



APPENDIX 7

**GRID CONNECTION
INFRASTRUTURE DESIGN
DRAWINGS**



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7. Exact location of cable/joint bay in the road cuttings to be subject to ESB specifications and agreement with Westmeath County Council.

- Drawing Legend**
- EIAR Site Boundary
 - Underground Electrical Cabling Route
 - ▬ Cabling Construction Track
 - Joint Bay
 - Culvert Crossing
 - Watercourse Crossing



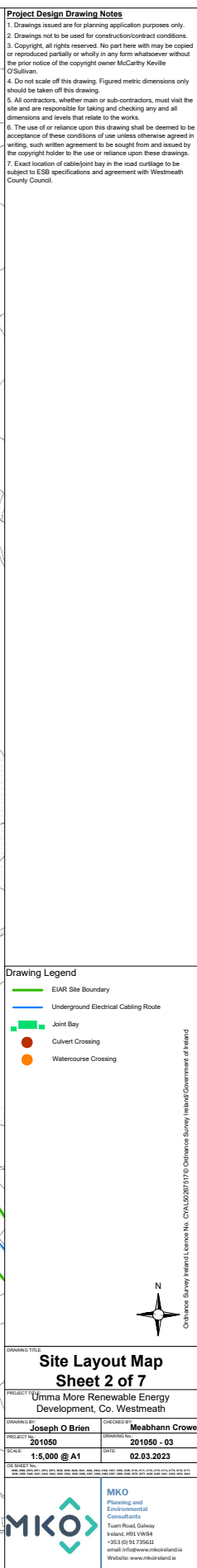
DRAWING TITLE: **Site Layout Map
Sheet 1 of 7**

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

DRAWING BY: Joseph O'Brien	CHECKED BY: Meabhann Crowe
PROJECT: 201050	DRAWING NO.: 201050 - 02
SCALE: 1:5,000 @ A1	DATE: 02.03.2023

00 SHEET 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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Website: www.mkoireland.ie



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7. Exact location of cable/bay in the road cartilage to be subject to GIS specifications and agreement with Westminster City Council.

Drawing Legend

- EIAR Site Boundary
- Underground Electrical Cabling Route
- Joint Bay
-  Culvert Crossing
-  Watercourse Crossing



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DRAWING TITLE:

Site Layout Map
Sheet 2 of 7

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

DRAWING BY: Joseph O'Brien	CHECKED BY: Meabhann Crowe
--------------------------------------	--------------------------------------

PROJECT No.: 201050	DRAWING No.: 201050 - 03
SCALE:	DATE:

[illegible]

	MKO
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7. The use of or reliance upon cable/joint bay in the road cartilage to be subject to the ESB specifications and agreement with Westmeath County Council.

Drawing Legend

- EIAR Site Boundary
-  Underground Electrical Cabling Route
-  Joint Bay
-  Culvert Crossing
-  Watercourse Crossing



1000

DRAWING TITLE:
Site Layout Map
Sheet 3 of 7

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

DRAWING BY:	Joseph O'Brien	CHECKED BY:	Meabhann Crowe
PROJECT No.:	201050	DRAWING No.:	201050 - 04
SCALE:	1:5,000 @ A1	DATE:	02.03.2023
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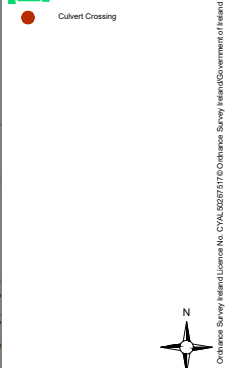


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 7. Exact location of cable/joint bay in the road cuttings to be subject to ESB specifications and agreement with Westmeath County Council.

- Drawing Legend**
- EIAR Site Boundary
 - Underground Electrical Cabling Route
 - Joint Bay
 - Culvert Crossing

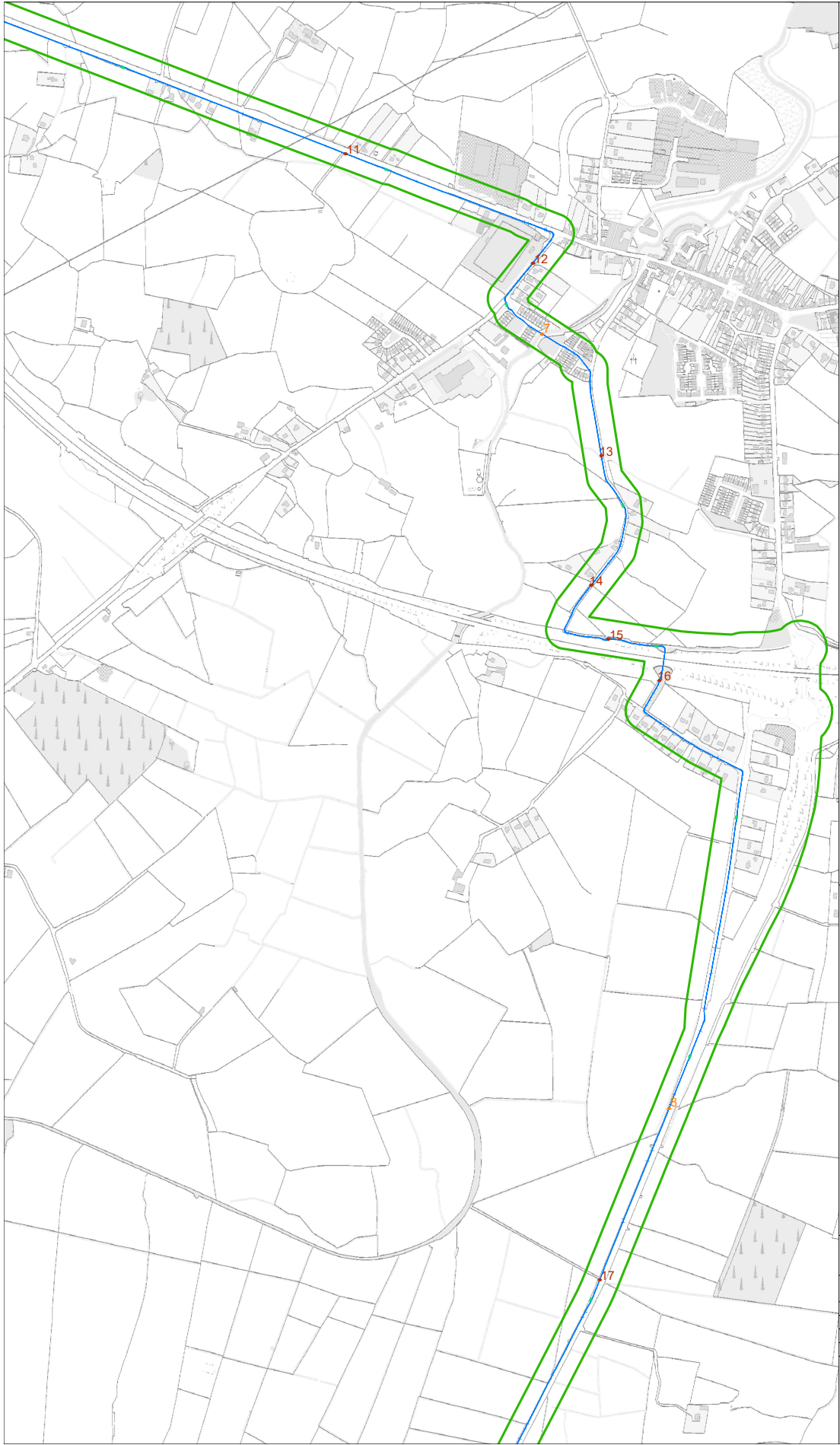


**Site Layout Map
Sheet 4 of 7**

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

PROJECT TITLE	Uimma More Renewable Energy Development, Co. Westmeath	
DRAWING BY	Joseph O'Brien	CHECKED BY
PROJECT	201050	DRAWING NO.
SCALE	1:5,000 @ A1	DATE
DATE	02.03.2023	

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7. Exact location of cable/joint bay in the road cut/ridge to be subject to ESB specifications and agreement with Westmeath County Council.

Drawing Legend

- EIAR Site Boundary
- Underground Electrical Cabling Route
- Joint Bay
- Culvert Crossing
- Watercourse Crossing

Site Layout Map
Sheet 5 of 7

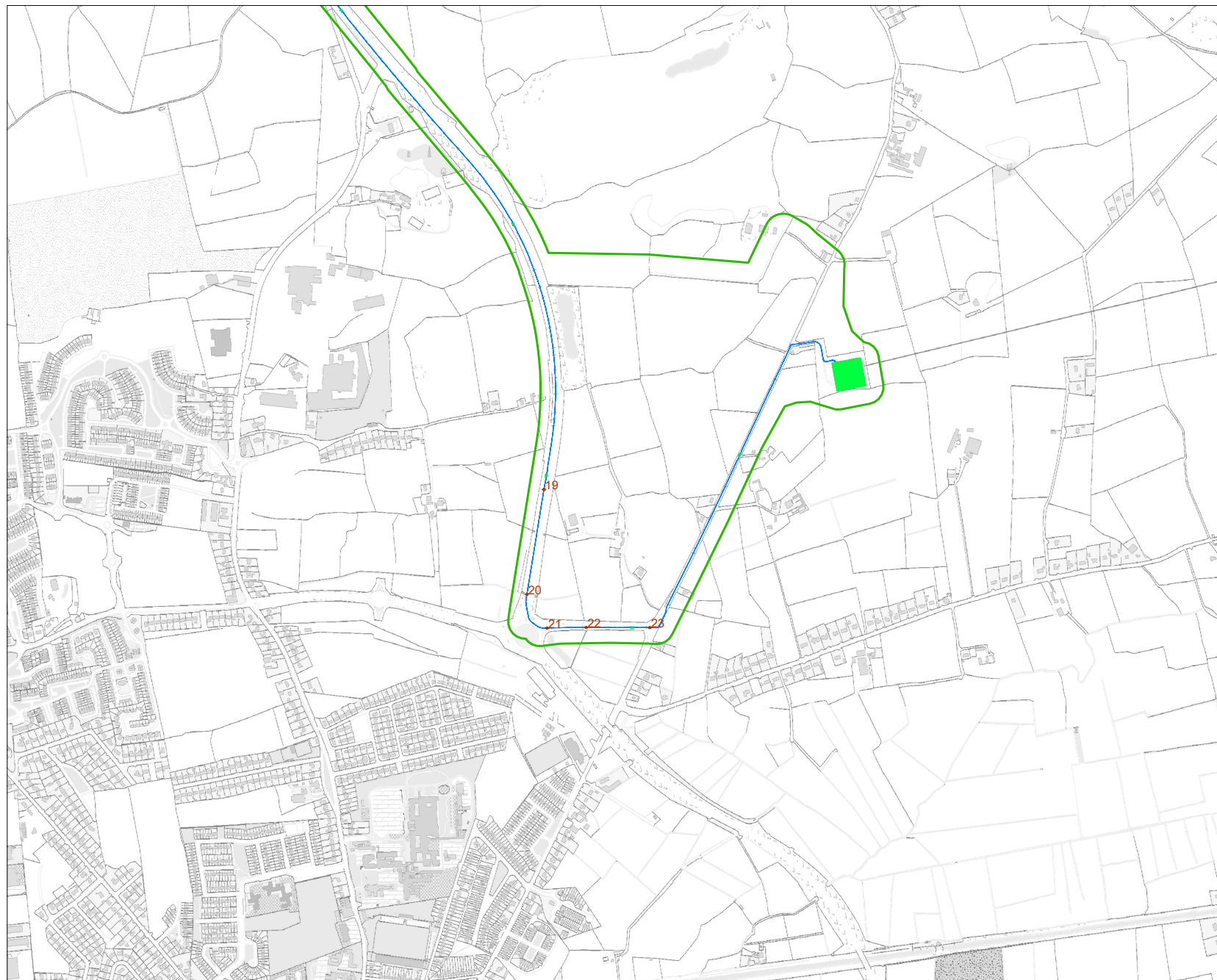
PROJECT: Úmma More Renewable Energy Development, Co. Westmeath

DRAWING BY: Joseph O'Brien
PROJECT: 201050
SCALE: 1:5,000 @ A1

CHECKED BY: Meabhann Crowe
DESIGNED BY: 201050 - 06
DATE: 02.03.2023

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Project Design Drawing Notes

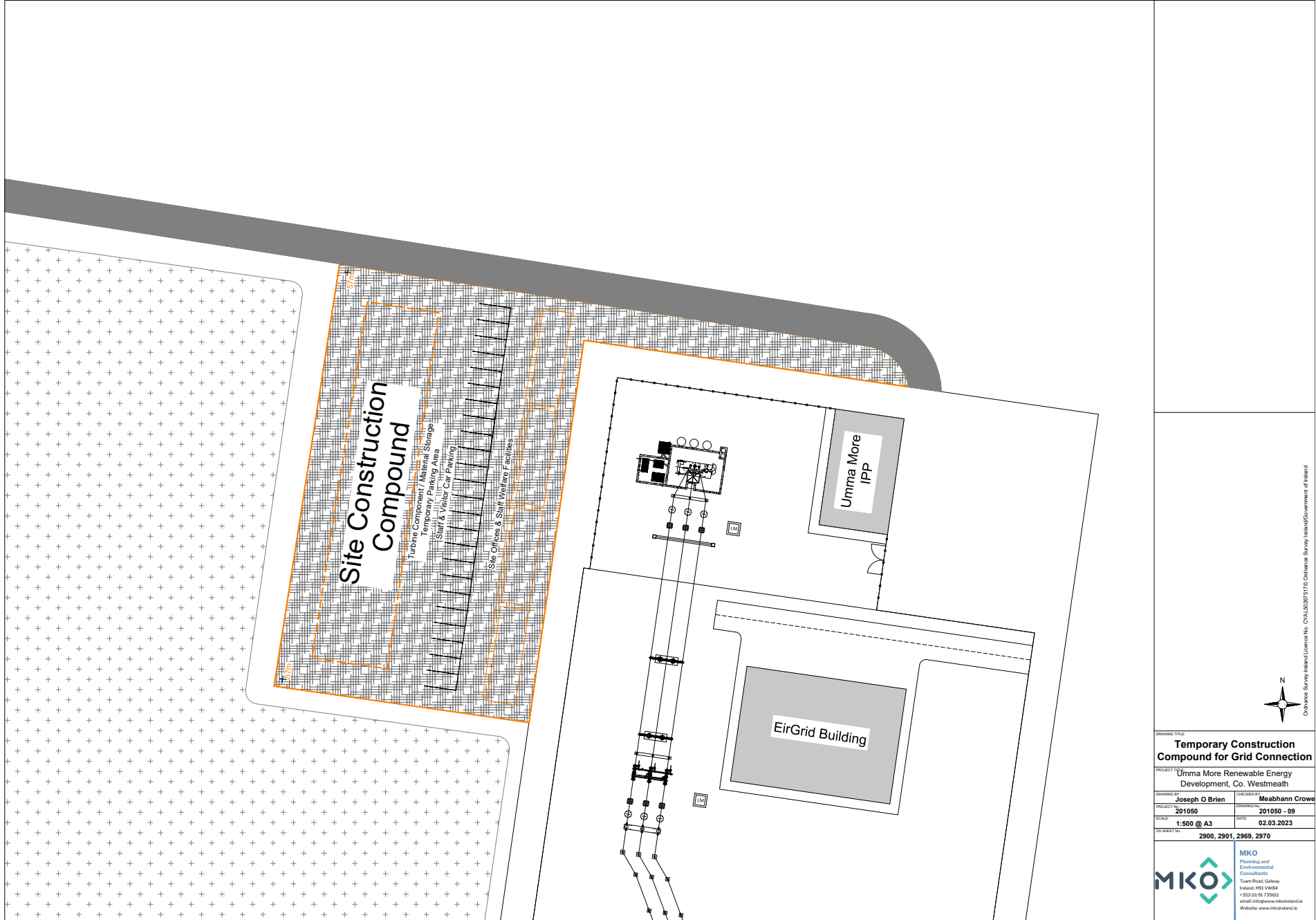
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7. Exact location of cable/joint bay in the road outline to be supplied by the ESI in accordance with agreement with Westmeath County Council.

Drawing Legend

-  EIA Site Boundary
-  Underground Electrical Cabling Route
-  Joint Bay
-  Culvert Crossing
-  Thornsberry 110kV Substation



DRAWING TITLE	
<h1>Site Layout Map</h1> <h2>Sheet 7 of 7</h2>	
PROJECT TITLE	
Umma More Renewable Energy Development, Co. Westmeath	
DRAWING NO.	CHECKED BY
Joseph O'Brien	Meabhann Crowe
PROJECT NO.	DATE
201050	201050 - 08
SCALE	DATE
1:5,000 @ A1	02.03.2023



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DRAWING TITLE

Temporary Construction Compound for Grid Connection

PROJECT TITLE

Umma More Renewable Energy Development, Co. Westmeath

DRAWING BY

Joseph O'Brien

CHECKED BY

Meabhann Crowe

PROJECT NO.

201050

DRAWING NO.

201050 - 09

SCALE


1:500 @ A3

DATE

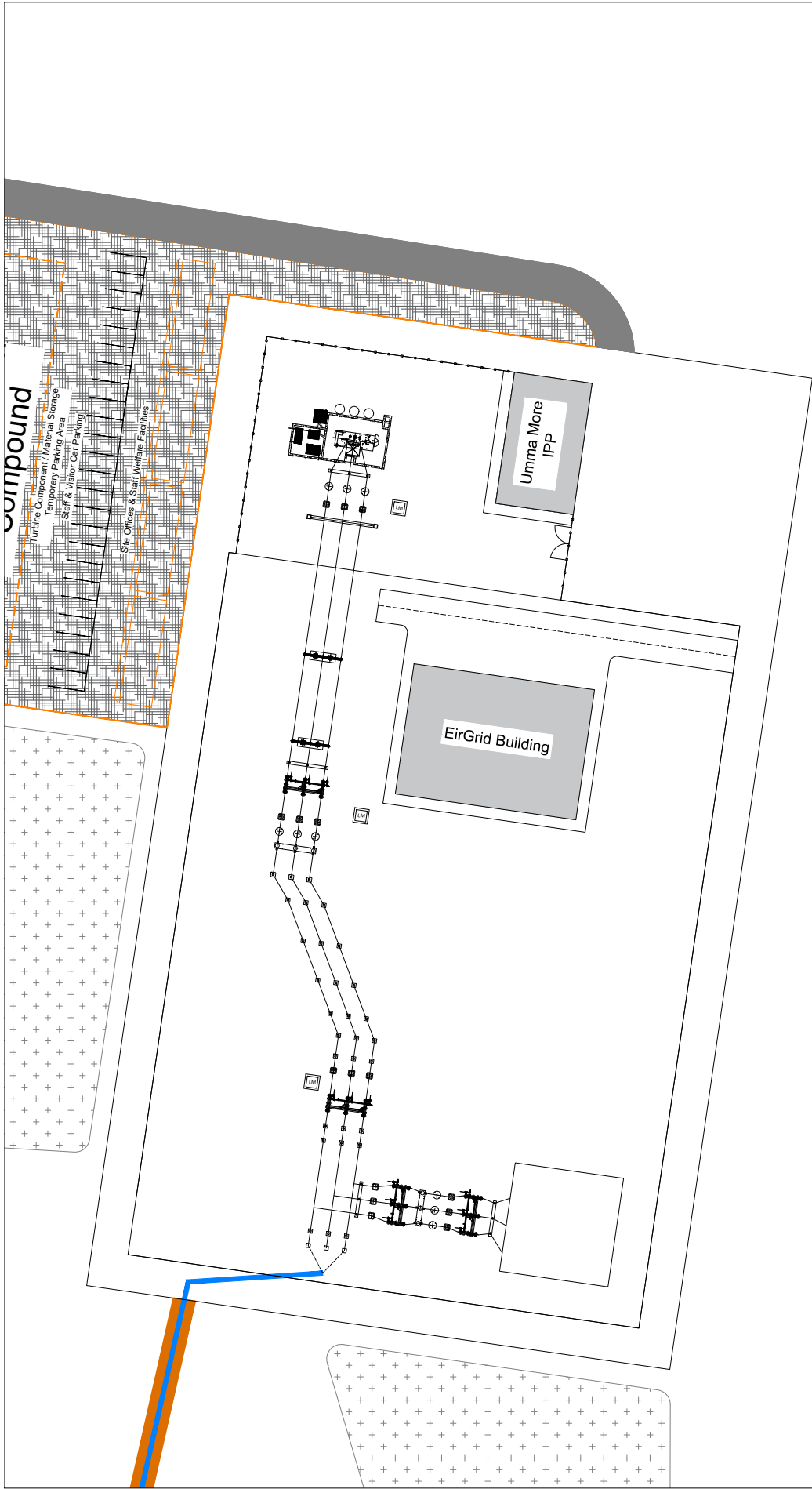
02.03.2023

ON SHEET NO.

2900, 2901, 2969, 2970



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**Onsite 110kV Substation
Drawing Layout**

PROJECT: Umma More Renewable Energy
Development, Co. Westmeath

DRAWING BY: Joseph O'Brien
PROJECT: 201050

CHECKED BY: Meabhann Crowe
DRAWING NO.: 201050 - 10

SCALE: 1:500 @ A3
DATE: 06.03.2023

DESIGNED BY: [Name]
DATE: [Date]

APPROVED BY: [Name]
DATE: [Date]

PROJECT MANAGER: [Name]
DATE: [Date]

CLIENT: [Name]
DATE: [Date]

REVISIONS: [List]
DATE: [Date]

NOTES: [List]
DATE: [Date]

PROJECT LOCATION: [Address]
DATE: [Date]

PROJECT REFERENCE: [Reference]
DATE: [Date]

PROJECT STATUS: [Status]
DATE: [Date]

PROJECT CONTACT: [Contact]
DATE: [Date]

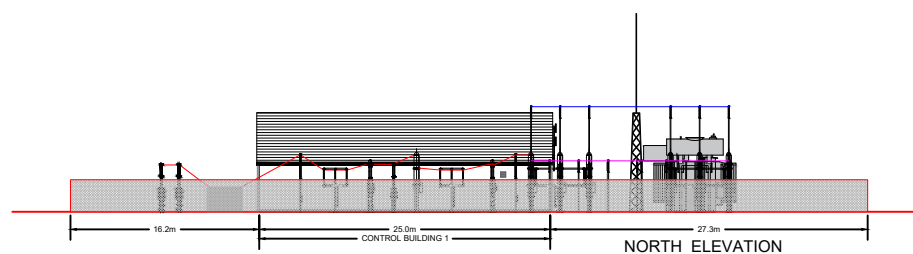
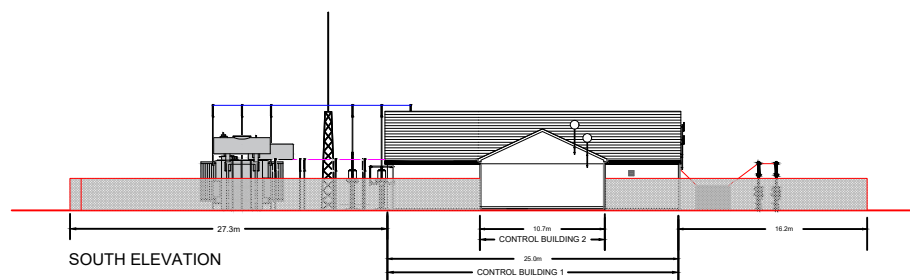
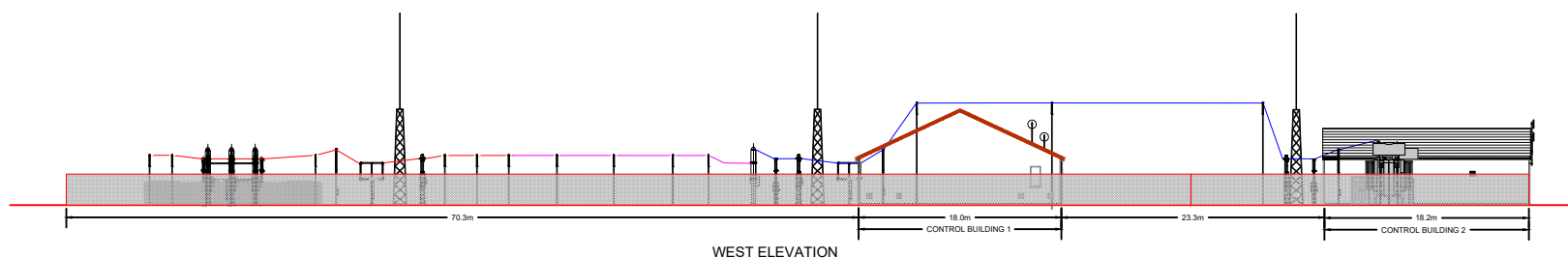
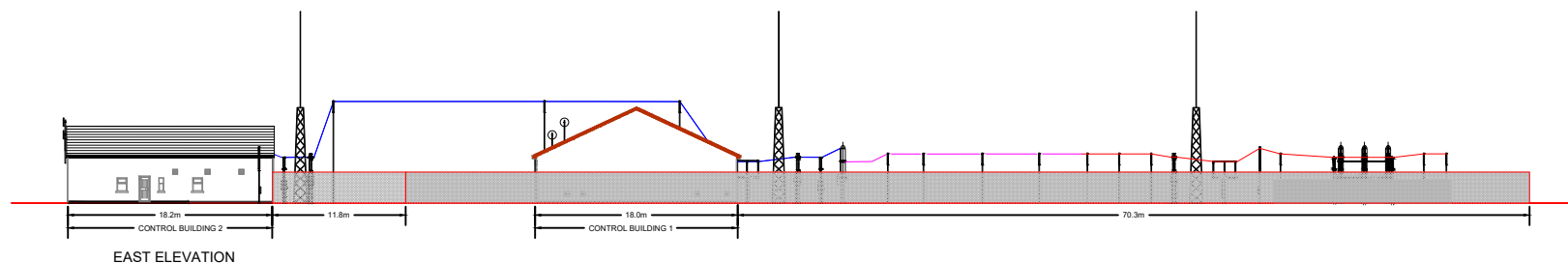
PROJECT APPROVAL: [Approval]
DATE: [Date]

PROJECT SIGNATURE: [Signature]
DATE: [Date]

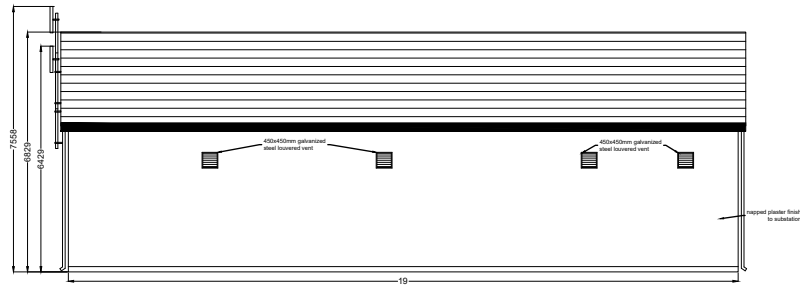
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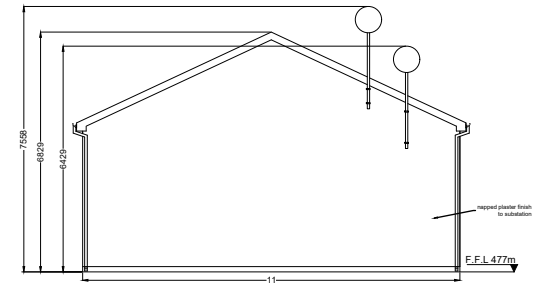
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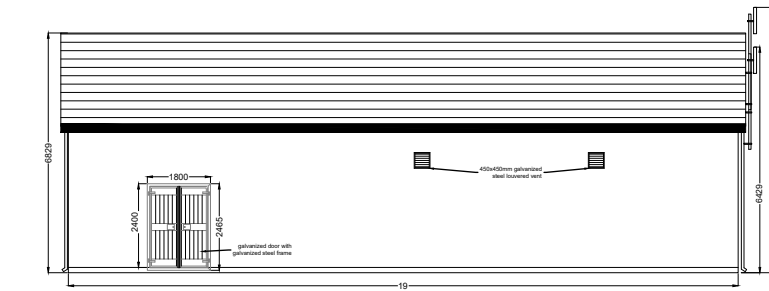
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Onsite 110kV Substation Drawing Elevations	
PROJECT TITLE	
Uimma More Renewable Energy Development, Co. Westmeath	
DRAWING BY	CHECKED BY
Joseph O'Brien	Meabhann Crowe
PROJECT NO.	DRAWING NO.
201050	201050 - 11
SCALE	DATE
1:200 @ A1	02.03.2023
 MKO Planning and Environmental Consultants Team Road, Galway Ireland, H91 V954 +353 (0) 91 735611 email: info@www.mkoland.ie Website: www.mkoland.ie	



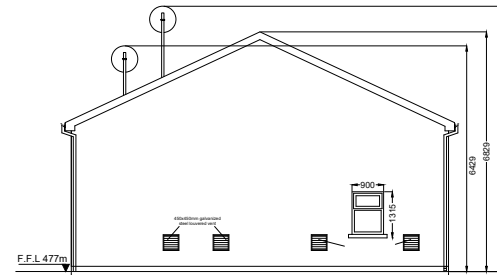
North Elevation



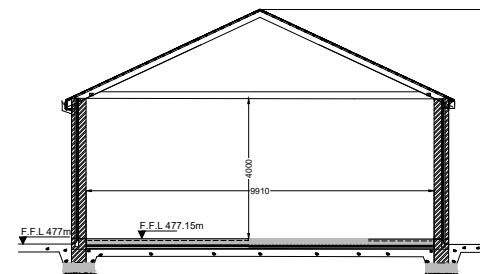
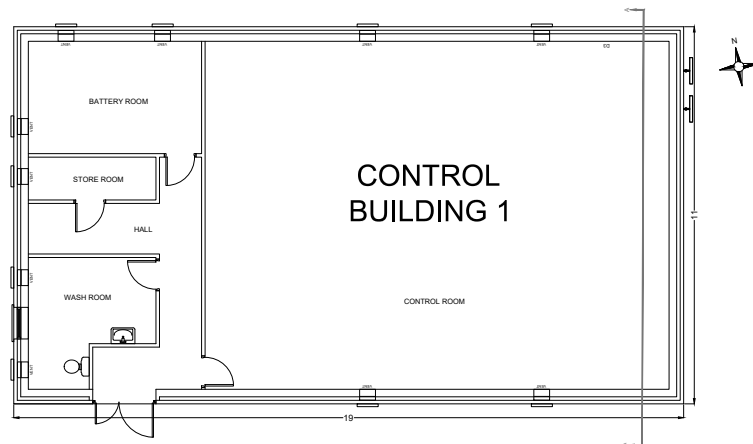
East Elevation



South Elevation

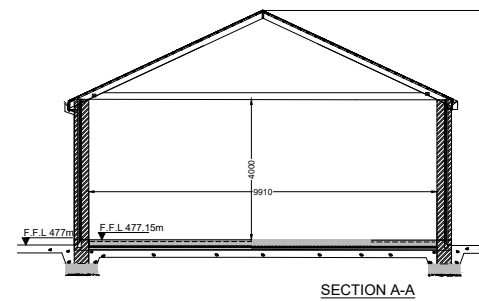
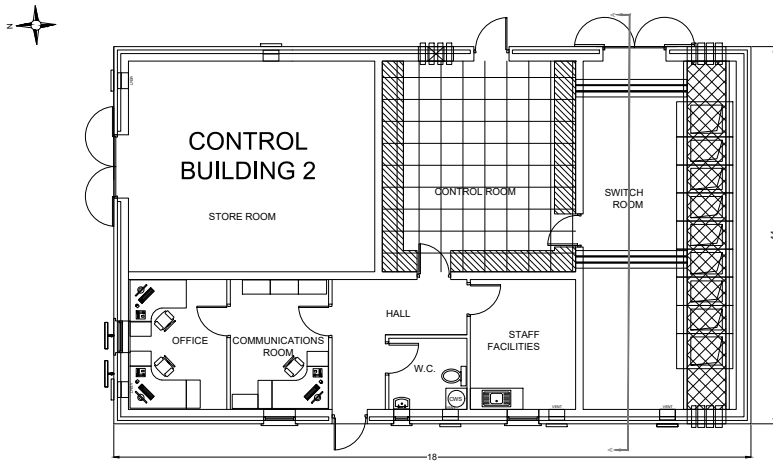
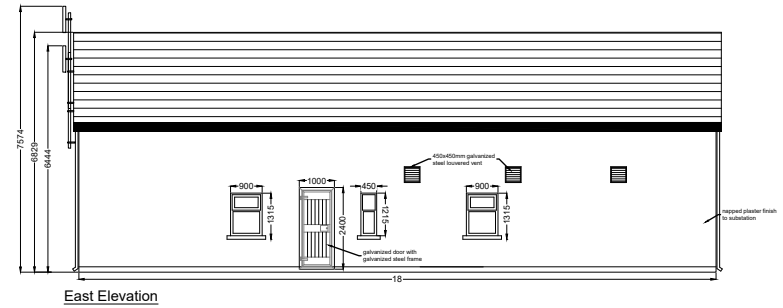
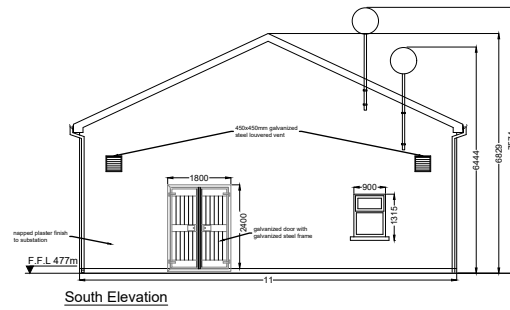
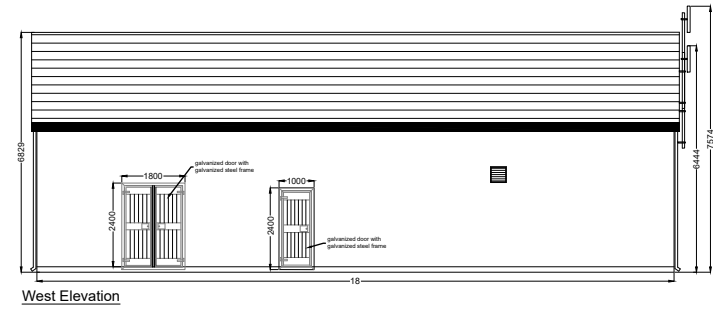
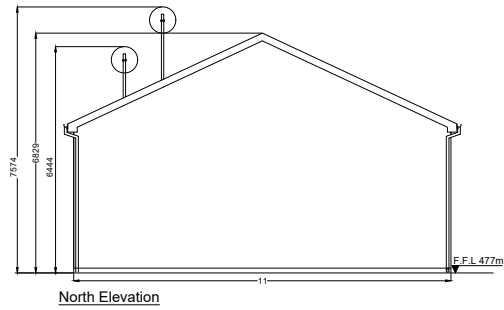


West Elevation



SECTION A-A

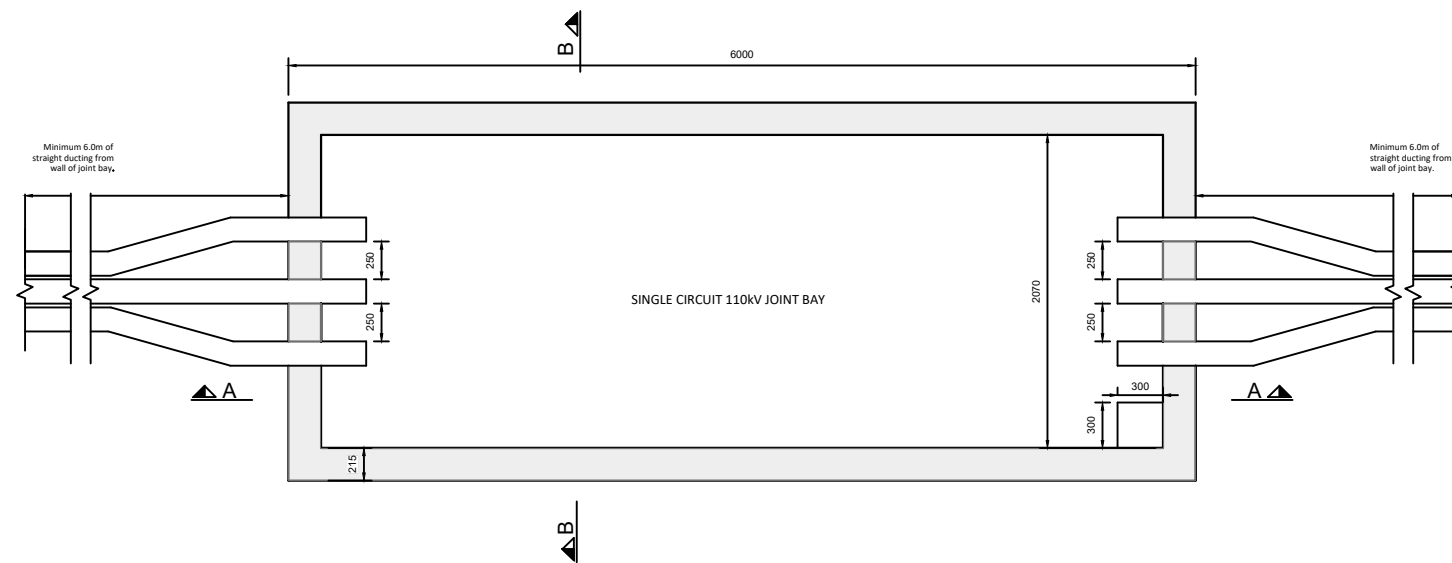
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Control Building 1 Elevations & Section			
PROJECT TITLE			
Umma More Renewable Energy Development, Co. Westmeath			
DRAWING BY		CHECKED BY	
Joseph O'Brien		Meabhann Crowe	
PROJECT NO.		DRAWING NO.	
201050		Fig 4-15	
SCALE		DATE	
1:100 @ A2		08.03.2023	
		MKO Planning and Environmental Consultants Tuam Road, Galway Ireland, V91 YW84 +353 (0) 91 756663 email: info@www.mkoireland.ie Website: www.mkoireland.ie	



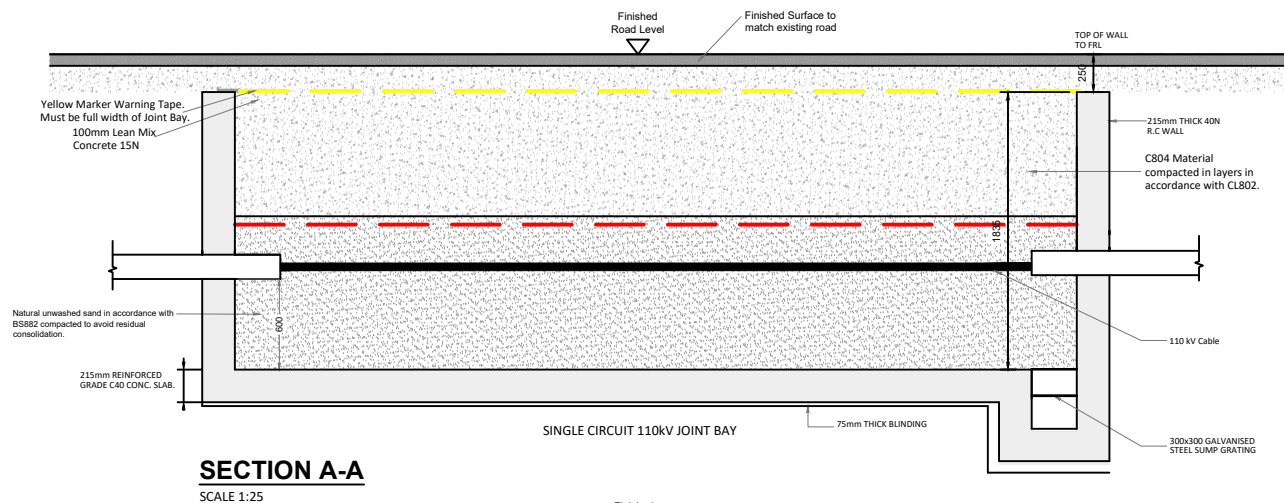
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PROJECT TITLE: Umma More Renewable Energy Development, Co. Westmeath	
DRAWING BY: Joseph O'Brien	DRAWING NO: Meabhann Crowe
PROJECT NO: 201050	FIG: Fig 4-16
SCALE: 1:100 @ A2	DATE: 08.03.2023
 MKO Planning and Environmental Consultants Tuam Road, Galway Ireland, V91 YW84 +353 (0) 91 75663 email: info@www.mkoireland.ie Website: www.mkoireland.ie	



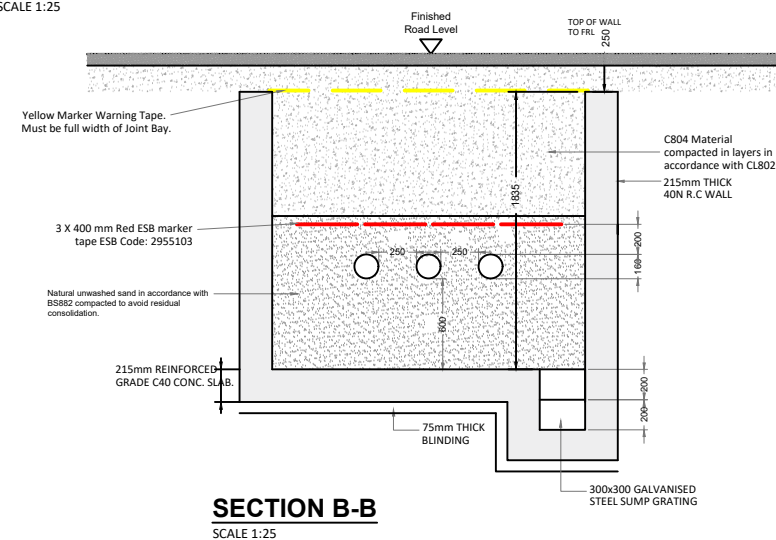
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110kV JOINT BAY DETAIL
SCALE 1:25



SECTION A-A
SCALE 1:25



SECTION B-B
SCALE 1:25

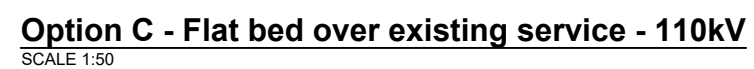
Note:
ALL DIMENSIONS TO BE CHECKED ON SITE AND ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER. FIGURED DIMENSIONS ONLY TO BE USED. DRAWINGS NOT TO BE SCALED.



Project:
Umma More

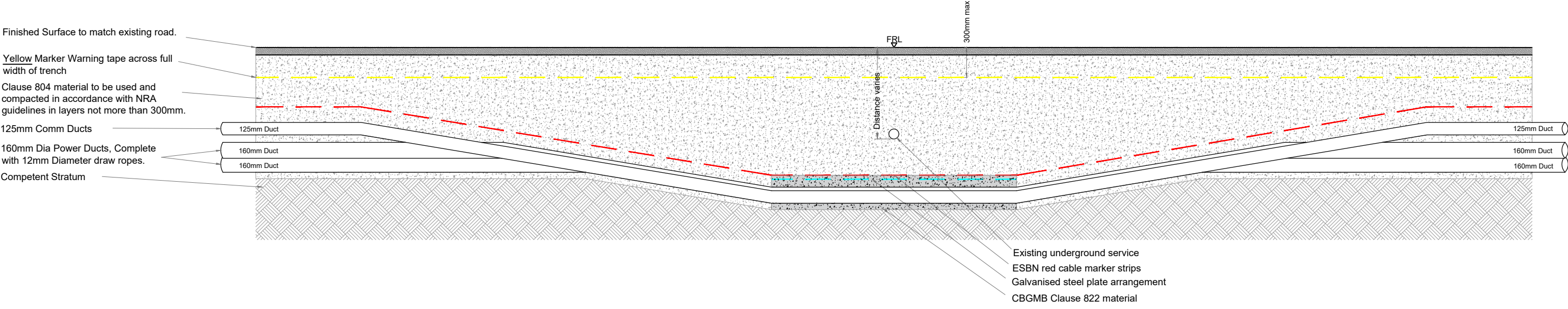
Drawing:
110kV Joint Bay Detail

Drawn By:	Checked By:	Drawing No.
MJM	T.Sca	0099 - 01 - E - 001 - R001
Scale:		As Shown @ A3

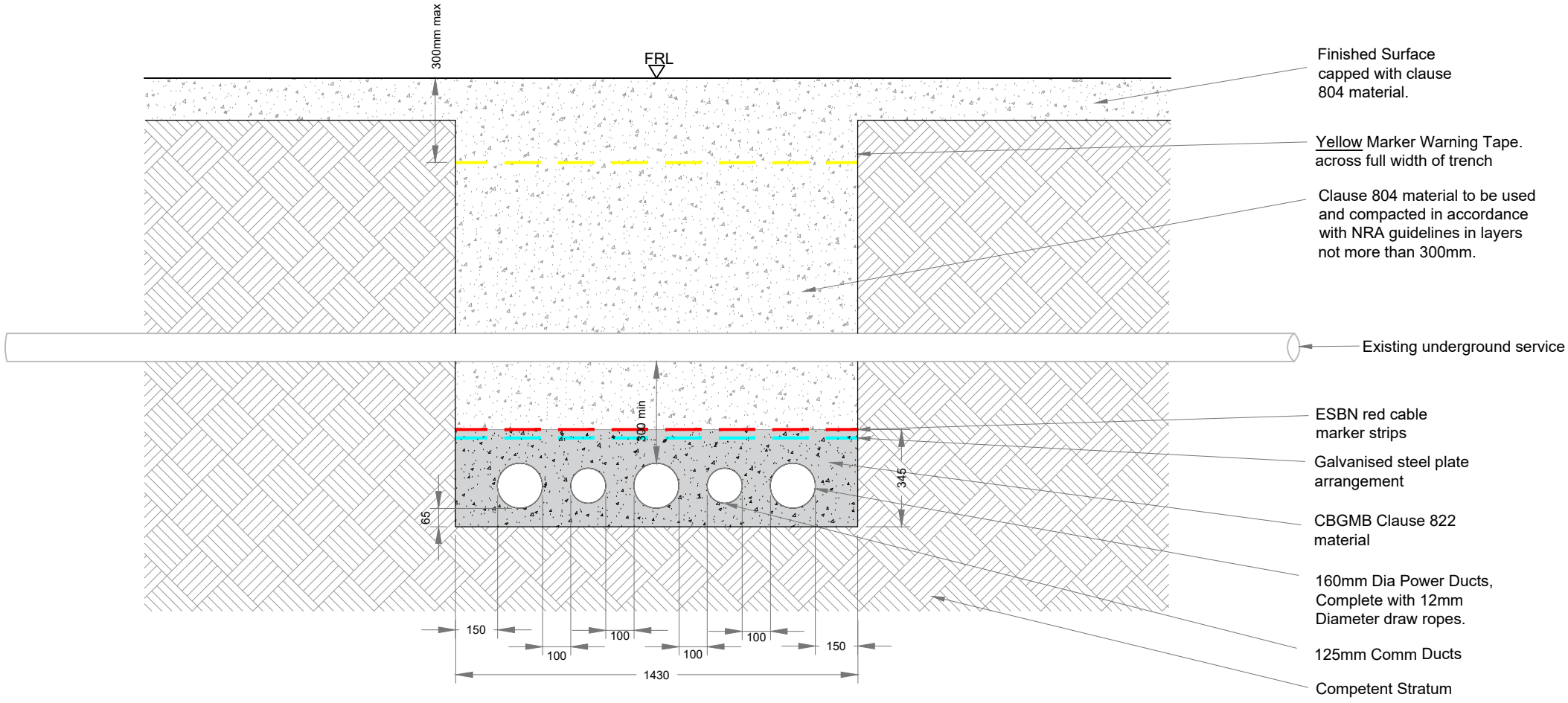


Enerco Energy

Drawn By: MJM Scale: As Shown @ A3		Checked By: T.Sca	Drawing No. 0099 - 01 - E - 002 - R001
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Option B - Flat bed under existing service - 110kV
SCALE 1:40



Option B - Flat bed under existing service - 110kV
SCALE 1:20

Note:
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Project: Umma More		
Drawing: Flat Bed Under - Existing Service		
Drawn By: MJM	Checked By: T.Sca	Drawing No. 0099 - 01 - E - 001 - R001
Scale: As Shown @ A3		

1.

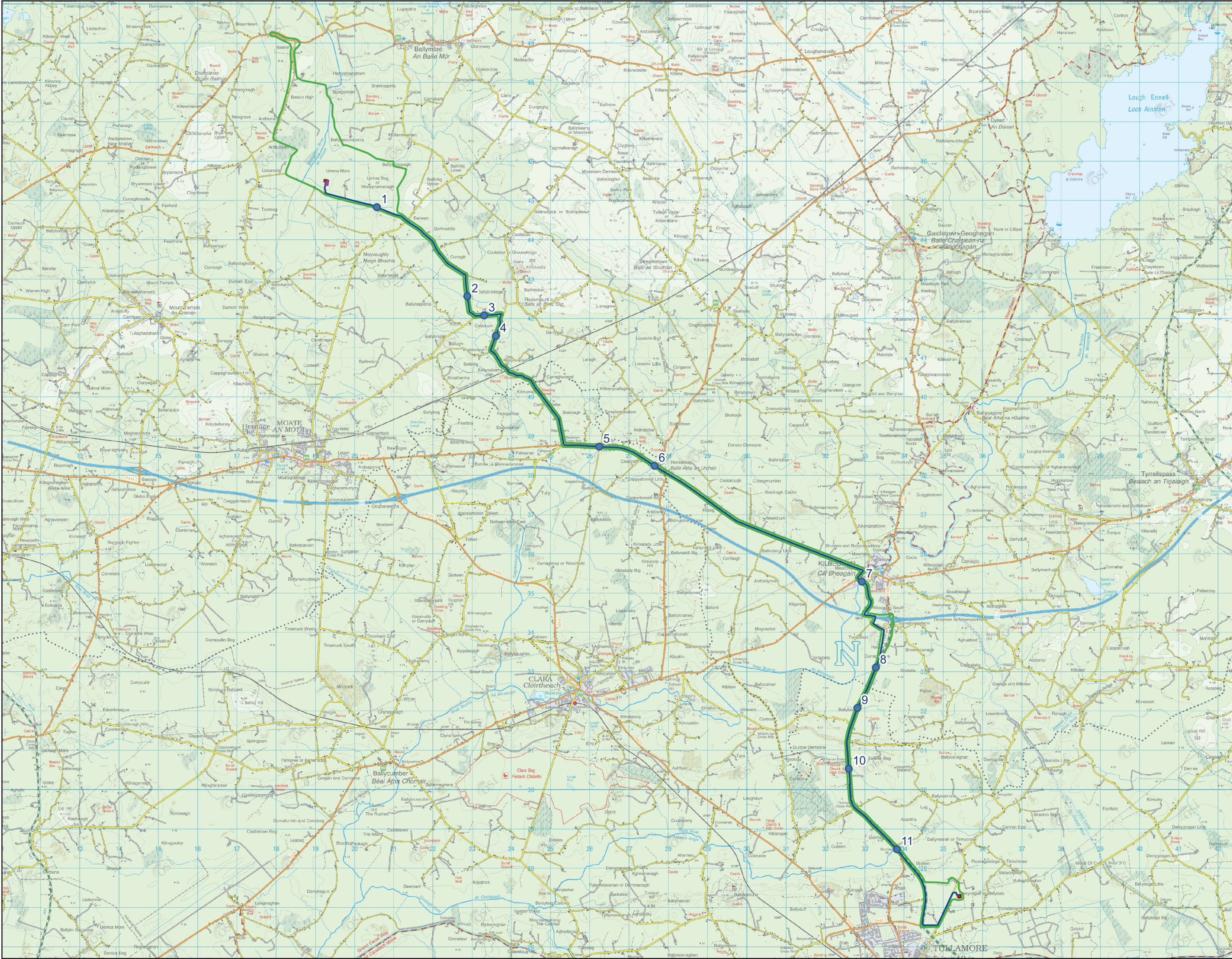
WATERCOURSE CROSSINGS METHODOLOGY

Watercourse Crossing Reference No.	Watercourse Type	Width of Channel (m)	Cover from Road Level to Top of Culvert (m)	Crossing Option Description	Watercourse Crossing Option	Extent of In-Channel Works	Site Layout Drawing Reference (included as Appendix 4-5)
1	Stone Culvert	-	0.6	Where cable ducts are to be installed over an existing culvert and sufficient cover cannot be achieved, the ducts will be laid in a much shallower trench, the depth of which will be determined by the cover available at the culvert crossing location. The ducts within the shallow formation trench will be encased in 6mm thick steel galvanized plates and backfilled with 35N concrete.	Option C	None. No in-stream works required.	Appendix 4-5: Figure 1
2	Concrete Bridge	-	0.4	Where sufficient depth is not available over or under the crossing for a trench arrangement, the laying of cable ducts to be completed using directional drilling. This crossing methodology will ensure that no contact will be made with the watercourse during the works.	Option D	None. No in-stream works required.	Appendix 4-5: Figure 2
3	Stone Arch Bridge	-	0.4	Where sufficient depth is not available over or under the crossing for a trench arrangement, the laying of cable ducts to be completed using directional drilling. This crossing methodology will ensure that	Option D	None. No in-stream works required.	Appendix 4-5: Figure 3

Watercourse Crossing Reference No.	Watercourse Type	Width of Channel (m)	Cover from Road Level to Top of Culvert (m)	Crossing Option Description	Watercourse Crossing Option	Extent of In-Channel Works	Site Layout Drawing Reference (included as Appendix 4-5)
				no contact will be made with the watercourse during the works.			
4	Stone Arch Bridge	-	0.4	Where sufficient depth is not available over or under the crossing for a trench arrangement, the laying of cable ducts to be completed using directional drilling. This crossing methodology will ensure that no contact will be made with the watercourse during the works.	Option D	None. No in-stream works required.	Appendix 4-5: Figure 4
5	Concrete Bridge	-	0.4	Where sufficient depth is not available over or under the crossing for a trench arrangement, the laying of cable ducts to be completed using directional drilling. This crossing methodology will ensure that no contact will be made with the watercourse during the works.	Option D	None. No in-stream works required.	Appendix 4-5: Figure 5
6	Stone Arch Bridge	-	1.2	Where cable ducts are to be installed over an existing culvert and sufficient cover cannot be achieved, the ducts will be laid in a much shallower trench, the depth of which will be determined by the cover available at the culvert crossing location. The ducts within the shallow formation trench will be encased in 6mm thick steel galvanized plates and backfilled with 35N concrete.	Option C	None. No in-stream works required.	Appendix 4-5: Figure 6
7	Open channel	3.9	-	Where sufficient depth is not available over or under the crossing for a trench arrangement, the laying of cable ducts to be completed using directional drilling. This crossing methodology will ensure that	Option D	None. No in-stream works required.	Appendix 4-5: Figure 7

Watercourse Crossing Reference No.	Watercourse Type	Width of Channel (m)	Cover from Road Level to Top of Culvert (m)	Crossing Option Description	Watercourse Crossing Option	Extent of In-Channel Works	Site Layout Drawing Reference (included as Appendix 4-5)
				no contact will be made with the watercourse during the works.			
8	1500 mm Concrete Pipe	-	0.9	Where cable ducts are to be installed over an existing culvert and sufficient cover cannot be achieved, the ducts will be laid in a much shallower trench, the depth of which will be determined by the cover available at the culvert crossing location. The ducts within the shallow formation trench will be encased in 6mm thick steel galvanized plates and backfilled with 35N concrete.	Option C	None. No in-stream works required.	Appendix 4-5: Figure 8
9	600mm Concrete Pipe	-	0.9	Where cable ducts are to be installed over an existing culvert and sufficient cover cannot be achieved, the ducts will be laid in a much shallower trench, the depth of which will be determined by the cover available at the culvert crossing location. The ducts within the shallow formation trench will be encased in 6mm thick steel galvanized plates and backfilled with 35N concrete.	Option C	None. No in-stream works required.	Appendix 4-5: Figure 9
10	1200mm Concrete Pipe	-	1.6	Where adequate cover exists above a culvert, the standard aforementioned trench arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or watercourse.	Option A	None. No in-stream works required.	Appendix 4-5: Figure 10
11	Box Culvert Bridge	-	1	Where sufficient depth is not available over or under the crossing for a trench arrangement, the laying of cable ducts to	Option D	None. No in-stream works required.	Appendix 4-5: Figure 11

Watercourse Crossing Reference No.	Watercourse Type	Width of Channel (m)	Cover from Road Level to Top of Culvert (m)	Crossing Option Description	Watercourse Crossing Option	Extent of In-Channel Works	Site Layout Drawing Reference (included as Appendix 4-5)
				be completed using directional drilling. This crossing methodology will ensure that no contact will be made with the watercourse during the works.			



Map Legend

- EIAR Site Boundary
- Watercourse Crossings

Proposed Grid Development

- Grid Connection
- Onsite Substation
- Temporary Construction Compound
- Thornsberry 110kV Substation

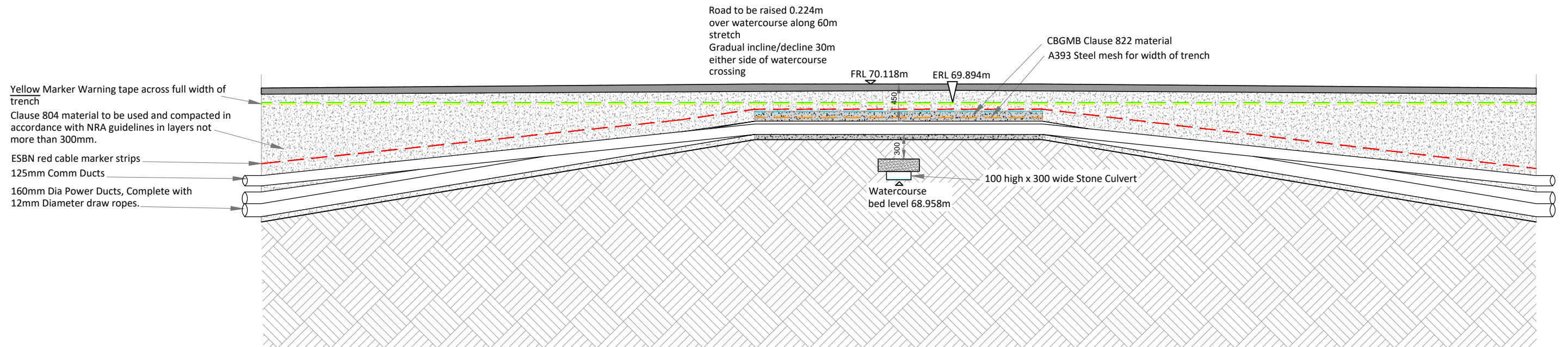
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Grid Connection Watercourse Crossing Locations

Project Title
Umma More Renewable Energy Development

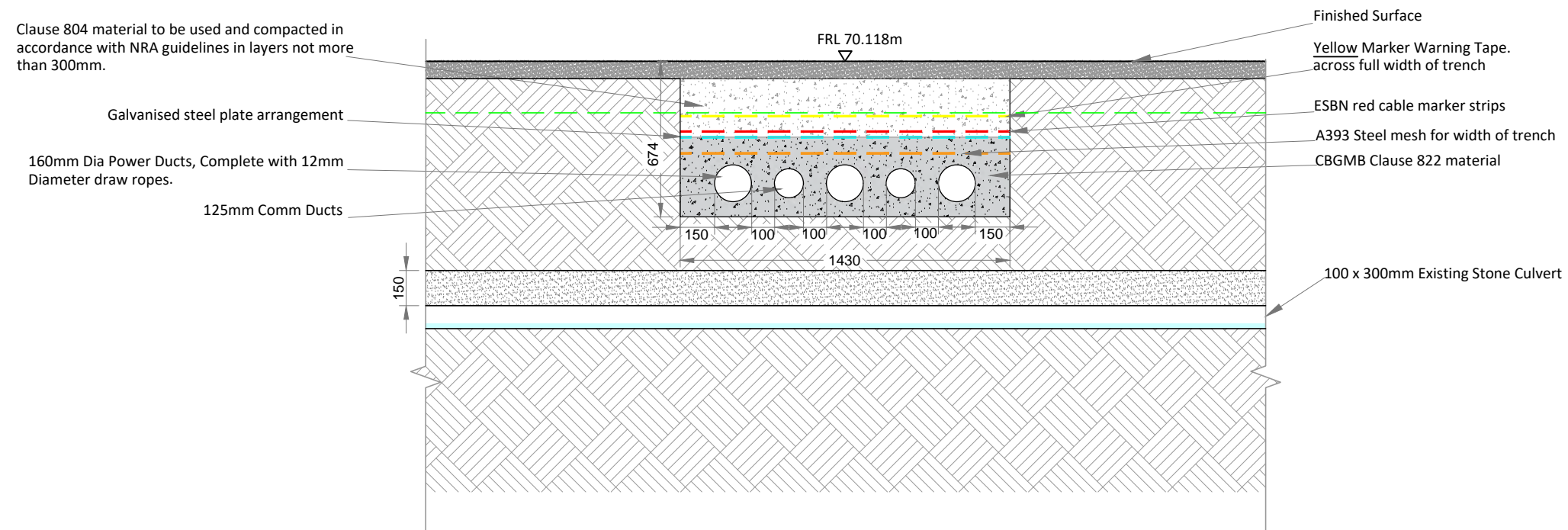
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Project No. 201050	Drawing No. Figure 4-29
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Section A-A
SCALE 1:50



Section B-B
SCALE 1:25

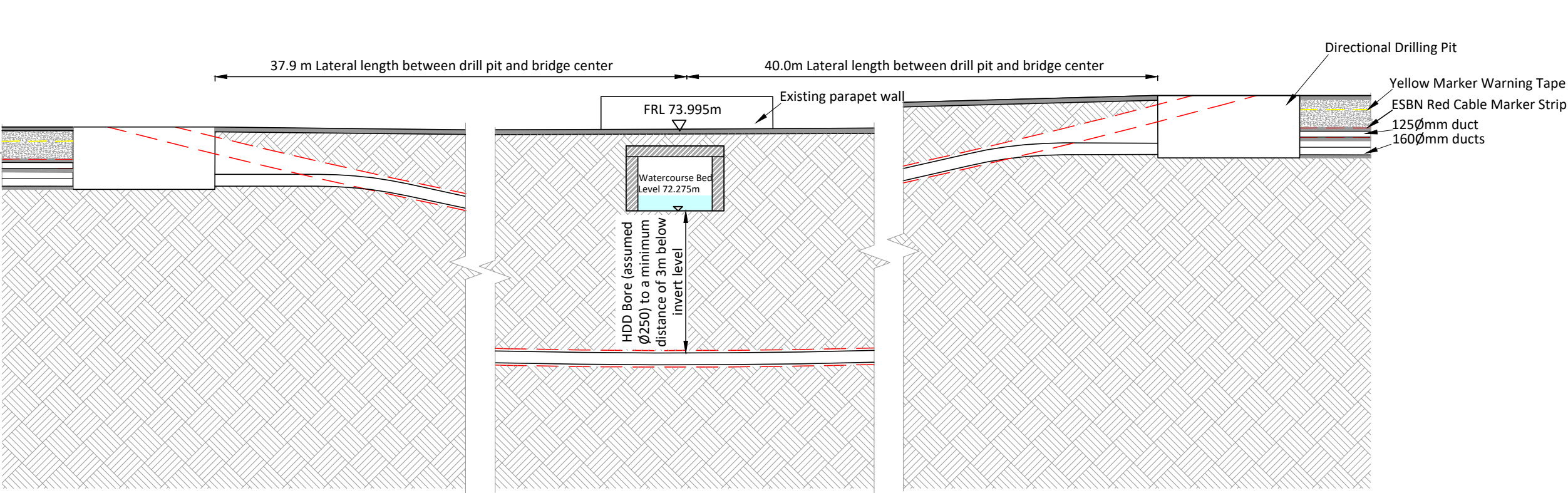
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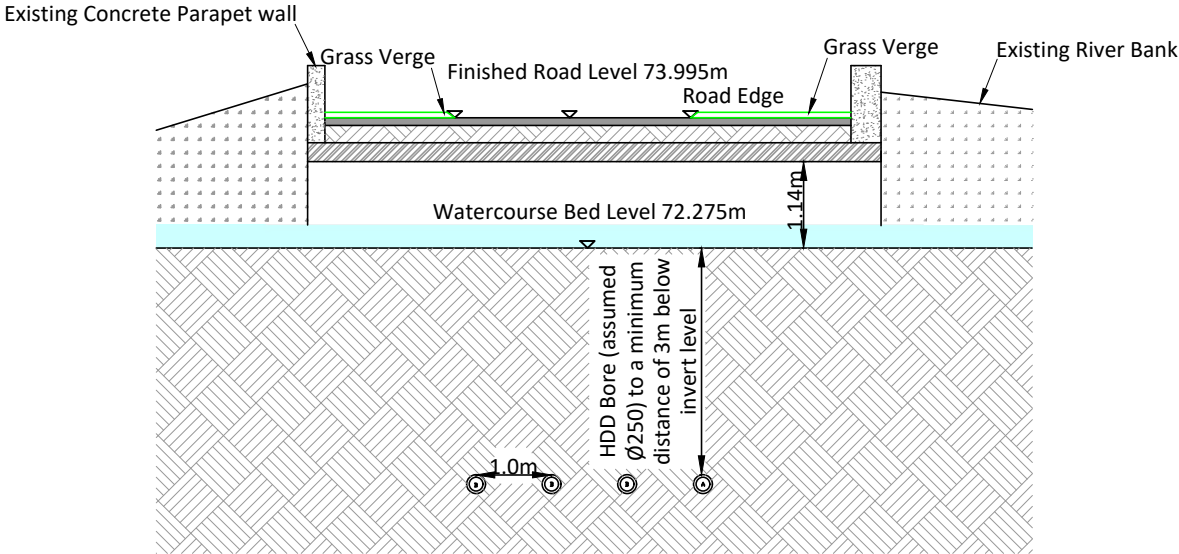
Project:
Umma More

Drawing:
Figure 1: WC Crossing 1 - Flat Bed Over & Raise Road

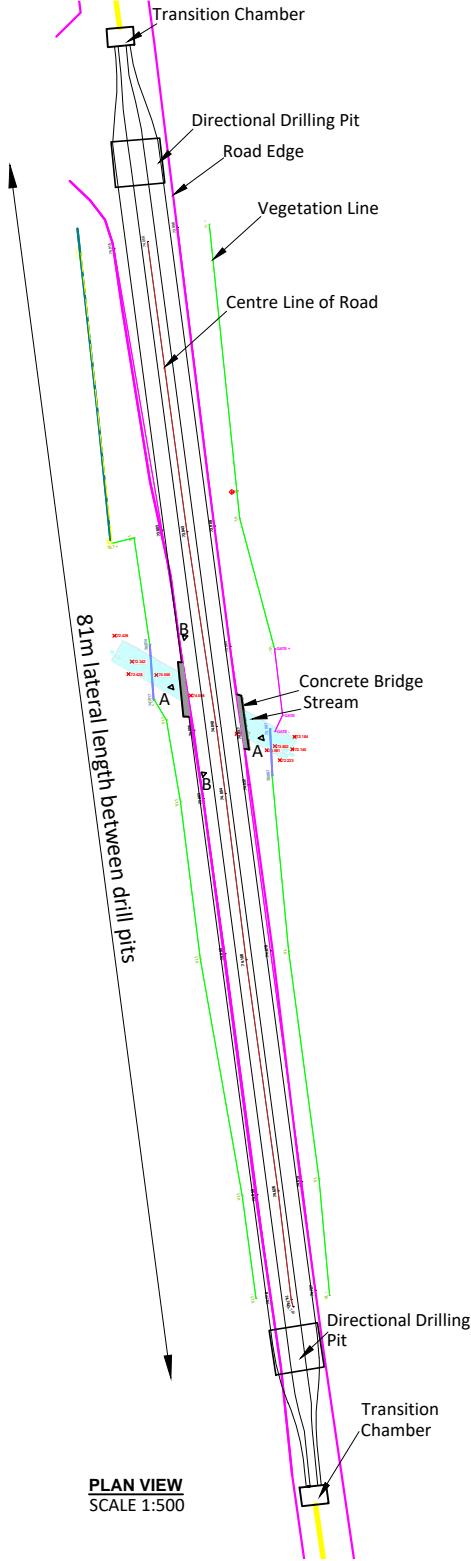
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Section B-B
SCALE 1:100



Section A-A
SCALE 1:100



PLAN VIEW
SCALE 1:500

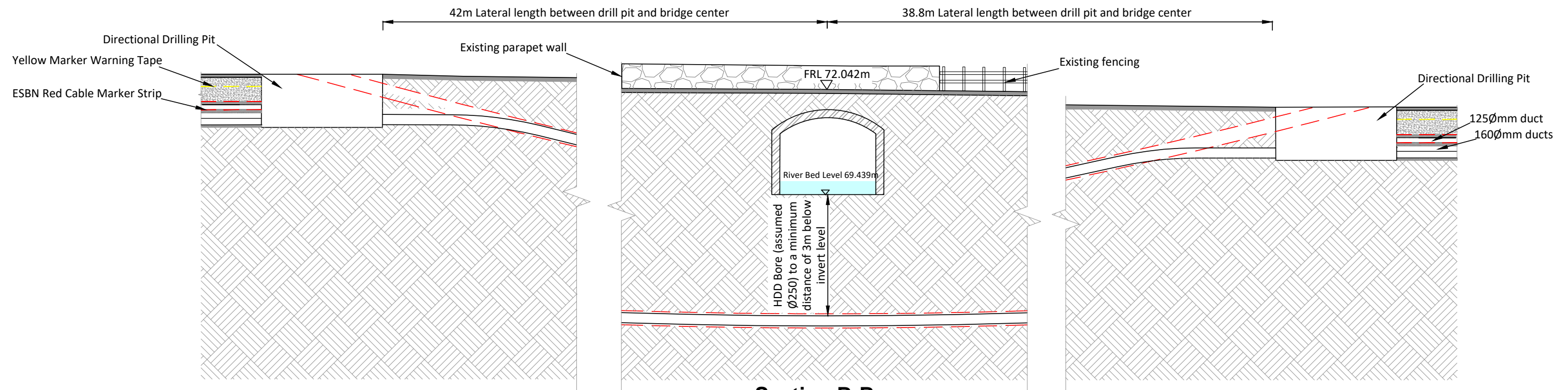
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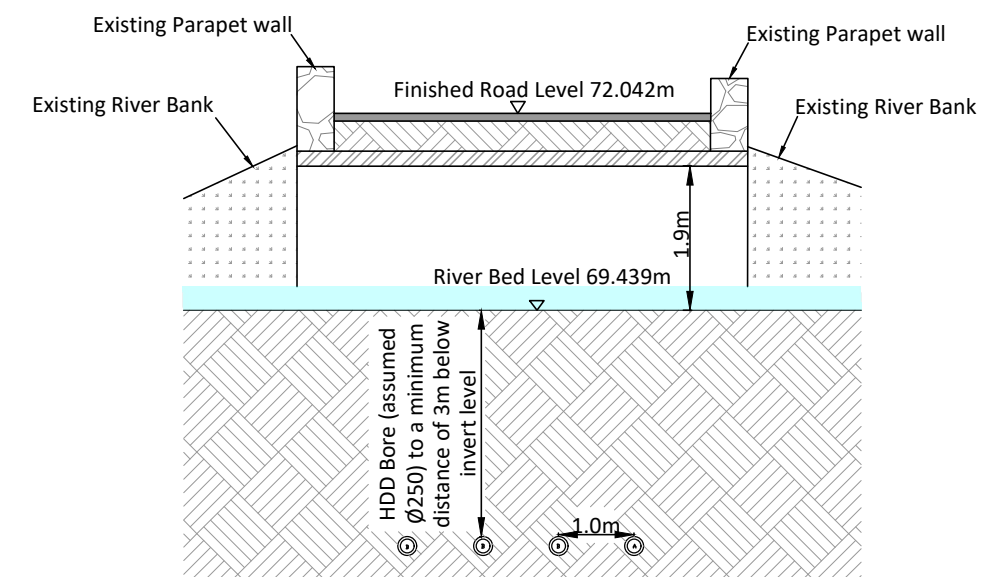
Project:
Umma More

Drawing:
Figure 2: WC Crossing 2 - HDD - 81m

Drawn By: MJM	Checked By: T.Sca	Drawing No. 0099 - 03 - I - 002A - R001
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Section B-B
SCALE 1:100



Section A-A
SCALE 1:100

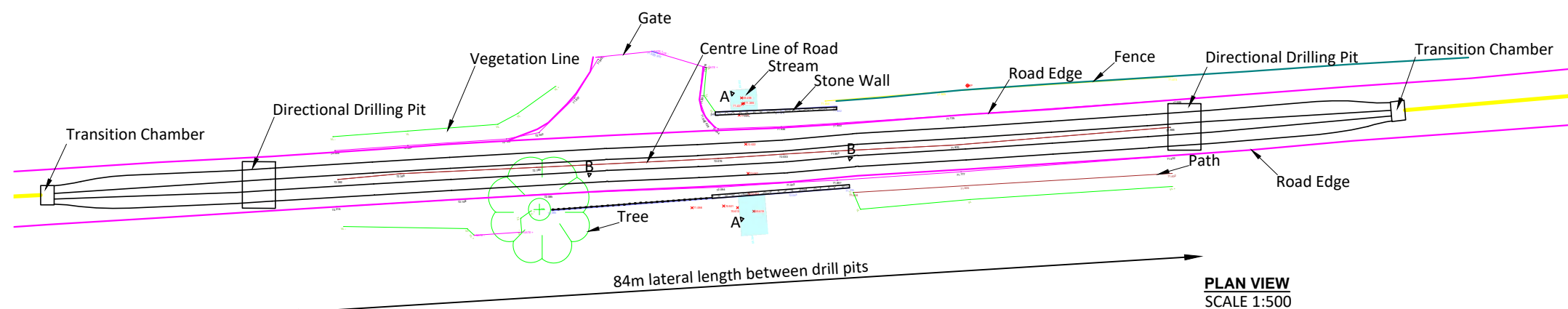
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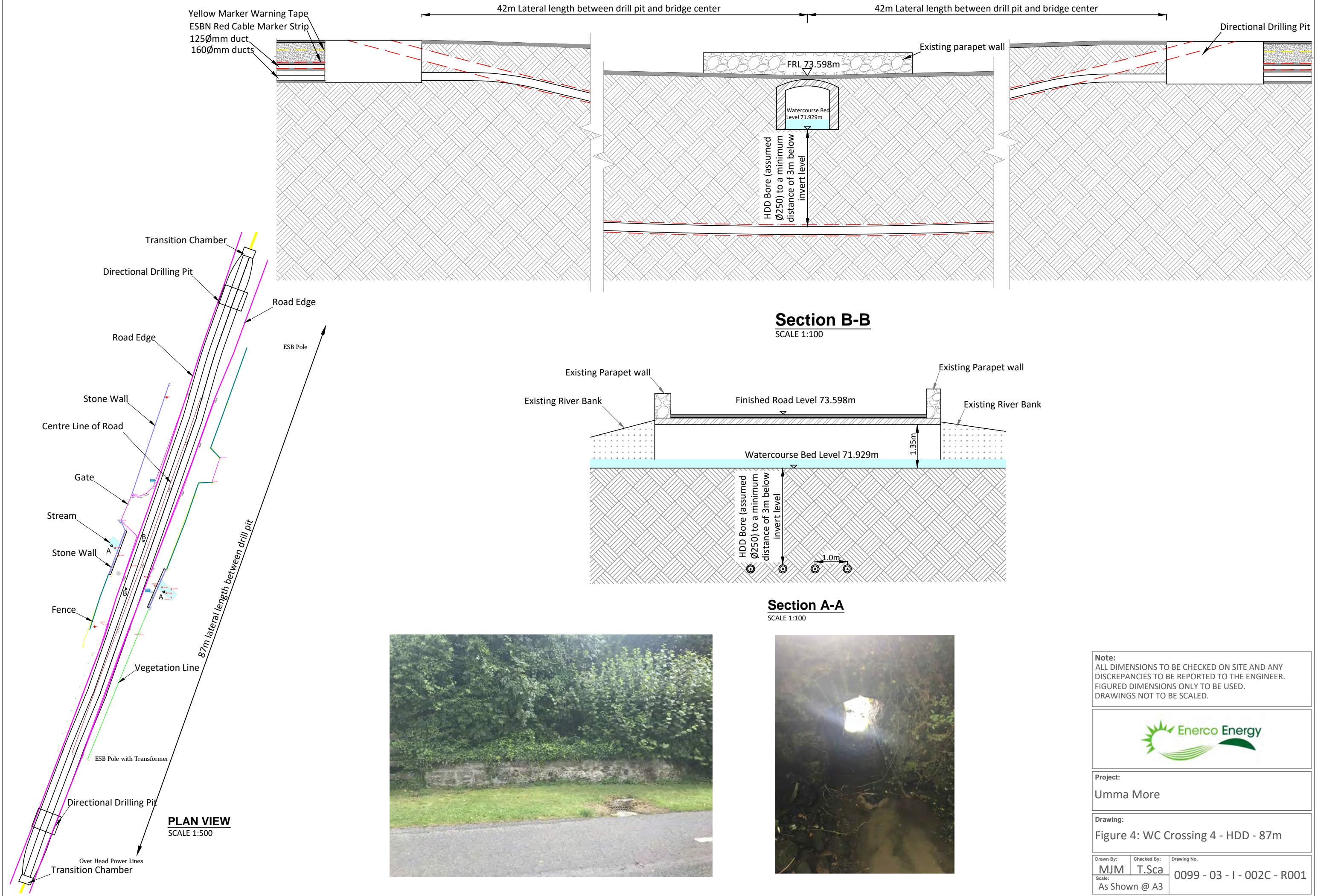
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Umma More

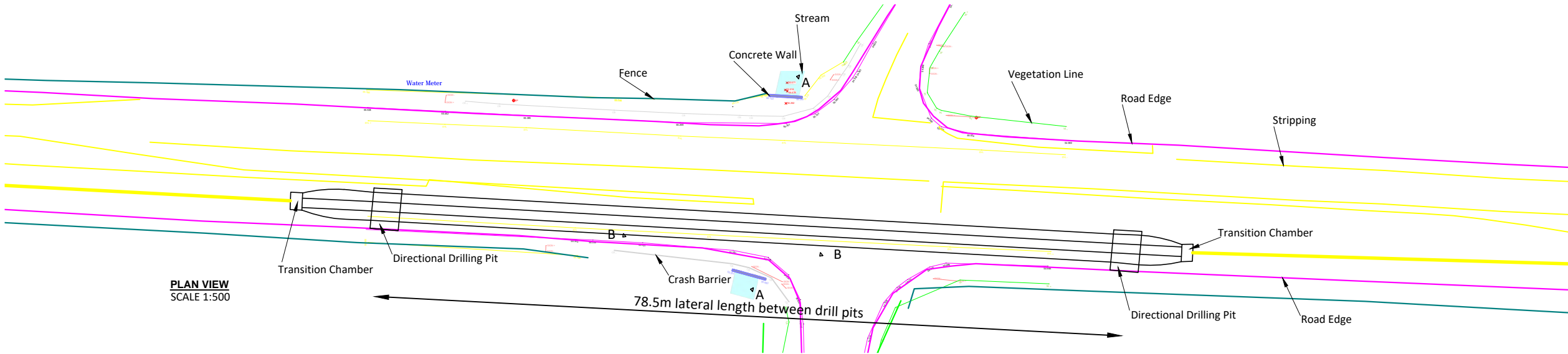
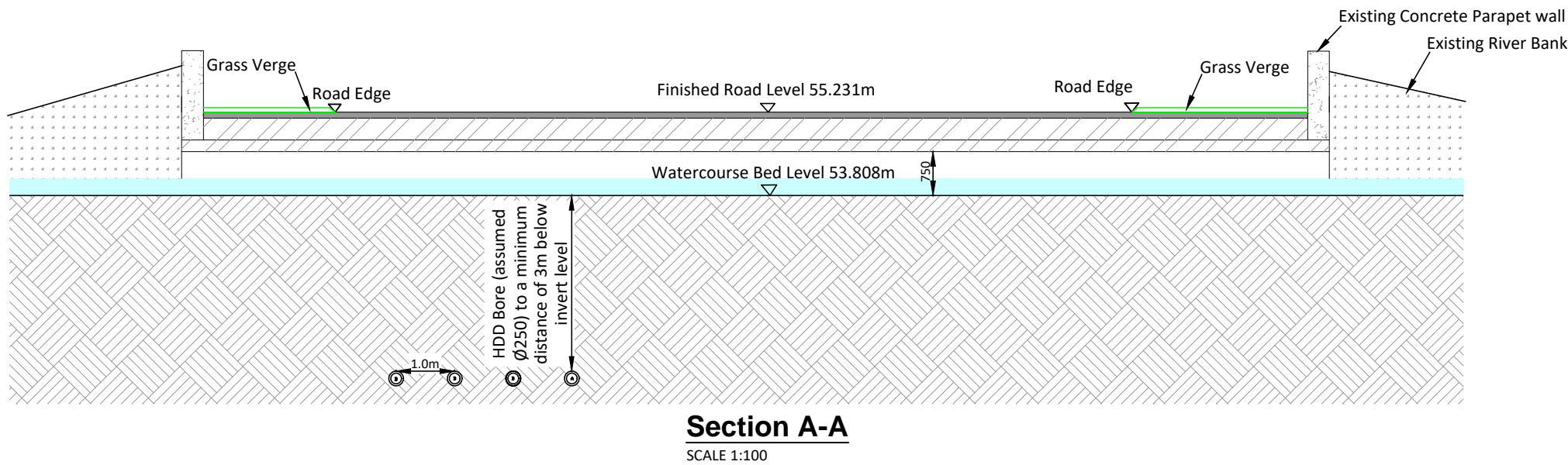
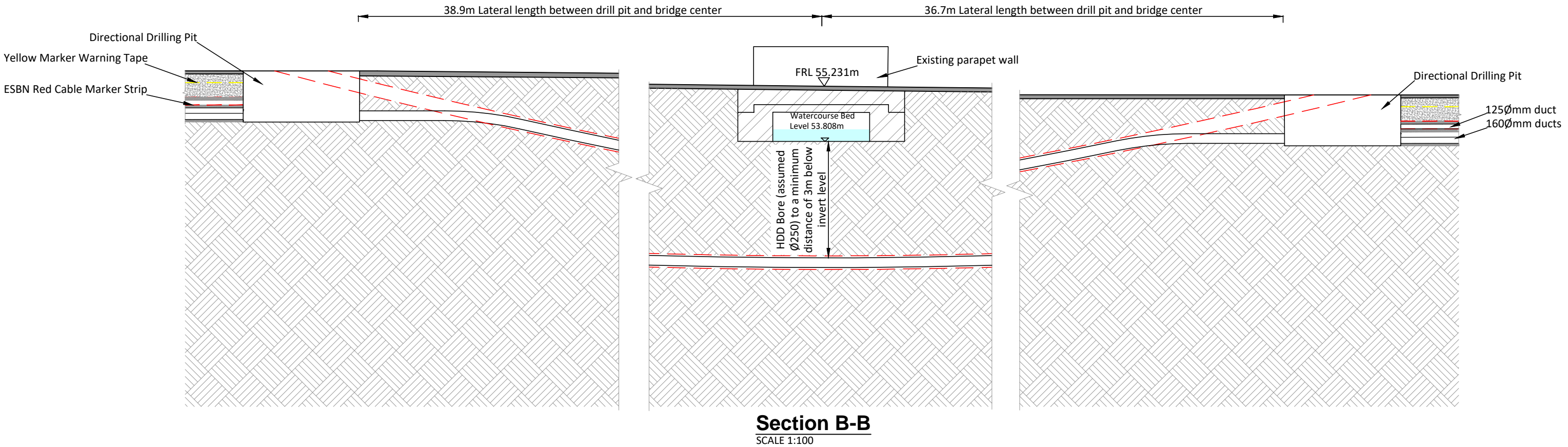
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Figure 3: WC Crossing 3 - HDD - 84m

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Scale: As Shown @ A3		



PLAN VIEW
SCALE 1:500

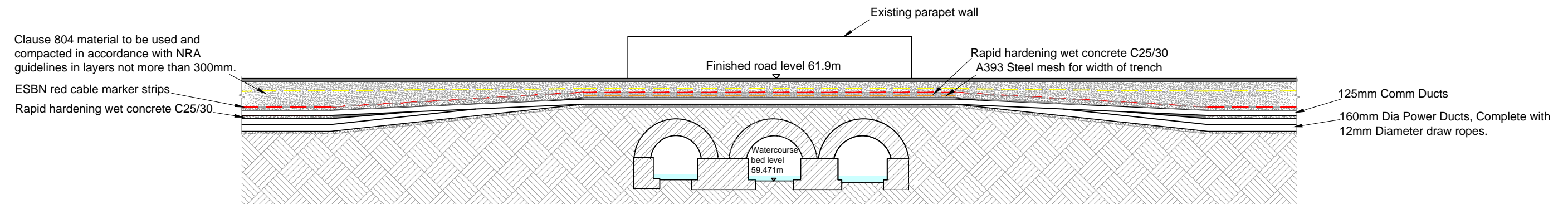




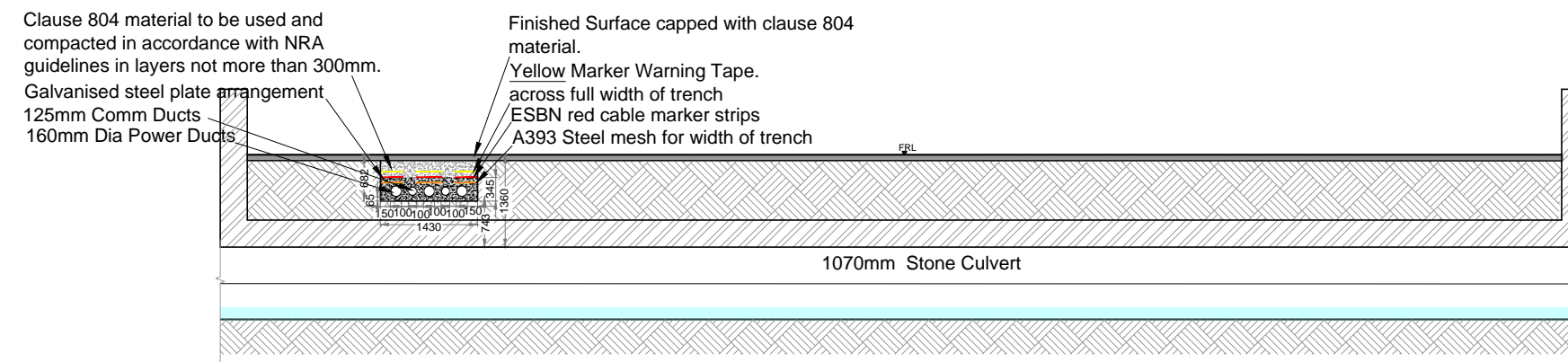
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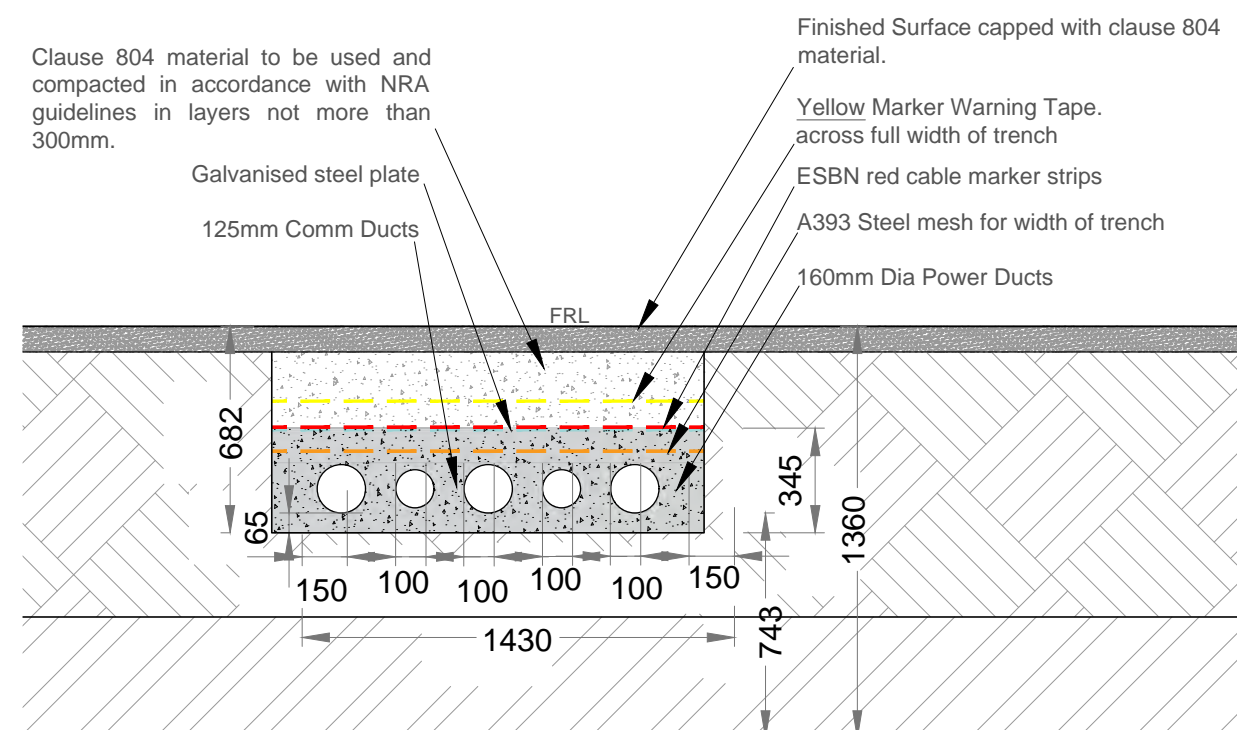
Project: Umma More		
Drawing: Figure 5: WC Crossing 5 - HDD - 78.5m		
Drawn By: MJM	Checked By: T.Sca	Drawing No. 0099 - 03 - I - 002D - R001
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Section A-A
SCALE 1:100



Section B-B
SCALE 1:100



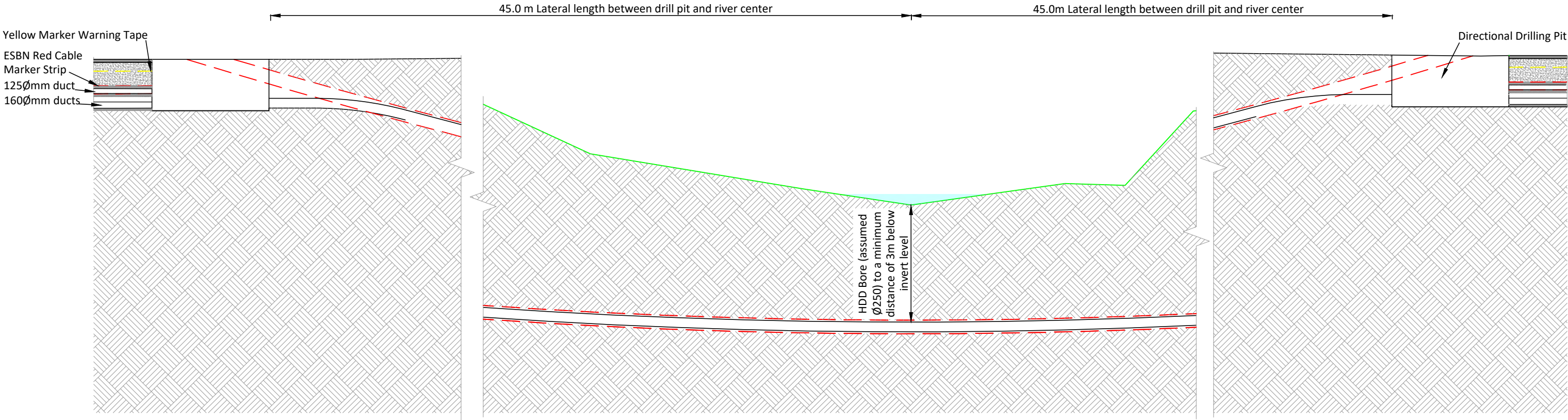
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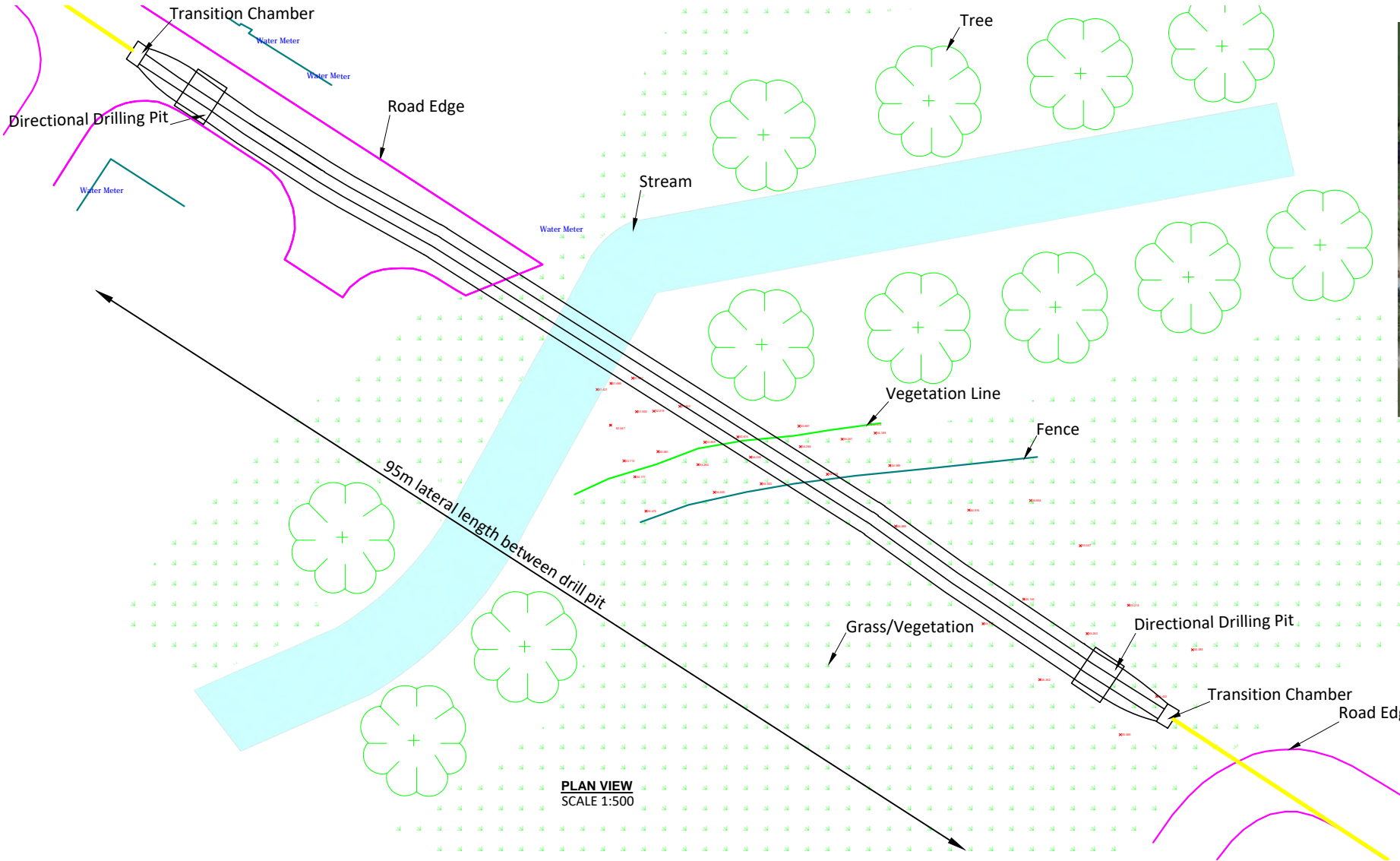
Project:
Umma More

Drawing:
Figure 6: WC Crossing 6 - Flat Bed Over

Drawn By: MJM	Checked By: T.Sca	Drawing No. 0099 - 03 - I - 002G - R001
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Section B-B
SCALE 1:100



Note:
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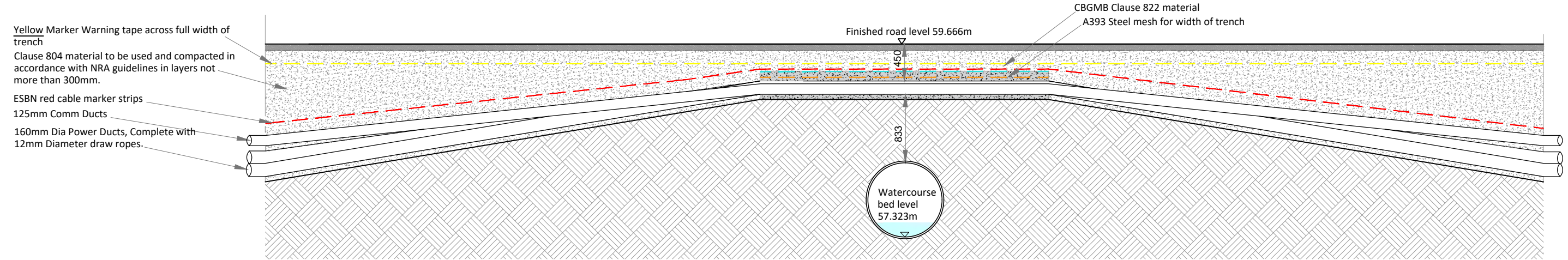
Project:
Umma More

Drawing:
Figure 7: WC Crossing 7 - HDD - 93m

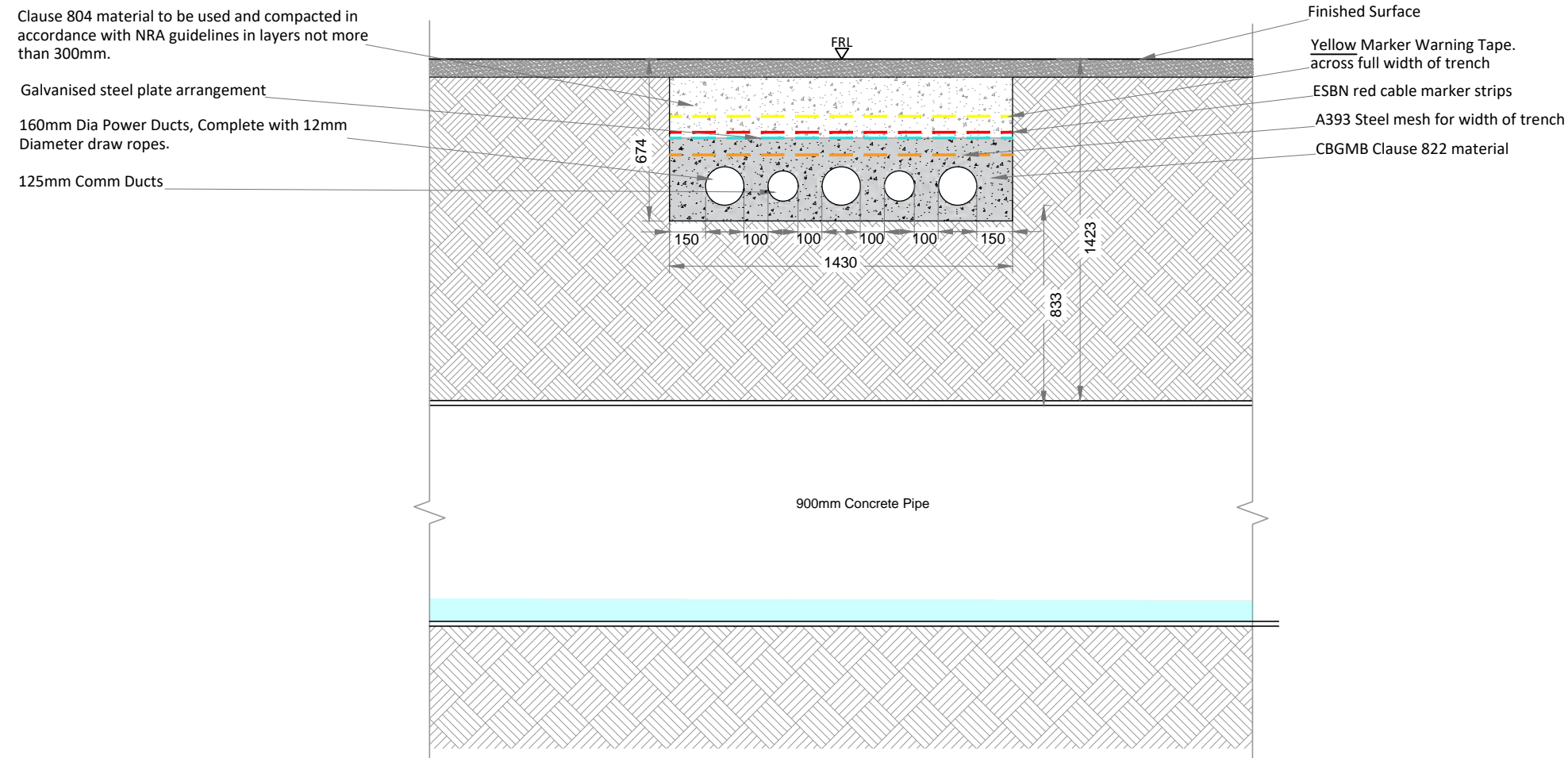
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0099 - 03 - I - 0021 - R001



Section A-A
SCALE 1:50



Section B-B
SCALE 1:25

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Project:

Umma More

Drawing:

Figure 10: WC Crossing 10 - Flat Bed Over

Drawn By:

MJM

Checked By:

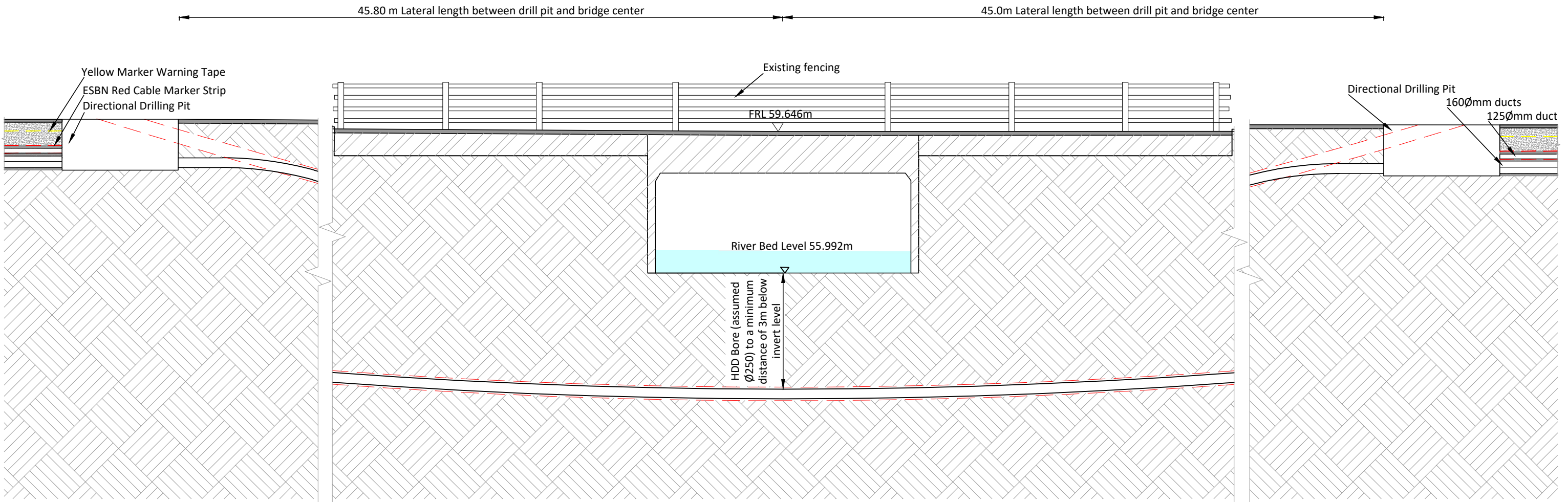
T.Sca

Drawing No.

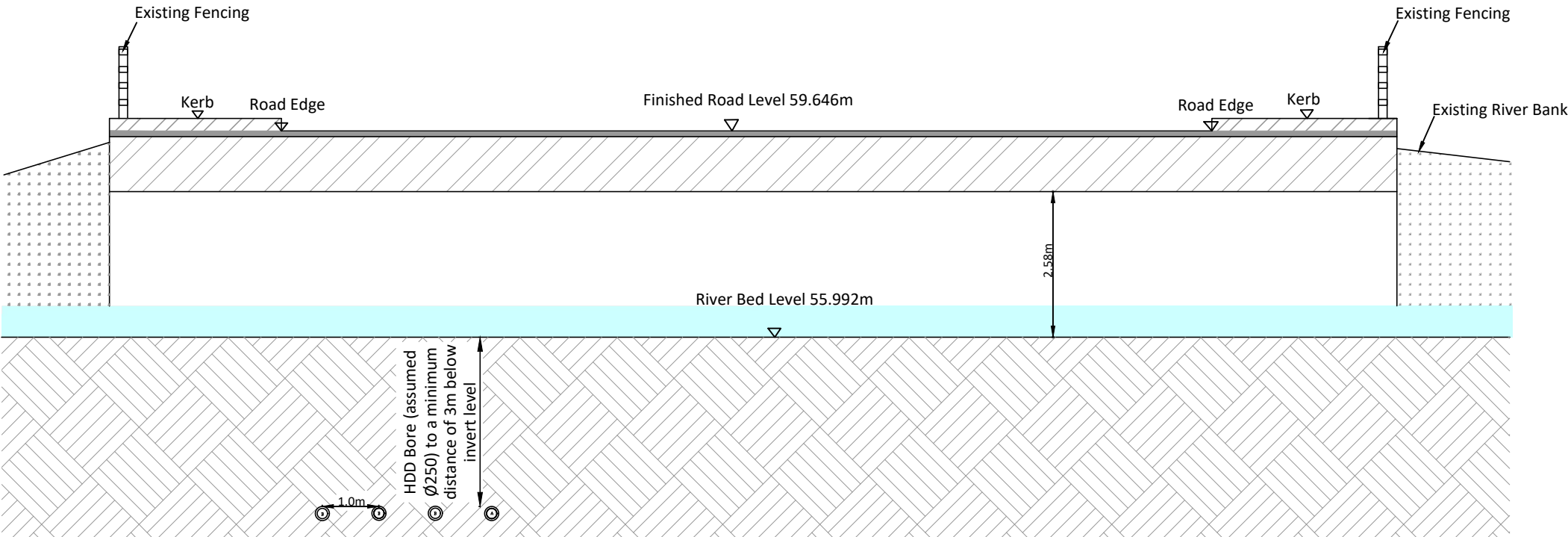
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Section B-B
SCALE 1:100



Section A-A
SCALE 1:100

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Project: Umma More		
Drawing: Figure 11: WC Crossing 11 - HDD - 93.8m		
Drawn By: MJM	Checked By: T.Sca	Drawing No. 0099 - 03 - I - 002F - R001
Scale: As Shown @ A3		



PLAN VIEW
SCALE 1:500

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Project:
Umma More

Drawing:
Figure 11: WC Crossing 11- Plan

Drawn By: MJM	Checked By: T.Sca	Drawing No. 0099-03-I-002F(1)-R001
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2.

CULVERT AND DRAIN CROSSINGS METHODOLOGY

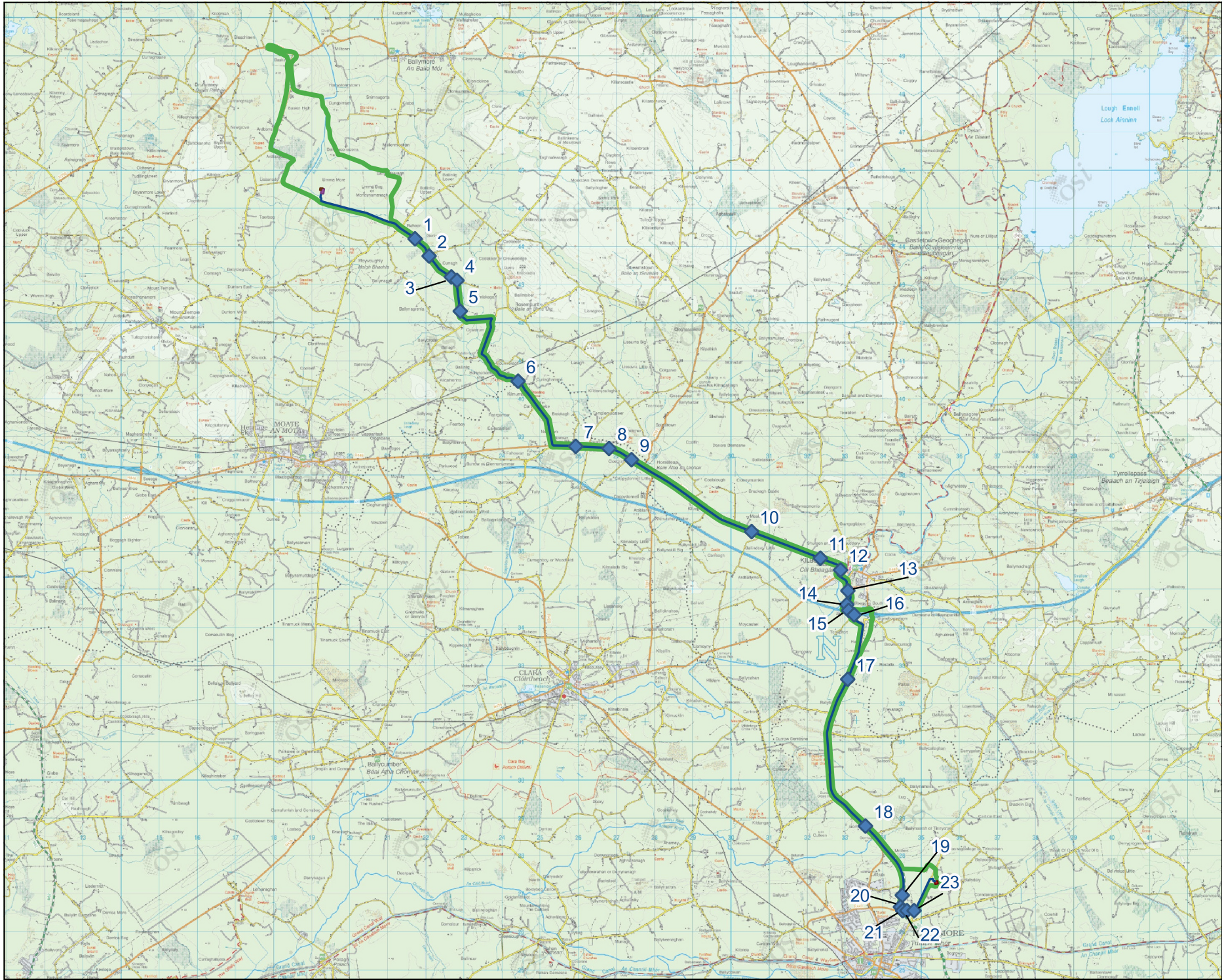
Culvert/Drain Crossing Reference No.	X (ITM)	Y (ITM)	Culvert/Drain Type	Width of Drain Channel (m)	Cover from Road Level to Top of Culvert (m)	Crossing Option Description	Watercourse Crossing Option	Extent of In-Channel Works
1	621671	744221	900mm Concrete Pipe	-	1.00 m	Where cable ducts are to be installed over an existing culvert and sufficient cover cannot be achieved, the ducts will be laid in a much shallower trench, the depth of which will be determined by the cover available at the culvert crossing location. The ducts within the shallow formation trench will be encased in 6mm thick steel galvanized plates and backfilled with 35N concrete.	Option C - Flat Bed Over	None. No in-stream works required.
2	622041	743768	600 mm Concrete Pipe	-	0.90 m	Where cable ducts are to be installed over an existing culvert and sufficient cover cannot be achieved, the ducts will be laid in a much shallower trench, the depth of which will be determined by the cover available at the culvert crossing location. The ducts within the shallow formation trench will be encased in 6mm thick steel galvanized plates and backfilled with 35N concrete.	Option C - Flat Bed Over	None. No in-stream works required.
3	622626	743218	450mm Concrete Pipe	-	0.90 m	Where cable ducts are to be installed over an existing culvert and sufficient cover cannot be achieved, the ducts will be laid in a much shallower trench, the depth of which will be determined by the cover available at the culvert crossing location. The ducts within the shallow formation trench will be encased in 6mm thick steel galvanized plates and backfilled with 35N concrete.	Option C - Flat Bed Over	None. No in-stream works required.
4	622773	743127	Blocked Concrete Pipe	-	-		Will be replaced with 450mm Pipe	None. No in-stream works required.

Culvert/Drain Crossing Reference No.	X (ITM)	Y (ITM)	Culvert/Drain Type	Width of Drain Channel (m)	Cover from Road Level to Top of Culvert (m)	Crossing Option Description	Watercourse Crossing Option	Extent of In-Channel Works
5	622858	742319	600 mm Concrete Pipe	-	1.10 m	Where cable ducts are to be installed over an existing culvert and sufficient cover cannot be achieved, the ducts will be laid in a much shallower trench, the depth of which will be determined by the cover available at the culvert crossing location. The ducts within the shallow formation trench will be encased in 6mm thick steel galvanized plates and backfilled with 35N concrete.	Option C - Flat Bed Over	None. No in-stream works required.
6	624378	740481	Blocked Stone Culvert	-	0.30 m		Will be repaced with 450mm Pipe	None. No in-stream works required.
7	625890	738770	900 mm Concrete Pipe	-	2.22 m	Where adequate cover exists above a culvert, the standard aforementioned trench arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or watercourse.	Option A - Standard Trench Detail	None. No in-stream works required.
8	626765	738714	600 Concrete Pipe	-	1.70 m	Where adequate cover exists above a culvert, the standard aforementioned trench arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or watercourse.	Option A - Standard Trench Detail	None. No in-stream works required.
9	627356	738418	Stone Culvert - 500mm x 800mm	-	1.70 m	Where adequate cover exists above a culvert, the standard aforementioned trench arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or watercourse.	Option A - Standard Trench Detail	None. No in-stream works required.
10	630508	736530	900 mm Concrete Pipe	-	1.45 m	Where adequate cover exists above a culvert, the standard aforementioned trench arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or watercourse.	Option A - Standard Trench Detail	None. No in-stream works required.







Culvert/Drain Crossing Reference No.	X (ITM)	Y (ITM)	Culvert/Drain Type	Width of Drain Channel (m)	Cover from Road Level to Top of Culvert (m)	Crossing Option Description	Watercourse Crossing Option	Extent of In-Channel Works
11	632314	735831	900 mm Concrete Pipe	-	1.22 m	Where cable ducts are to be installed over an existing culvert and sufficient cover cannot be achieved, the ducts will be laid in a much shallower trench, the depth of which will be determined by the cover available at the culvert crossing location. The ducts within the shallow formation trench will be encased in 6mm thick steel galvanized plates and backfilled with 35N concrete.	Option C - Flat Bed Over	None. No in-stream works required.
12	632844	735522	Box Culvert Bridge	-	0.40 m	Where sufficient depth is not available over or under the crossing for a trench arrangement, the laying of cable ducts to be completed using directional drilling. This crossing methodology will ensure that no contact will be made with the watercourse during the works.	Option D - HDD 46m	None. No in-stream works required.
13	633036	734978	900 mm Concrete Pipe	-	1.57 m	Where adequate cover exists above a culvert, the standard aforementioned trench arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or watercourse.	Option A - Standard Trench Detail	None. No in-stream works required.
14	633008	734613	300mm UPVC	-	0.70 m	Where the culvert consists of a socketed concrete or sealed plastic pipe and sufficient depth is not available over the crossing, a trench will be excavated beneath the culvert and cable ducts will be installed in the standard formation 300mm below the existing pipe.	Option B - Flat Bed Under	None. No in-stream works required.
15	633057	734460	1200 mm Concrete Pipe	-	0.35 m	Where the culvert consists of a socketed concrete or sealed plastic pipe and sufficient depth is not available over the crossing, a trench will be excavated beneath the culvert and cable ducts will be installed in the standard formation 300mm below the existing pipe.	Option B - Flat Bed Under	None. No in-stream works required.
16	633200	734344	900 mm Concrete Pipe	-	1.72 m	Where adequate cover exists above a culvert, the standard aforementioned trench arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or watercourse.	Option A - Standard Trench Detail	None. No in-stream works required.

Culvert/Drain Crossing Reference No.	X (ITM)	Y (ITM)	Culvert/Drain Type	Width of Drain Channel (m)	Cover from Road Level to Top of Culvert (m)	Crossing Option Description	Watercourse Crossing Option	Extent of In-Channel Works
17	633032	732652	Concrete Bridge 1200W	-	0.40 m	Where sufficient depth is not available over or under the crossing for a trench arrangement, the laying of cable ducts to be completed using directional drilling. This crossing methodology will ensure that no contact will be made with the watercourse during the works.	Option D - HDD 50m	None. No in-stream works required.
18	633498	728797	600 mm Concrete Pipe	-	1.67 m	Where adequate cover exists above a culvert, the standard aforementioned trench arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or watercourse.	Option A - Standard Trench Detail	None. No in-stream works required.
19	634465	726979	600 mm Concrete Pipe	-	0.30 m	Where the culvert consists of a socketed concrete or sealed plastic pipe and sufficient depth is not available over the crossing, a trench will be excavated beneath the culvert and cable ducts will be installed in the standard formation 300mm below the existing pipe.	Option B - Flat Bed Under	None. No in-stream works required.
20	634415	726673	600mm Concrete Pipe	-	0.97 m	Where cable ducts are to be installed over an existing culvert and sufficient cover cannot be achieved, the ducts will be laid in a much shallower trench, the depth of which will be determined by the cover available at the culvert crossing location. The ducts within the shallow formation trench will be encased in 6mm thick steel galvanized plates and backfilled with 35N concrete.	Option C - Flat Bed Over	None. No in-stream works required.
21	634474	726574	900 mm Concrete Pipe	-	2.10 m	Where adequate cover exists above a culvert, the standard aforementioned trench arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or watercourse.	Option A - Standard Trench Detail	None. No in-stream works required.
22	634588	726575	1200 mm Concrete Pipe	-	1.75 m	Where adequate cover exists above a culvert, the standard aforementioned trench arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or watercourse.	Option A - Standard Trench Detail	None. No in-stream works required.

Culvert/Drain Crossing Reference No.	X (ITM)	Y (ITM)	Culvert/Drain Type	Width of Drain Channel (m)	Cover from Road Level to Top of Culvert (m)	Crossing Option Description	Watercourse Crossing Option	Extent of In-Channel Works
23	634774	726575	900 mm Concrete Pipe	-	0.80 m	Where the culvert consists of a socketed concrete or sealed plastic pipe and sufficient depth is not available over the crossing, a trench will be excavated beneath the culvert and cable ducts will be installed in the standard formation 300mm below the existing pipe.	Option B - Flat Bed Under	None. No in-stream works required.



Map Legend

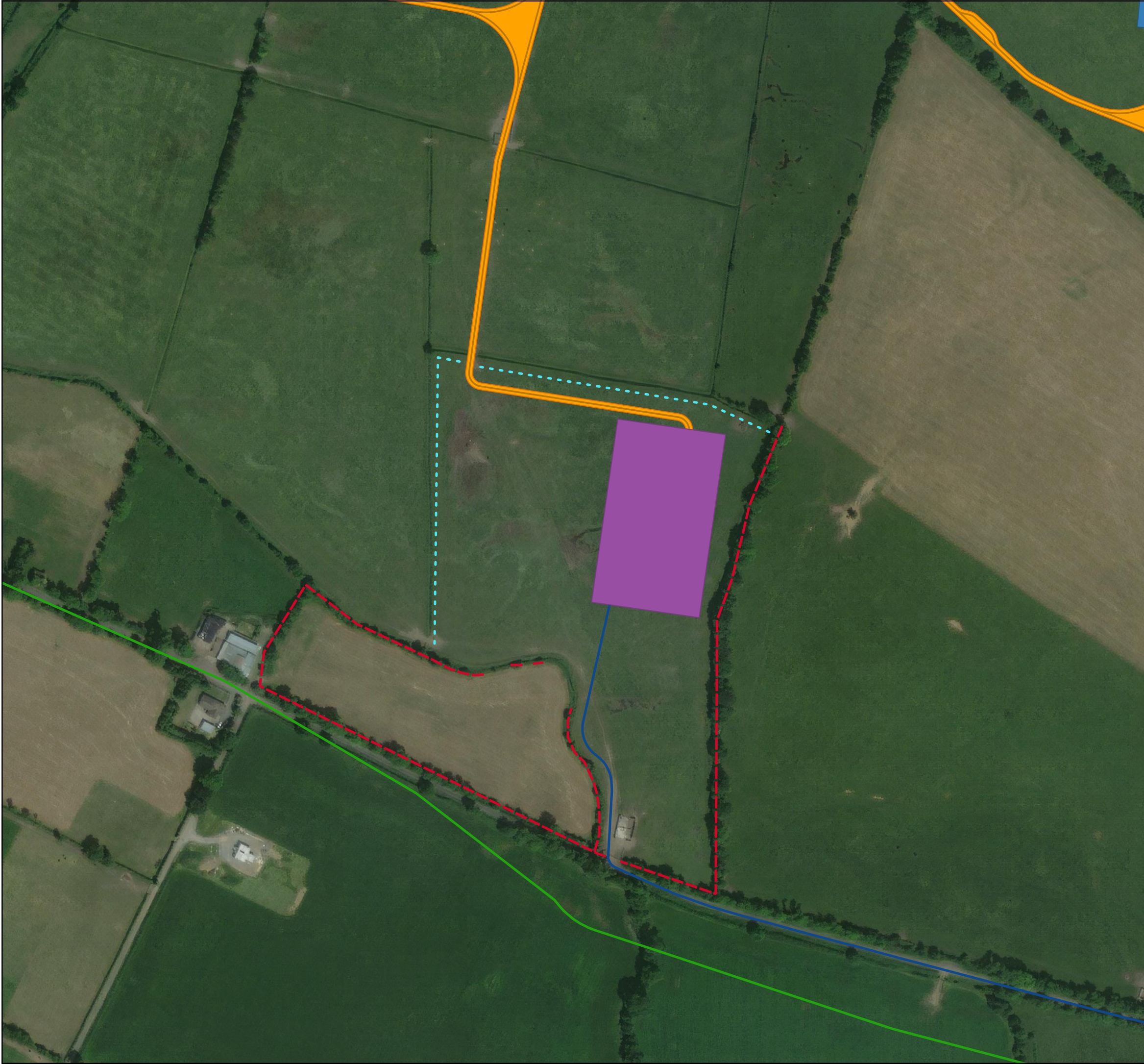
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-  Culvert and Drain Crossings
-  Proposed 110 kV Onsite Substation
-  Existing Thornsberry 110kV Substation
-  Proposed Temporary Construction Route
-  Proposed Underground Electrical Cabling Route



Drawing Title	
Grid Connection Culvert and Drain Crossings	
Project Title	
Umma More Renewable Energy Development	
Drawn By	Checked By
NMCh	EC
Project No.	Drawing No.
201050	
Scale	Date
1:130,000	2023-02-01



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



Map Legend

- EIAR Site Boundary
- Proposed New Roads
- Proposed Onsite Substation
- Proposed Grid Connection underground electrical cabling route
- Existing Treeline
- Proposed planting



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Drawing Title
Substation Enhancement Planting

Project Title
Umma More Renewable Energy Development

Drawn By	EC	Checked By	MW
Project No.	201050	Drawing No.	1
Scale	1:2750	Date	2023-03-08



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