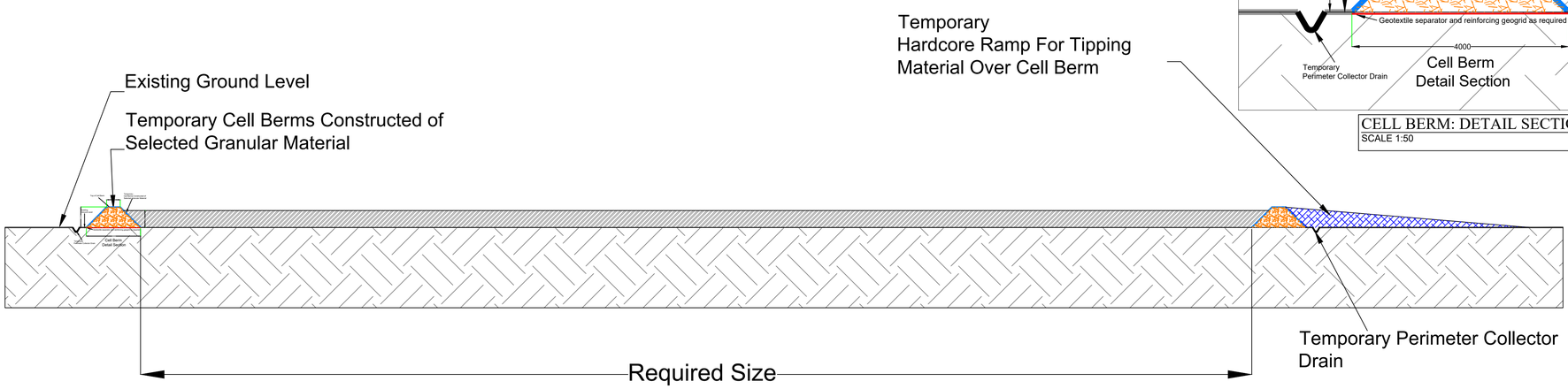
Revision: -FI -00

DRAWING TITLE: TYPICAL SECTION THROUGH GENERAL ACCESS TRACK DETAILS

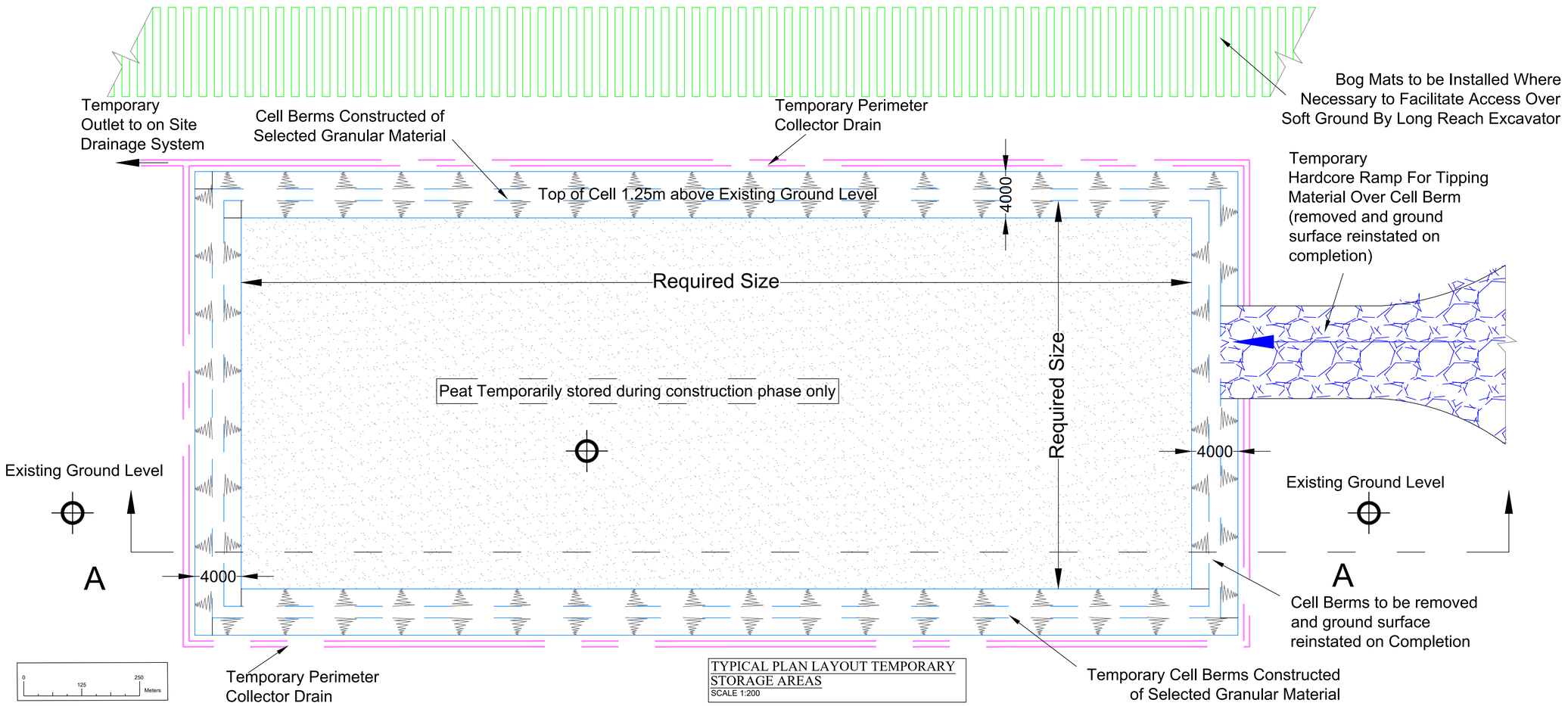
SCALE:	SHOWN	SHEET SIZE:	A1	DATE:	17/06/2021
DRAWN BY:	CJM	CHECKED BY:	L.B	APPROVED BY:	P.Q.



CELL BERM: DETAIL SECTION
SCALE 1:50



TYPICAL SECTION A-A
SCALE 1:200



TYPICAL PLAN LAYOUT TEMPORARY STORAGE AREAS
SCALE 1:200

NOTES:

1. THIS DRAWING IS FOR PLANNING AND ENVIRONMENTAL IMPACT ASSESSMENT PURPOSES AND SHOULD NOT BE USED AS DETAILED DESIGN OR FOR CONSTRUCTION DRAWINGS.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

REV: FI -00	DATE: 06/10/21	DRAWN BY: CJM	CHECKED BY: LB
DESCRIPTION:	ISSUED FOR INFORMATION		

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ISSUED AS: FOR INFORMATION

CLIENT: MKO

PROJECT TITLE: BALLYNAGARE WIND FARM

DRAWING No: 20260-GDG-ZZ-XX-SK-C-0251

Revision: -FI -00

DRAWING TITLE: TEMPORARY PEAT STORAGE AREAS -TYPICAL DETAILS

SCALE: 1:200	SHEET SIZE: A1	DATE: 6/10/21
DRAWN BY: CJM	CHECKED BY: L.B	APPROVED BY: L.B.

POLLUTION PREVENTION NOTES:

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

Discharges

4. Water containing silt will not be pumped directly to any natural watercourse. All discharges to be made over open ground or into existing field drain with silt trap, and via silt bag, at a minimum of 20m from nearest watercourse unless otherwise stated.
5. No excavated material is to be stored within any surface water buffer zone, unless for designed proposed temporary storage areas.
6. Pumped water will be directed into track side ditches and treated in settlement ponds and vegetation swales prior to overland discharge.
7. Pumping of clean water from excavations / or over-pumping in drains/ditches/streams will be completed in a manner that 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.
8. Vegetation will NOT be stripped from existing drains/ditches unless absolutely necessary.

Excavations

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

Exposed Ground & Stockpiles

10. The amount of exposed ground and temporary stockpiles open at any one time will be minimised, as far as practicable.

Site tracks

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

Refueling

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

Concrete

15. Care will be taken when completing concrete works on site to ensure no discharges occur.
16. 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.

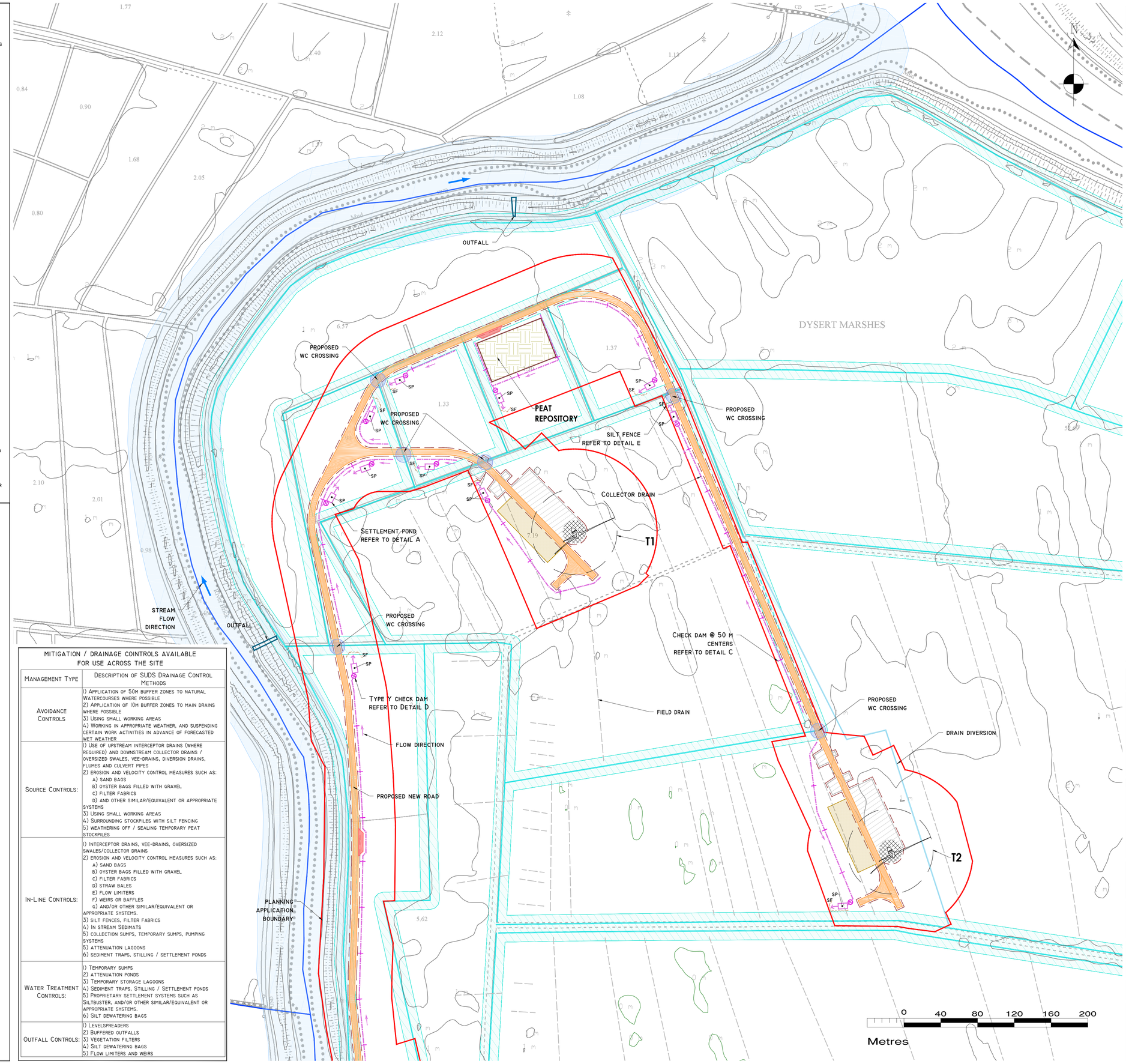
NOTIFY - The relevant authorities (Site Manager / Fisheries / NPWS / Local Authority etc.) should be notified immediately to ensure that measures can be implemented downstream to protect fisheries and other sensitive areas.

DRAINAGE NOTES:

1. Roadway surfacing design and construction to Engineer's Specification.
2. 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.
3. 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.
4. 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.
5. Interceptor swales / existing 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.
6. Drainage swales / ditches to be excavated adjacent to the access tracks. Regular cross drains to be located along access tracks to prevent excessive volumes of water collecting in the swales / ditches. Locations of cross drains to be agreed with the Engineer on site. Surface water will not be allowed to discharge directly into existing watercourses.
7. Where possible, a buffer zone of >10m to any existing watercourse will be required where over land discharges are proposed from access track swales / ditches.
8. Batters of all proposed swales / ditches to have a slope of between 1 : 1.5 to 1 : 2 depending upon depth of swale/ditch and will be left as cut to re-vegetate with local species.
9. Track side swales / ditches to be shallow with moderate gradients to prevent scouring. In steep areas check dams 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.
10. 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.
11. Straw bales / or similar and silt fences to be used also around spoil heaps to mitigate silt runoff. Silt fences may be removed when suitable vegetation cover is established.
12. silt fences to be provide along edge of existing watercourse where works comes within <10m of edge of any ditch / ephemeral channels.
13. Slopes of the swales / ditches to be vegetated or protected from erosion until vegetation has been established. Stripped vegetative layer (peat 'sod' or 'scraw') from excavations to be stored locally and used to line slopes and base of swales / ditches or longitudinal mounds of vegetation swales at field drain discharge points.
14. Areas stripped of vegetation should be kept to a minimum.
15. Clean stone flow control check dams to be made of locally won / geologically similar well graded stone. Aggregate size for stone check dams to be typically 20- 40mm clean stone. On sloping sections of the access tracks, 40mm check dams to be protected from washing away through the placement of 100m stone on the downhill face of the check dam and by wrapping in geotextile.
16. Build up of silt levels at check dams to be removed and disposed of appropriately. Silt levels at check dams to be visually inspected as part of an ongoing drainage maintenance programme during the construction phase. Where check dams become clogged with silt or vegetation, stone check dam to be removed and replaced subsequent to the removal of silt.
17. Spacing and frequency of check dams will be dependent upon longitudinal gradient of swale.
18. Location of filtration check dams (if required) to be agreed on site with Engineer. Settlement ponds to be constructed in a manner where they may be easily infilled at a later date (post completion of the turbine base and hardstand construction). Only suitable materials excavated from the pond to be used to form part of the embankment around the pond.
19. Oil fuel should be stored within bunded containment structures.
20. silt bags will be used on site at field drain discharge locations, as necessary.

MITIGATION / DRAINAGE COINTROLS 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 (where required) 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 temporary peat 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 Sedimats 5) Collection sumps, temporary sumps, pumping systems 5) Attenuation lagoons 6) 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
- Drains
- Drains 10m buffer
- Diverted drain
- Field drains (Existing)
- Stream flow direction

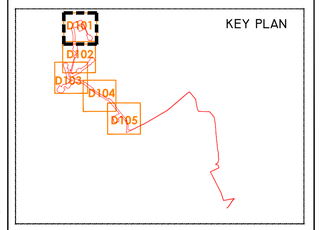
(Existing Drainage)

- Swales/Downstream Collector Drain
- Direction of flow
- Silt Fences
- Double Silt Fences
- Settlement pond - level spreader
- Check Dam 'type A'
- proposed culverts/bridges
- Collector Ditch Culvert
- TW Treated Water Discharge
- SP Settlement Pond
- Pumping Sump
- Ground slope direction

(Proposed Drainage)

- Planning Application boundary
- Existing ground surface intermediate contour (10 m interval)
- Existing ground surface major contour (5 m interval)
- Existing ground surface minor contour (1 m interval)
- Turbine and swept area
- Turbine foundation
- Crane platform
- Proposed new access road
- Existing road proposed to be upgraded
- Passing bay
- Substation
- Construction compound
- Borrow pit
- Peat repository
- Met mast platform
- Cut and fill area

KEY PLAN



DRAWING NOTES

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3. Do not scale off this drawing. Figured metric dimensions only should be taken off this drawing.
4. All dimensions are in metres.

Date	Description	Chkd	Signed

Revisions

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email: info@hydroenvironmental.ie
web: www.hydroenvironmental.ie

Client: MKO

Job: Ballynagare WF, Co. Kerry

Title: Proposed Drainage Layout

Figure No: D101

Drawing No: P1531-0-1021-A1-D101-00A	
Sheet Size: A1	Project No.: P1531-0
Scale: 1:2,000 (A1)	Drawn By: MG/GD
Date: 18/10/2021	Checked By: MG

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14. Areas stripped of vegetation should be kept to a minimum.
15. Clean stone flow control check dams to be made of locally won / geologically similar well graded stone. Aggregate size for stone check dams to be typically 20- 40mm clean stone. On sloping sections of the access tracks, 40mm check dams to be protected from washing away through the placement of 100m stone on the downhill face of the check dam and by wrapping in geotextile.
16. Build up of silt levels at check dams to be removed and disposed of appropriately. Silt levels at check dams to be visually inspected as part of an ongoing drainage maintenance programme during the construction phase. Where check dams become clogged with silt or vegetation, stone check dam to be removed and replaced subsequent to the removal of silt.
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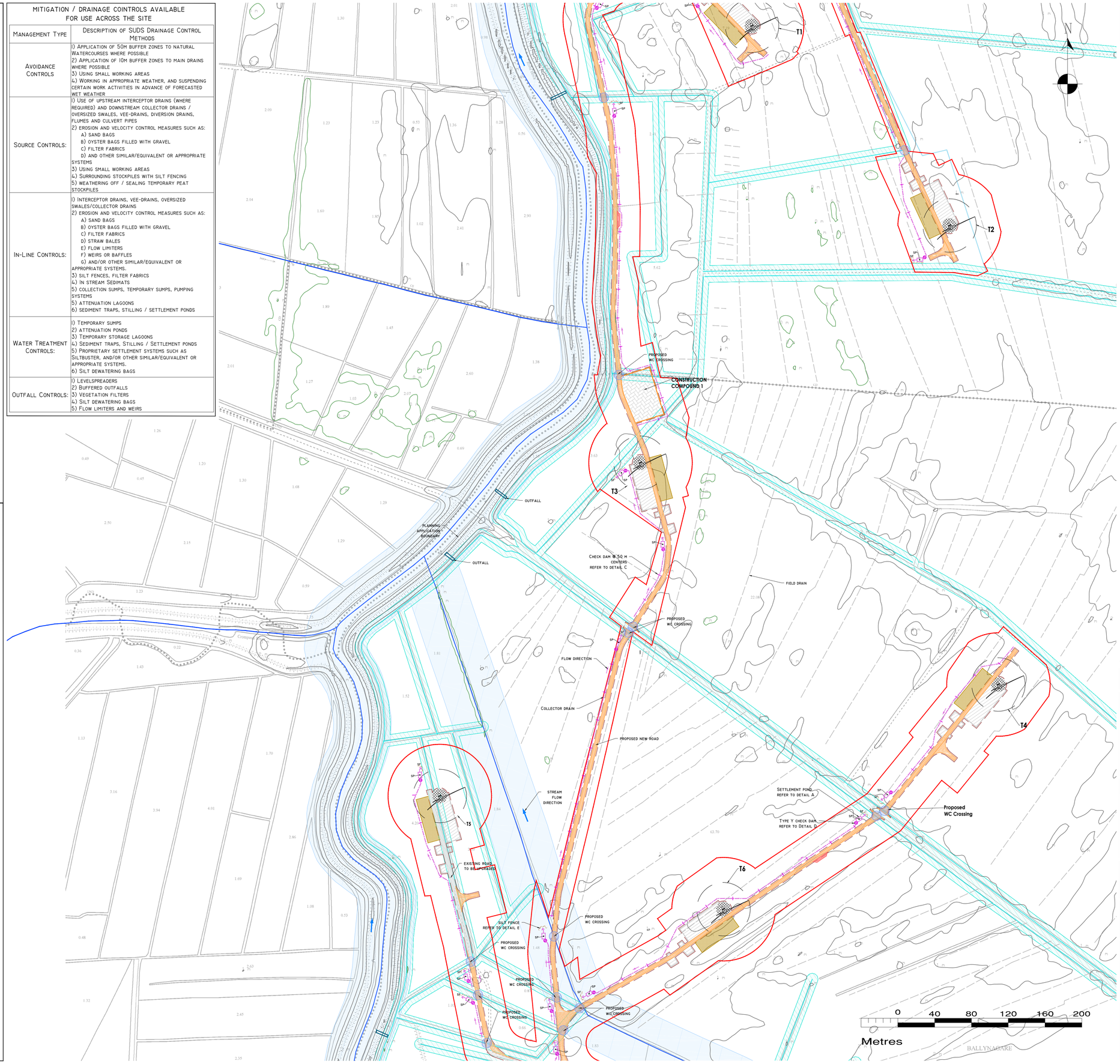

DRAWING LEGEND :

- Existing Drainage
  - Rivers/Streams
  - Rivers/Streams 50m buffer
  - Drains
  - Drains 10m buffer
  - Diverted drain
  - Field drains (Existing)
  - Stream flow direction
- Proposed Drainage
  - Swales/Downstream Collector Drain
  - Direction of flow
  - Silt Fences
  - Double Silt Fences
  - Settlement pond - level spreader
  - Check Dam 'type A'
  - Proposed culverts/bridges
  - Collector Ditch Culvert
  - TW Treated Water Discharge
  - SP Settlement Pond
  - Pumping Sump
  - Ground slope direction
- Planning Application Boundary
- Existing ground surface intermediate contour (10 m interval)
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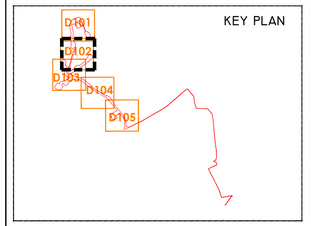
- Passing bay
- Substation
- Construction compound
- Borrow pit
- Peat repository
- Met mast platform
- Cut and fill area

KEY PLAN



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Date	Description	Chkd	Signed
Revisions			

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Client: MKO

Job: Ballynagare WF, Co. Kerry

Title: Proposed Drainage Layout

Figure No: D102

Drawing No: P1531-0-1021-A1-D102-00A	
Sheet Size: A1	Project No.: P1531-0
Scale: 1:2,000 (A1)	Drawn By: MG/GD
Date: 18/10/2021	Checked By: MG

POLLUTION PREVENTION NOTES:

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

Discharges

4. Water containing silt will not be pumped directly to any natural watercourse. All discharges to be made over open ground or into existing field drain with silt trap, and via silt bag, at a minimum of 20m from nearest watercourse unless otherwise stated.
5. No excavated material is to be stored within any surface water buffer zone, unless for designed proposed temporary storage areas.
6. Pumped water will be directed into track side ditches and treated in settlement ponds and vegetation swales prior to overland discharge.
7. Pumping of clean water from excavations / or over-pumping in drains/ditches/streams will be completed in a manner that 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.
8. Vegetation will NOT be stripped from existing drains/ditches unless absolutely necessary.

Excavations

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

Exposed Ground & Stockpiles

10. The amount of exposed ground and temporary stockpiles open at any one time will be minimised, as far as practicable.

Site tracks

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

Refuelling

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

Concrete

15. Care will be taken when completing concrete works on site to ensure no discharges occur.
16. 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.

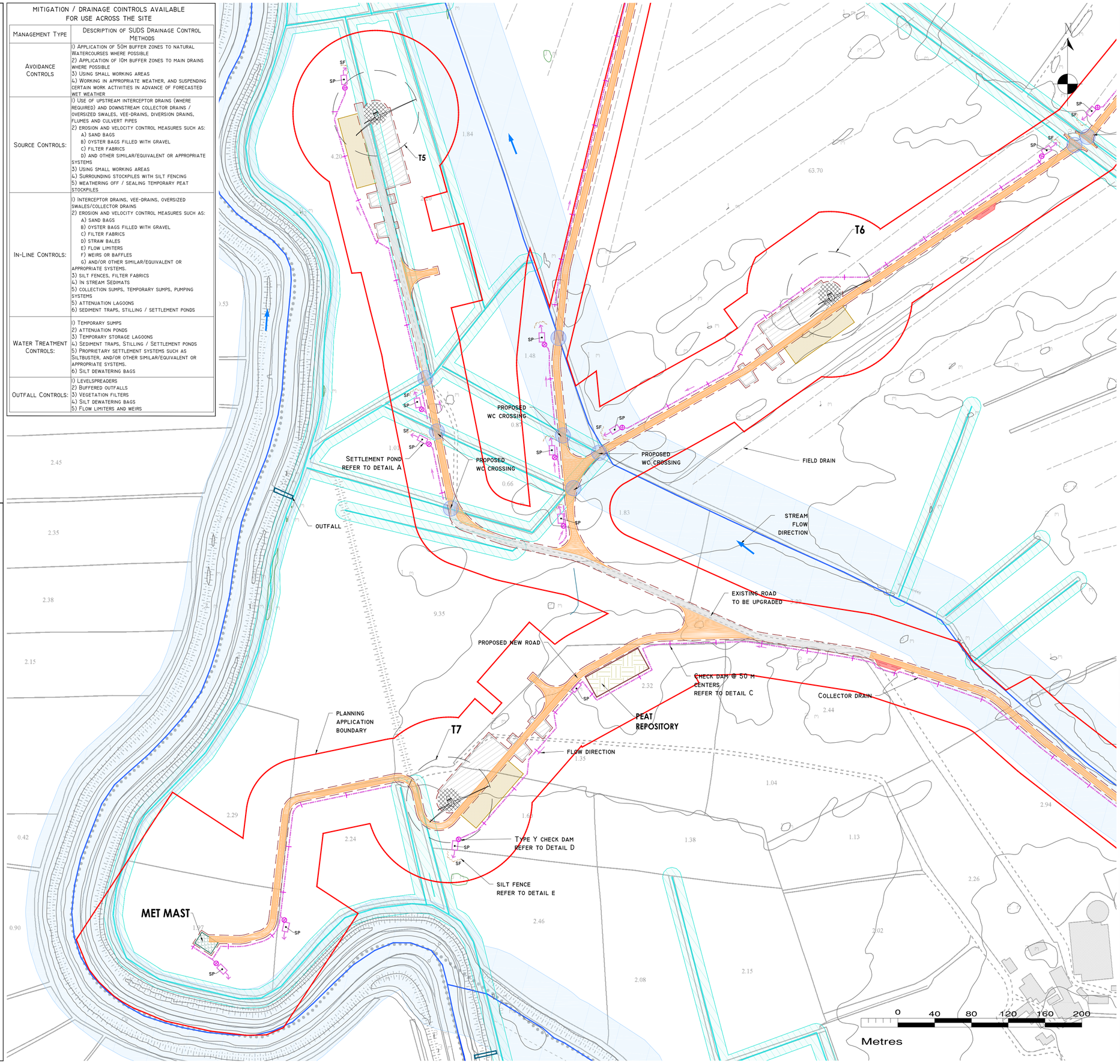
NOTIFY - The relevant authorities (Site Manager / Fisheries / NPWS / Local Authority etc.) should be notified immediately to ensure that measures can be implemented downstream to protect fisheries and other sensitive areas.

DRAINAGE NOTES:

1. Roadway surfacing design and construction to Engineer's Specification.
2. 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.
3. 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.
4. 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.
5. Interceptor swales / existing 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.
6. Drainage swales / ditches to be excavated adjacent to the access tracks. Regular cross drains to be located along access tracks to prevent excessive volumes of water collecting in the swales / ditches. Locations of cross drains to be agreed with the Engineer on site. Surface water will not be allowed to discharge directly into existing watercourses.
7. Where possible, a buffer zone of >10m to any existing watercourse will be required where over land discharges are proposed from access track swales / ditches.
8. Batters of all proposed swales / ditches to have a slope of between 1 : 1.5 to 1 : 2 depending upon depth of swale/ditch and will be left as cut to re-vegetate with local species.
9. Track side swales / ditches to be shallow with moderate gradients to prevent scouring. In steep areas check dams 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.
10. 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.
11. Straw bales / or similar and silt fences to be used also around spoil heaps to mitigate silt runoff. Silt fences may be removed when suitable vegetation cover is established.
12. Silt fences to be provide along edge of existing watercourse where works comes within <10m of edge of any ditch / ephemeral channels.
13. Slopes of the swales / ditches to be vegetated or protected from erosion until vegetation has been established. Stripped vegetative layer (peat 'sod' or 'scraw') from excavations to be stored locally and used to line slopes and base of swales / ditches or longitudinal mounds of vegetation swales at field drain discharge points.
14. Areas stripped of vegetation should be kept to a minimum.
15. Clean stone flow control check dams to be made of locally won / geologically similar well graded stone. Aggregate size for stone check dams to be typically 20- 40mm clean stone. On sloping sections of the access tracks, 40mm check dams to be protected from washing away through the placement of 100m stone on the downhill face of the check dam and by wrapping in geotextile.
16. Build up of silt levels at check dams to be removed and disposed of appropriately. Silt levels at check dams to be visually inspected as part of an ongoing drainage maintenance programme during the construction phase. Where check dams become clogged with silt or vegetation, stone check dam to be removed and replaced subsequent to the removal of silt.
17. Spacing and frequency of check dams will be dependent upon longitudinal gradient of swale.
18. Location of filtration check dams (if required) to be agreed on site with Engineer. Settlement ponds to be constructed in a manner where they may be easily infilled at a later date (post completion of the turbine base and hardstand construction). Only suitable materials excavated from the pond to be used to form part of the embankment around the pond.
19. Oil fuel should be stored within bunded containment structures.
20. silt bags will be used on site at field drain discharge locations, as necessary.

MITIGATION / DRAINAGE COINTROLS 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 (where required) 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 temporary peat 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 Sedimats 5) Collection sumps, temporary sumps, pumping systems 5) Attenuation lagoons 6) 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
- Drains
- Drains 10m buffer
- Diverted drain
- Field drains (Existing)
- Stream flow direction

(Existing Drainage)

- Swales/Downstream Collector Drain
- Direction of flow
- Silt Fences
- Double Silt Fences
- Settlement pond - level spreader
- Check Dam 'type A'
- proposed culverts/bridges
- Collector Ditch Culvert
- TW Treated Water Discharge
- SP Settlement Pond
- Pumping Sump
- ground slope direction

(Proposed Drainage)

- Planning Application Boundary
- Existing ground surface intermediate contour (10 m interval)
- Existing ground surface major contour (5 m interval)
- Existing ground surface minor contour (1 m interval)
- Turbine and swept area
- Turbine foundation
- Crane platform
- Proposed new access road
- Existing road proposed to be upgraded
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- Substation
- Construction compound
- Borrow pit
- Peat repository
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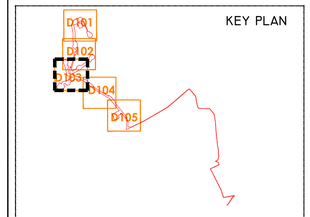
KEY PLAN



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Client: MKO

Job: Ballynagare WF, Co. Kerry

Title: Proposed Drainage Layout

Figure No: D103

Drawing No: P1531-0-1021-A1-D103-00A	
Sheet Size: A1	Project No.: P1531-0
Scale: 1:2,000 (A1)	Drawn By: MG/GD
Date: 18/10/2021	Checked By: MG

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Exposed Ground & Stockpiles

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Site tracks

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12. Check dams to be inspected and cleaned regularly.

Refueling

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DRAINAGE NOTES:

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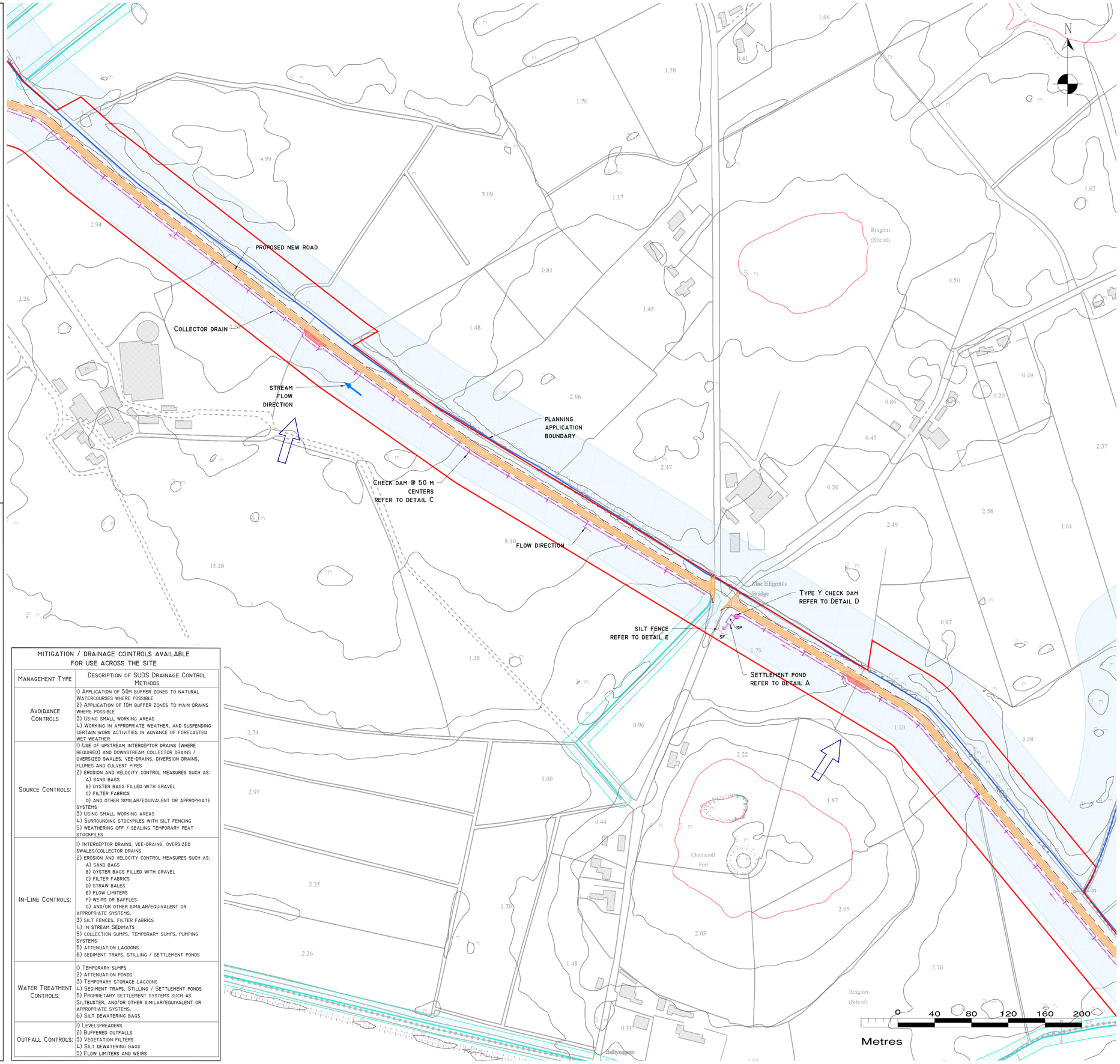

DRAWING LEGEND :

- Rivers/streams
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- Drains
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(Existing Drainage)

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(Proposed Drainage)

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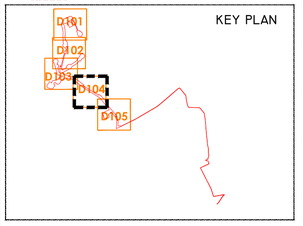
KEY PLAN



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Date	Description	Chkd	Signed

Revisions

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Client: MKO

Job: Ballynagare WF, Co. Kerry

Title: Proposed Drainage Layout

Figure No: D104

Drawing No: P1531-0-1021-A1-D104-00A	
Sheet Size: A1	Project No.: P1531-0
Scale: 1:2,000 (A1)	Drawn By: MG/GD
Date: 18/10/2021	Checked By: MG

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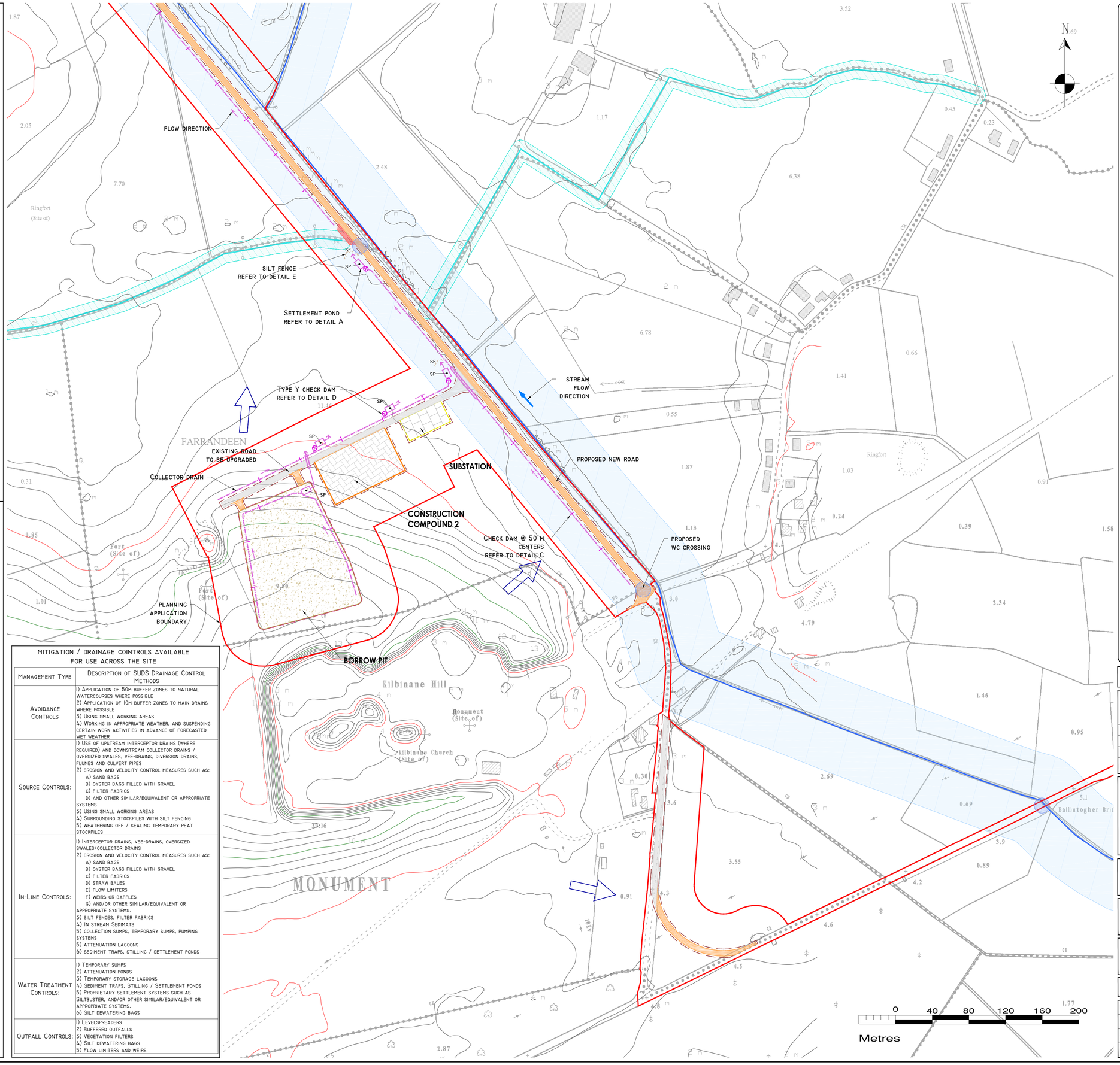
14. Areas stripped of vegetation should be kept to a minimum.
15. Clean stone flow control check dams to be made of locally won / geologically similar well graded stone. Aggregate size for stone check dams to be typically 20- 40mm clean stone. On sloping sections of the access tracks, 40mm check dams to be protected from washing away through the placement of 100m stone on the downhill face of the check dam and by wrapping in geotextile.
16. Build up of silt levels at check dams to be removed and disposed of appropriately. Silt levels at check dams to be visually inspected as part of an ongoing drainage maintenance programme during the construction phase. Where check dams become clogged with silt or vegetation, stone check dam to be removed and replaced subsequent to the removal of silt.
17. Spacing and frequency of check dams will be dependent upon longitudinal gradient of swale.
18. Location of filtration check dams (if required) to be agreed on site with Engineer. Settlement ponds to be constructed in a manner where they may be easily infilled at a later date (post completion of the turbine base and hardstand construction). Only suitable materials excavated from the pond to be used to form part of the embankment around the pond.
19. Oil fuel should be stored within bunded containment structures.
20. silt bags will be used on site at field drain discharge locations, as necessary.

MITIGATION / DRAINAGE COINTROLS 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 (where required) 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 temporary peat 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 Sedimats 5) collection sumps, temporary sumps, pumping systems 5) attenuation lagoons 6) 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
- Drains
- Drains 10m buffer
- Diverted drain
- Field drains (Existing)
- Stream flow direction

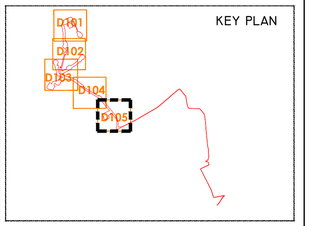
(Existing Drainage)

- Swales/Downstream Collector Drain
- Direction of flow
- Silt Fences
- Double Silt Fences
- Settlement pond - level spreader
- Check Dam 'type A'
- Proposed culverts/bridges
- Collector Ditch Culvert
- TW Treated Water Discharge
- SP Settlement Pond
- Pumping Sump
- Ground slope direction

(Proposed Drainage)

- Planning Application Boundary
- Existing ground surface intermediate contour (10 m interval)
- Existing ground surface major contour (5 m interval)
- Existing ground surface minor contour (1 m interval)
- Turbine and swept area
- Turbine foundation
- Crane platform
- Proposed new access road
- Existing road proposed to be upgraded
- Passing bay
- Substation
- Construction compound
- Borrow pit
- Peat repository
- Met mast platform
- Cut and fill area

KEY PLAN



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4. All dimensions are in metres.

Date	Description	Chkd	Signed

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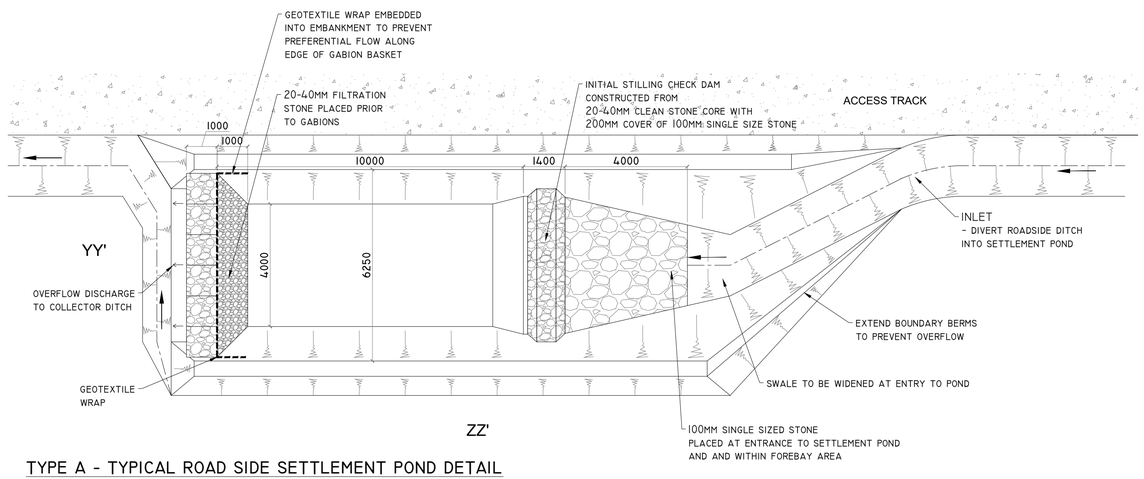
Job: Ballynagare WF, Co. Kerry

Title: Proposed Drainage Layout

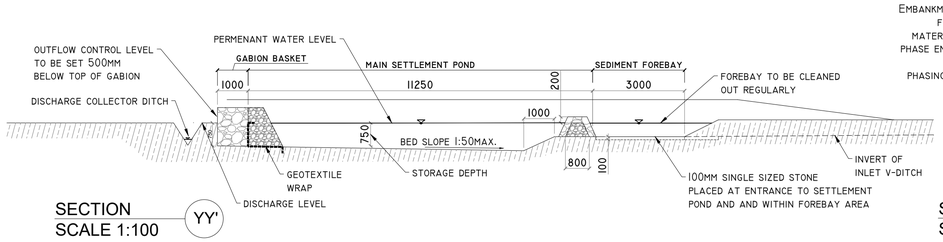
Figure No: DI05

Drawing No: P1531-0-1021-A1-D105-00A	
Sheet Size: A1	Project No.: P1531-0
Scale: 1:2,000 (A1)	Drawn By: MG/GD
Date: 18/10/2021	Checked By: MG

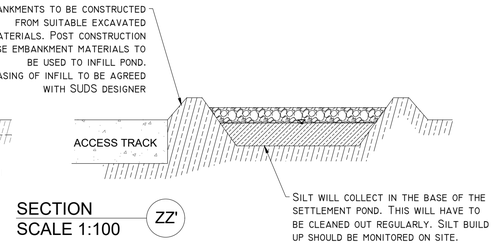
DETAIL A1



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



SECTION YY'
SCALE 1:100



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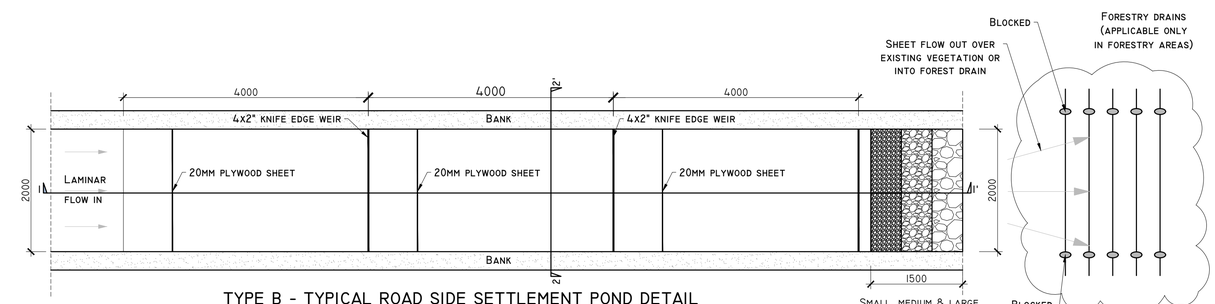
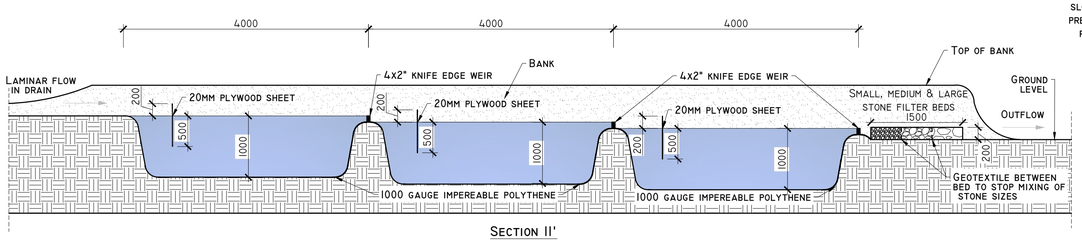
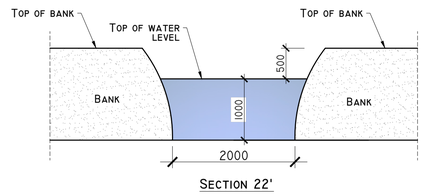


TYPE B - TYPICAL ROAD SIDE SETTLEMENT POND DETAIL
SCALE 1:200 (NOTE DIMENSIONS VARY DEPENDING ON CATCHMENT SIZE - SEE ATTACHED TABLE)

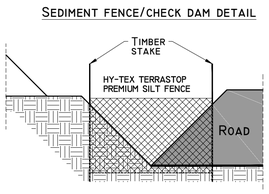


SECTION 11'



SECTION 22'

SEDIMENT FENCE/CHECK DAM DETAIL



DETAIL A2

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08/10/21	Planning	MG	MG
Date	Description	Chkd	Signed

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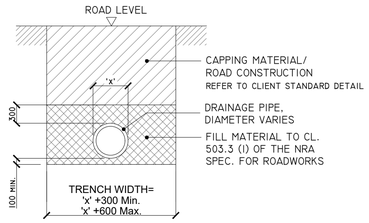
Job: Ballynagare WF, Co. Kerry

Title: Drainage Details 1

Figure No: D501

Drawing No: P1531-0-1021-A1-D501-00A	
Sheet Size: A1	Project No.: P1531-0
Scale: as shown (A1)	Drawn By: MG/GD
Date: 18/10/2021	Checked By: M.G.

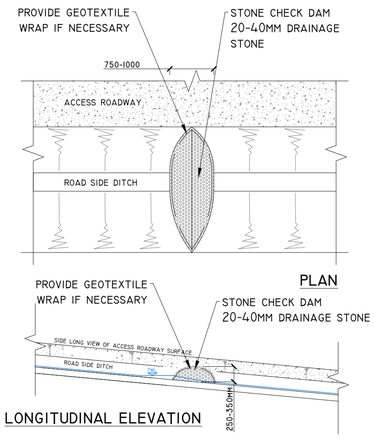
DETAIL B



'TYPE B' CULVERT - DRAINAGE CROSSING BENEATH EXCAVATED ROAD

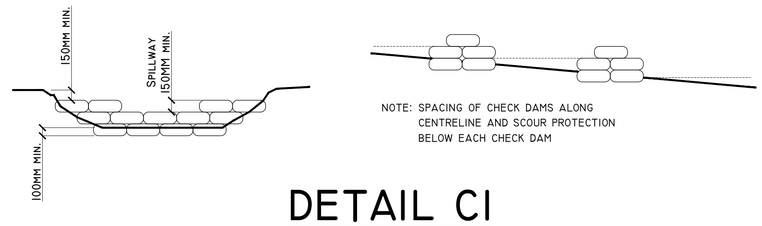
SCALE 1:50

DETAIL C



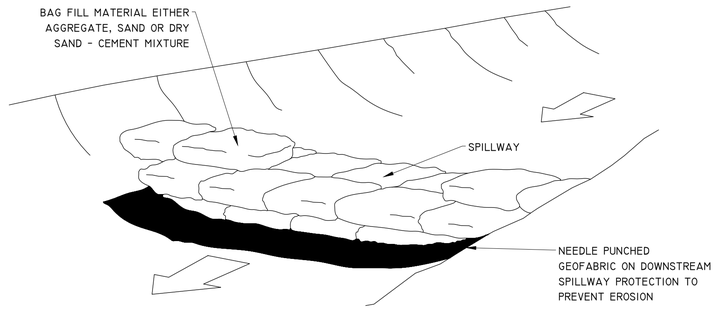
TYPE X - CHECK DAM DETAIL

SCALE 1:50



NOTE: SPACING OF CHECK DAMS ALONG CENTRELINE AND SCOUR PROTECTION BELOW EACH CHECK DAM

DETAIL C1



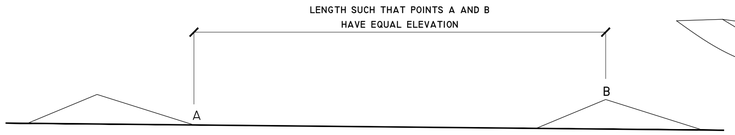
TEMPORARY CHECK DAM / SETTLEMENT POND OVERFLOW
SAND FILLED BAG CONSTRUCTION

SCHEMATIC - NOT TO SCALE

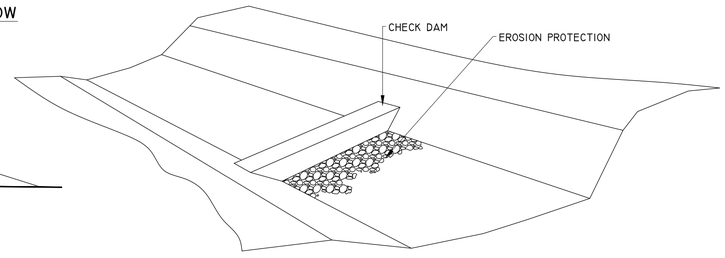
DETAIL C2

TEMPORARY CHECK DAM / SETTLEMENT POND OVERFLOW

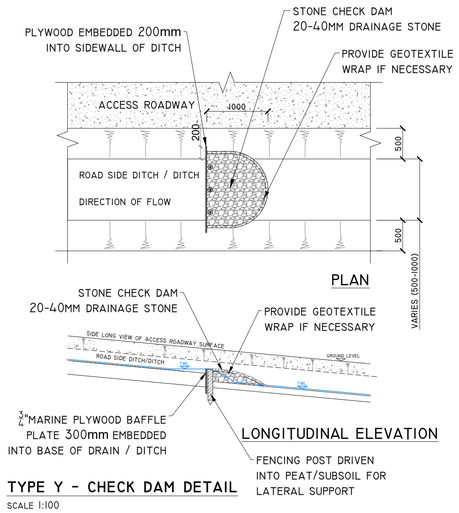
SCHEMATIC - NOT TO SCALE



ELEVATION



DETAIL D



TYPE Y - CHECK DAM DETAIL

SCALE 1:100

Date	Description	Chkd	Signed
08/10/21	Planning	MG	MG

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Job: BALLYNAGARE WF, CO. KERRY

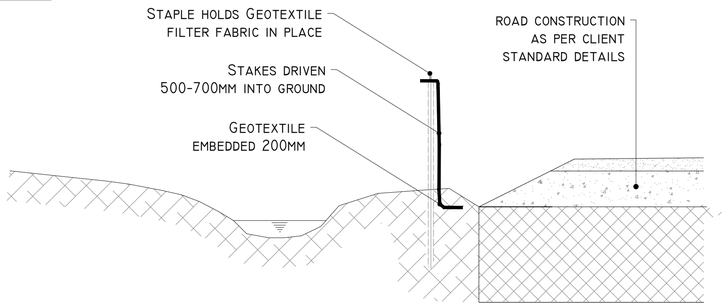
Title: DRAINAGE DETAILS 2

Figure No: D502

Drawing No: P1531-0-1021-A1-D502-00A

Sheet Size: A1	Project No.: P1531-0
Scale: as shown (A1)	Drawn By: MG/GD
Date: 18/10/2021	Checked By: M.G.

DETAIL E

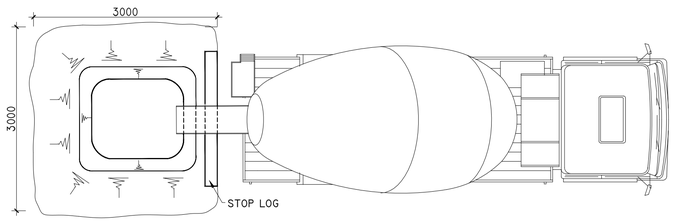


SILT FENCE FOR WATERCOURSE PROTECTION
SCALE 1:25

DETAIL F

TEMPORARY CONCRETE WASH OUT PIT
SCALE 1:50

PLAN



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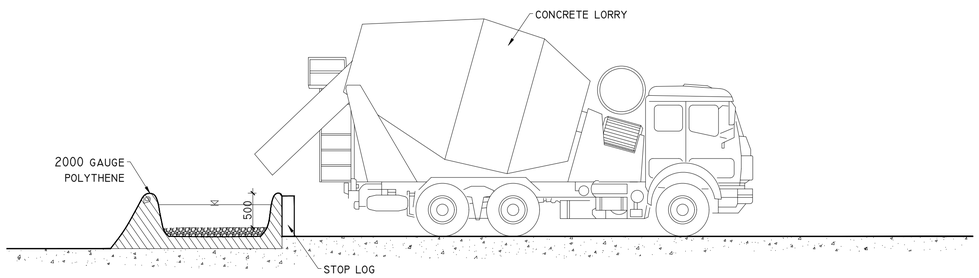

DETAIL G-1

LEVEL SPREADER DETAIL
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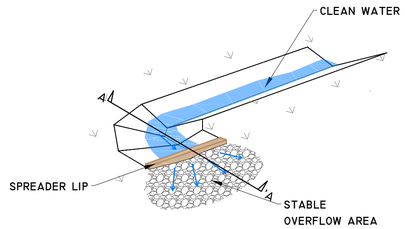
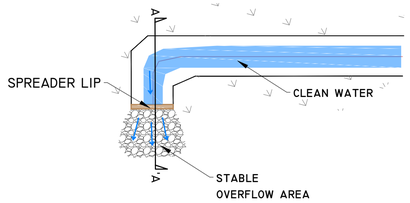
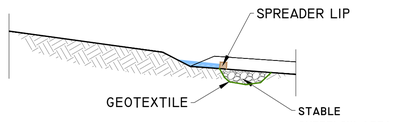


PLAN



SECTION AA'



DETAIL G-2

LEVEL SPREADER DETAIL
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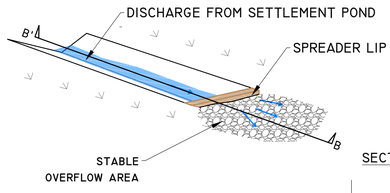
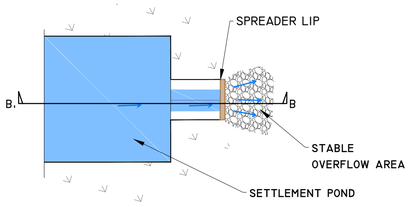
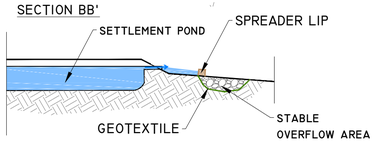


PLAN



SECTION BB'



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08/10/21	Planning	MG	MG

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Title: Drainage Details 3

Figure No: D503

Drawing No: P1531-0-1021-A1-D503-00A	
Sheet Size: A1	Project No.: P1531-0
Scale: as shown (A1)	Drawn By: MG/GD
Date: 18/10/2021	Checked By: M.G.