

# Comhairle Contae Mhuineacháin Monaghan County Council

Acmhainní Daonna  
Human Resources  
047 30586

Airgeadas  
Finance  
047 30589

Na Bóithre  
Roads  
047 30597

Clár na dToghthóirí  
Register of Electors  
047 30551

Comhshaol  
Environment  
042 9661240

Na hEalaíona  
Arts  
047 38162

Isachtaí /Deontais Tithíochta  
Housing Loans/Grants  
047 30527

Leabharlann an Chontae  
County Library  
047 74700

Mótarcháin  
Motor Tax  
047 81175

Músaem an Chontae  
County Museum  
047 82928

Pleanáil  
Planning  
047 30532

Pobal  
Community  
047 73719

Rialú Dóiteáin/Foirgnimh  
Fire/Building Control  
047 30521

Óifig Fiontair Áitiúil  
Local Enterprise Office  
047 71818

Seirbhísí Uisce  
Water Services  
047 30504/30571

10<sup>th</sup> July 2023

Dermot Guilfoyle  
c/o Jennings O Donovan & Partners,  
Finisklin Business Park,  
Sligo,  
F91 RHH9

**Re: Compliance with Planning ref: ABP-309119-21**  
**Applicant: Drumlins Park Limited**

A Chara,

I refer to documentation received on 18<sup>th</sup> May 2023 in connection with compliance with condition 6 of the above-mentioned permission and can advise as follows:-

The Planning Authority is satisfied that Condition 6 of ABP-309119-21 is fully complied with.

I trust this letter to be self-explanatory but should you have any further queries please do not hesitate to contact this office.

Mise le meas,

Angela Gallagher  
Administrative officer  
Planning

Fálltíonn an tÚdarás Áitiúil roimh chomhfhreagras i nGaeilge.

Comhairle Contae Mhuineacháin, Oifigí an Chontae, An Gleann, Muineachán, Éire.

Monaghan County Council, Council Offices, The Glen, Monaghan, Ireland.

☎ 00353 47 30500 📠 00353 47 82739 🌐 [www.monaghan.ie](http://www.monaghan.ie)

💬 [eolas@monaghancoco.ie](mailto:eolas@monaghancoco.ie) 📧 [info@monaghancoco.ie](mailto:info@monaghancoco.ie)

**MONAGHAN COUNTY COUNCIL**  
**PLANNING AND DEVELOPMENT COMPLIANCE REPORT**

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**File Ref:** ABP 309119-21 (Drumlins Park Substation) Compliance Condition 6  
**Applicant:** Drumlins Park Ltd.  
**Development:** 110kV Loop-in/Loop-out Substation Compound  
**Location:** Drunianan and Cornawall, Newbliss, Co. Monaghan

**Condition 6**

Water supply and drainage arrangements, including the attenuation and disposal of surface water, shall comply with the requirements of Irish Water and the Planning Authority for such works and services as appropriate.

**Applicants Submission**

- Planning Statement, dated 16-5-2023, as prepared by Jennings O'Donovan, stating the following:
  - Two domestic water connections are required, one for the Eirgrid Compound and one for the Developer Compound. Connections will be provided from the Drumgole Group Water Scheme.
  - In relation to stormwater drainage, please find attached, the construction stage drainage design as outlined on Malachy Walsh & Partners Consultant Engineers, drawings 23003- MWP- SS- 00- DR- C- 1017 Rev. C03, 23003- MWP- SS- 00- DR- C- 2000 Rev. C09 and 23003- MWP- SS- XX- DR- C- 2013, Rev. C04.
  - Also enclosed is an extract from the overall construction design basis report, prepared by Malachy Walsh & Partners Consultant Engineers. This extract sets out the design rationale for the Substation Storm and Foul Water networks.
  - Storm Water from the Substation compound will be discharge via a full retention petrol interceptor upstream of an open storage pond. An open storage pond is proposed rather than a buried attenuation tank in the interests of ease of maintenance and serviceability. HydroBreak flow control units will be utilised to limit the discharge from the open storage pond to the existing watercourse at the prescribed Greenfield Run -Off rate in order to provide a SUDS compliant design.
  - Foul Water will discharge to a holding tank, the contents of which will be tankered off site 2- 3 times per year. The holding tank will be fitted with a high- level notification alarm
  - We would be grateful for your confirmation that the water supply and drainage arrangements are acceptable to the planning authority or to advise if you have any additional requirements to those proposed.

The Applicants Compliance Submission, dated 16-5-2023, in relation to Condition 6, was received by the Planning Authority on 18-5-2023.

The compliance Submission was referred to Water Services, Municipal District, Roads and Environment. The internal departments and the Planning Authority are satisfied with the content of the submission.

**Recommendation**

The compliance Submission was referred to Water Services, Municipal District, Roads and Environment. The internal departments and the Planning Authority are satisfied with the content of the submission.

The Planning Authority is satisfied that Condition 6 of ABP 309119-21 is fully complied with.

The applicant shall be advised accordingly.

*A King 10/7/2023*

Aisling King, Assistant Planner, Date: 10-7-2023



# Comhairle Contae Mhuineacháin Monaghan County Council

Acmhainní Daonna  
Human Resources  
047 30586

Airgeadas  
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042 9661240

Na hEalaíona  
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sachtaí /Deontais Tithíochta  
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Pleanáil  
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Pobal  
Community  
047 73719

Rialú Dóiteáin/Foirgnimh  
Fire/Building Control  
047 30521

Oifig Fiontair Áitiúil  
Local Enterprise Office  
047 71818

Seirbhís Uisce  
Water Services  
047 30504/30571

19<sup>th</sup> May 2023

Dermot Guilfoyle  
c/o Jennings O Donovan & Partners,  
Finisklin Business Park,  
Sligo,  
F91 RHH9

**Re: Compliance with Planning ref: ABP-309119-21**  
**Applicant: Drumlins Park Limited**

A Chara,

I wish to acknowledge receipt of documentation received on 18<sup>th</sup> May 2023 in connection with compliance with 6 of the above-mentioned planning permission.

It has been referred to the relevant planner for consideration and this office will revert in due course.

I trust this letter to be self-explanatory but should you have any further queries please do not hesitate to contact this office.

Mise le meas,

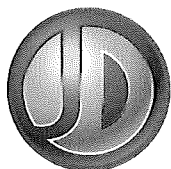
Angela Gallagher  
Administrative officer  
Planning

Fáltaíonn an tUdarás Áitiúil roimh chomhfhreagras i nGaeilge.

Comhairle Contae Mhuineacháin, Oifig an Chontae, An Gleann, Muineachán, Éire.  
Monaghan County Council, Council Offices, The Glen, Monaghan, Ireland.

(☎) 00353 47 30500 (📠) 00353 47 82739 (🌐) [www.monaghan.ie](http://www.monaghan.ie)

(✉) [eolas@monaghancoco.ie](mailto:eolas@monaghancoco.ie) [info@monaghancoco.ie](mailto:info@monaghancoco.ie)

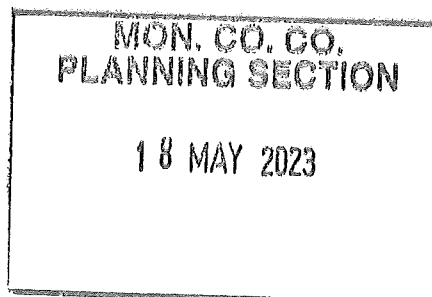


**JENNINGS O'DONOVAN**  
& PARTNERS LIMITED  
CONSULTING ENGINEERS

Finisklin Business Park  
Sligo, Ireland, F91 RHH9

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W: www.jodireland.com



6592/408/001/DK

16th May 2023

Planning Department,  
Monaghan County Council,  
Council Offices,  
The Glen,  
Monaghan,  
**H18 YT50.**

**Re: 110kV Loop-in/Loop-out Substation Compound at Drumanan and Cornawall, Newbliss,  
Co. Monaghan  
Order of An Bord Pleanála Case No. ABP-309119-21  
Condition 6 - Water Supply & Drainage Arrangements, Attenuation and Disposal of Surface Water**

Dear Sir / Madam,

We refer to Condition 6 of the above order made by An Bord Pleanála. The Condition States:

*"Water supply and drainage arrangements, including the attenuation and disposal of surface water; shall comply with the requirements of Irish Water and the planning authority for such works and services as appropriate.*

*Reason: In the interest of public health and to ensure a proper standard of development."*

Two domestic water connections are required, one for the Eirgrid Compound and one for the Developer Compound. Connections will be provided from the Drumgole Group Water Scheme.

In relation to stormwater drainage, please find attached, the construction stage drainage design as outlined on Malachy Walsh & Partners Consultant Engineers, drawings 23003-MWP-SS-00-DR-C-1017 Rev. C03, 23003-MWP-SS-00-DR-C-2000 Rev. C09 and 23003-MWP-SS-XX-DR-C-2013, Rev. C04.

Also enclosed is an extract from the overall construction design basis report, prepared by Malachy Walsh & Partners Consultant Engineers. This extract sets out the design rationale for the Substation Storm and Foul Water networks.

Storm Water from the Substation compound will be discharge via a full retention petrol interceptor upstream of an open storage pond. An open storage pond is proposed rather than a buried attenuation tank in the interests of ease of maintenance and serviceability. HydroBreak flow control units will be utilised to limit the discharge from the open storage pond to the existing watercourse at the prescribed Greenfield Run-Off rate in order to provide a SUDS compliant design.

Foul Water will discharge to a holding tank, the contents of which will be tankered off site 2-3 times per year. The holding tank will be fitted with a high-level notification alarm.

We would be grateful for your confirmation that the water supply and drainage arrangements are acceptable to the planning authority or to advise if you have any additional requirements to those proposed.

Directors: D. Kiely, C. McCarthy  
Regional Director: A. Phelan  
Consultants: C. Birney, R. Gillan

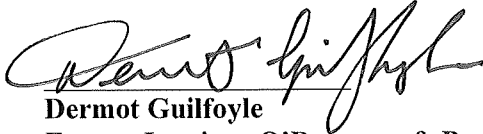
Senior R. Davis, M. Forbes, S. Gilmartin, J. Healy, S. Lee,  
Associates: J. McElvaney, T. McGloin, S. Molloy  
Associates: B. Coyle, D. Guilfoyle, L. McCormack,  
C. O'Reilly, M. Sullivan

Company Reg No. 149104 VAT Reg. No. IE6546504D



We look forward to receipt of your confirmation at your earliest convenience.

Yours faithfully,

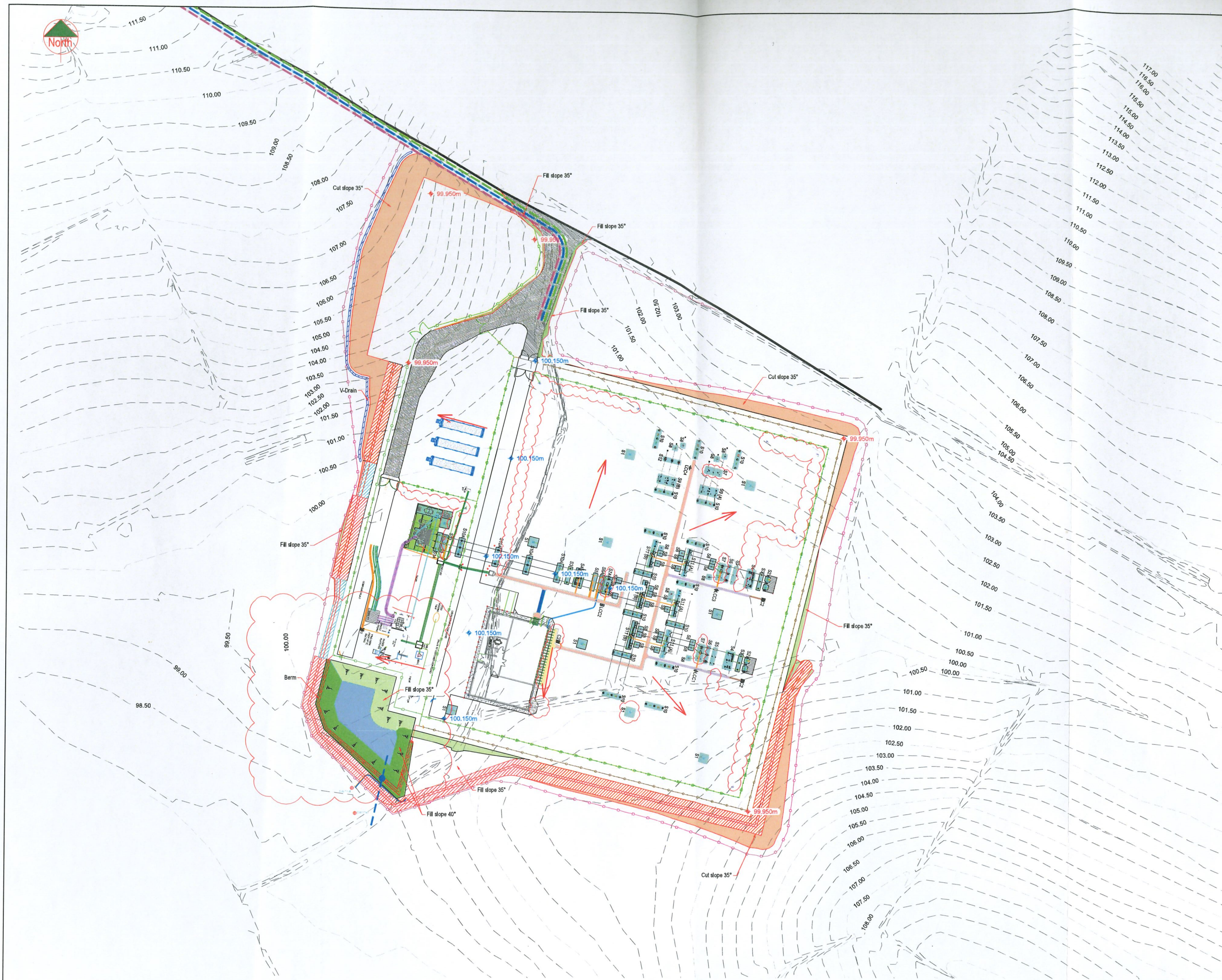
A handwritten signature in black ink, appearing to read 'Dermot Guilfoyle', written over a horizontal line.

**Dermot Guilfoyle**

**For: Jennings O'Donovan & Partners Limited**

**Encl**





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**LEGEND:**

- Site Boundary
- Palisade Fence
- Concrete Post & Rail Fence
- Post & Wire Stock Proof Fence
- Cut Slope 35°
- Fill slope 35°
- V-Drain
- Swale
- Berm
- Attenuation Pond
- 100.150m Stabilised soil finished level 100.150m
- 99.950m Stabilised soil finished level 99.950m
- Fall to top of Stabilised soil finished level

- NOTE:**
- ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, BILLS OF QUANTITIES, ARCHITECTURAL, SERVICES AND ENGINEERING DRAWINGS.
  - ALL LEVELS ARE IN METRES RELATED TO ORDNANCE DATUM MALIN HEAD.
  - ANY DISCREPANCIES BETWEEN THESE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
  - DRAWINGS ARE NOT TO BE SCALED.
  - ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.

C03	24.11.22	ISSUED FOR CONSTRUCTION	NT	BS
C02	05.09.22	ISSUED FOR CONSTRUCTION	NT	BS
C01	22.08.22	ISSUED FOR CONSTRUCTION	NT	BS
REV	DATE	DESCRIPTION	BY	APP

PROJECT: LISLEA 110KV SUBSTATION

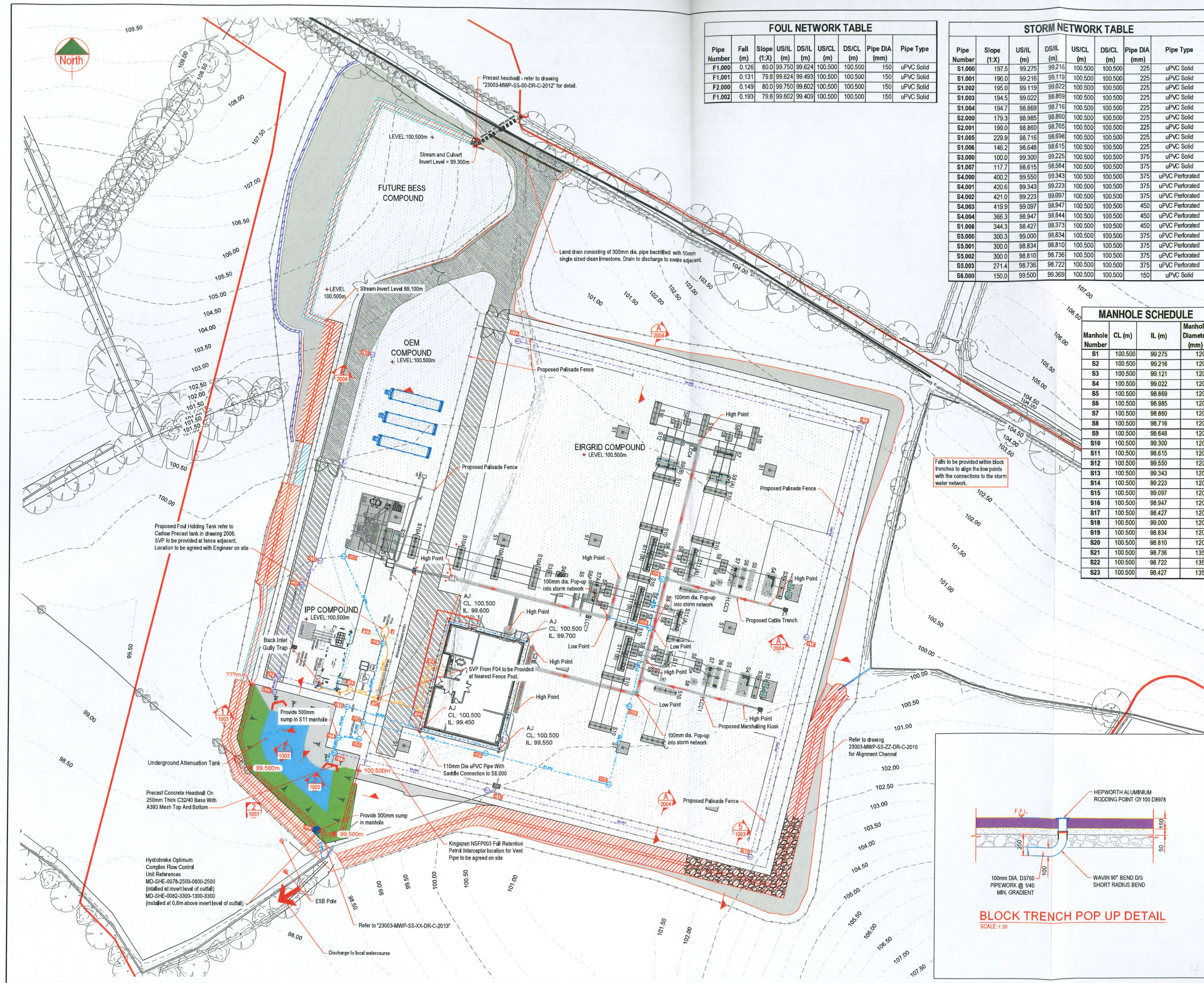
TITLE: STABILISED SOIL FINISHED LEVELS

CLIENT: **H&MV** ENGINEERING

**MWP** ENGINEERING AND ENVIRONMENTAL CONSULTANTS  
CORR | TRAFF | LONDON | LIVERP | MWP

DRAWN:	CP	CHECKED:	NT	APPROVED:	BS
PROJECT NUMBER:	23003	DATE:	OCT.2022	SCALE @A1:	1:500
STATUS DESCRIPTION: FOR CONSTRUCTION					STATUS: A
DRAWING NUMBER: 23003 - MWP - SS - 00 - DR - C - 1017					REV: C03





FOUL NETWORK TABLE							
Pipe Number	Fall (m)	Slope (1:X)	US/IL (m)	DS/IL (m)	US/CL (m)	DS/CL (m)	Pipe Type
F1.000	0.126	80.0	99.750	99.624	100.500	100.500	150 uPVC Solid
F1.001	0.131	79.8	99.624	99.493	100.500	100.500	150 uPVC Solid
F2.000	0.149	80.0	99.750	99.602	100.500	100.500	150 uPVC Solid
F1.002	0.193	79.8	99.602	99.409	100.500	100.500	150 uPVC Solid

STORM NETWORK TABLE							
Pipe Number	Slope (1:X)	US/IL (m)	DS/IL (m)	US/CL (m)	DS/CL (m)	Pipe DIA (mm)	Pipe Type
S1.000	197.5	99.275	99.216	100.500	100.500	225	uPVC Solid
S1.001	196.0	99.216	99.119	100.500	100.500	225	uPVC Solid
S1.002	195.0	99.119	99.022	100.500	100.500	225	uPVC Solid
S1.003	194.5	99.022	98.869	100.500	100.500	225	uPVC Solid
S1.004	194.7	98.869	98.716	100.500	100.500	225	uPVC Solid
S2.000	179.3	98.985	98.860	100.500	100.500	225	uPVC Solid
S2.001	199.0	98.860	98.765	100.500	100.500	225	uPVC Solid
S1.005	229.9	98.716	98.698	100.500	100.500	225	uPVC Solid
S1.006	146.2	98.648	98.615	100.500	100.500	225	uPVC Solid
S3.000	100.0	99.300	99.225	100.500	100.500	375	uPVC Solid
S1.007	117.7	98.615	98.584	100.500	100.500	375	uPVC Solid
S4.000	400.2	99.550	99.343	100.500	100.500	375	uPVC Perforated
S4.001	420.6	99.343	99.223	100.500	100.500	375	uPVC Perforated
S4.002	421.0	99.223	99.097	100.500	100.500	375	uPVC Perforated
S4.003	419.9	99.097	98.947	100.500	100.500	450	uPVC Perforated
S4.004	366.3	98.947	98.844	100.500	100.500	450	uPVC Perforated
S1.008	344.3	98.427	98.373	100.500	100.500	450	uPVC Perforated
S5.000	300.3	99.000	98.834	100.500	100.500	375	uPVC Perforated
S5.001	300.0	98.834	98.810	100.500	100.500	375	uPVC Perforated
S5.002	300.0	98.810	98.736	100.500	100.500	375	uPVC Perforated
S5.003	271.4	98.736	98.722	100.500	100.500	375	uPVC Perforated
S6.000	150.0	99.500	99.369	100.500	100.500	150	uPVC Solid

MANHOLE SCHEDULE			
Manhole Number	CL (m)	IL (m)	Manhole Diameter (mm)
S1	100.500	99.275	1200
S2	100.500	99.216	1200
S3	100.500	99.121	1200
S4	100.500	99.022	1200
S5	100.500	98.869	1200
S6	100.500	98.985	1200
S7	100.500	98.860	1200
S8	100.500	98.716	1200
S9	100.500	98.648	1200
S10	100.500	99.300	1200
S11	100.500	98.615	1200
S12	100.500	99.550	1200
S13	100.500	99.343	1200
S14	100.500	99.223	1200
S15	100.500	99.097	1200
S16	100.500	98.947	1200
S17	100.500	98.427	1200
S18	100.500	99.000	1200
S19	100.500	98.834	1200
S20	100.500	98.810	1200
S21	100.500	98.736	1350
S22	100.500	98.722	1350
S23	100.500	98.427	1350

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**LEGEND:**

- Site Boundary
- Proposed Marshalling Kiosk
- Proposed uPVC Culvert Pipe
- Proposed 300mm Ø Riddrain with 250 mm Concrete Surround
- Proposed uPVC Storm Water Pipe
- Perforated uPVC Land Drain
- Proposed Storm Water Access Junction
- Proposed Storm Water Manhole
- 150mm Ø uPVC Foul Water Pipe
- Proposed Foul Water Access Junction
- Proposed Foul Water Manhole
- Proposed Watermain - 2mm Diameter Hydrodare to be installed in accordance with Irish Water's Code Of Practice
- ACO Channel
- Berm
- Attenuation Pond
- Trapezoidal Channel
- Rectangular Channel
- 100mm dia. Pop-up Into Storm Network

**NOTE:**

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- ALL LEVELS ARE IN METRES RELATED TO ORDNANCE DATUM MALIN HEAD.
- ANY DISCREPANCIES BETWEEN THESE DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
- DRAWINGS ARE NOT TO BE SCALED.
- ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
- CC18/20 CONCRETE SURROUND (150MM) TO BE PROVIDED TO ALL NON-PERFORATED DUCTWORK WHERE LESS THAN 900mm COVER IS PRESENT.

C09	21.12.22	ISSUED FOR CONSTRUCTION	NT	BS
C08	23.11.22	ISSUED FOR CONSTRUCTION	NT	BS
C07	23.09.22	ISSUED FOR CONSTRUCTION	NT	BS
C06	09.09.22	ISSUED FOR CONSTRUCTION	NT	BS
C05	07.09.22	ISSUED FOR CONSTRUCTION	NT	BS
C04	05.09.22	ISSUED FOR CONSTRUCTION	NT	BS
C03	23.08.22	ISSUED FOR CONSTRUCTION	NT	BS
C02	06.08.22	ISSUED FOR CONSTRUCTION	NT	BS
C01	05.08.22	ISSUED FOR CONSTRUCTION	NT	BS
REV	DATE	DESCRIPTION	BY	APP

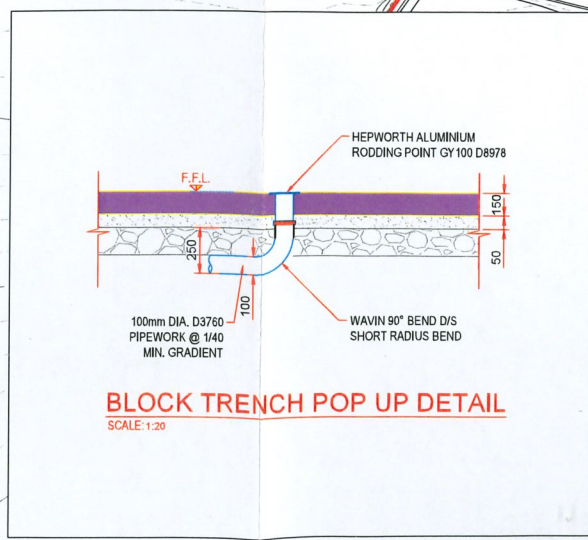
LISLEA 110KV SUBSTATION

COMPOUND DRAINAGE LAYOUT

CLIENT: **H&MV ENGINEERING**

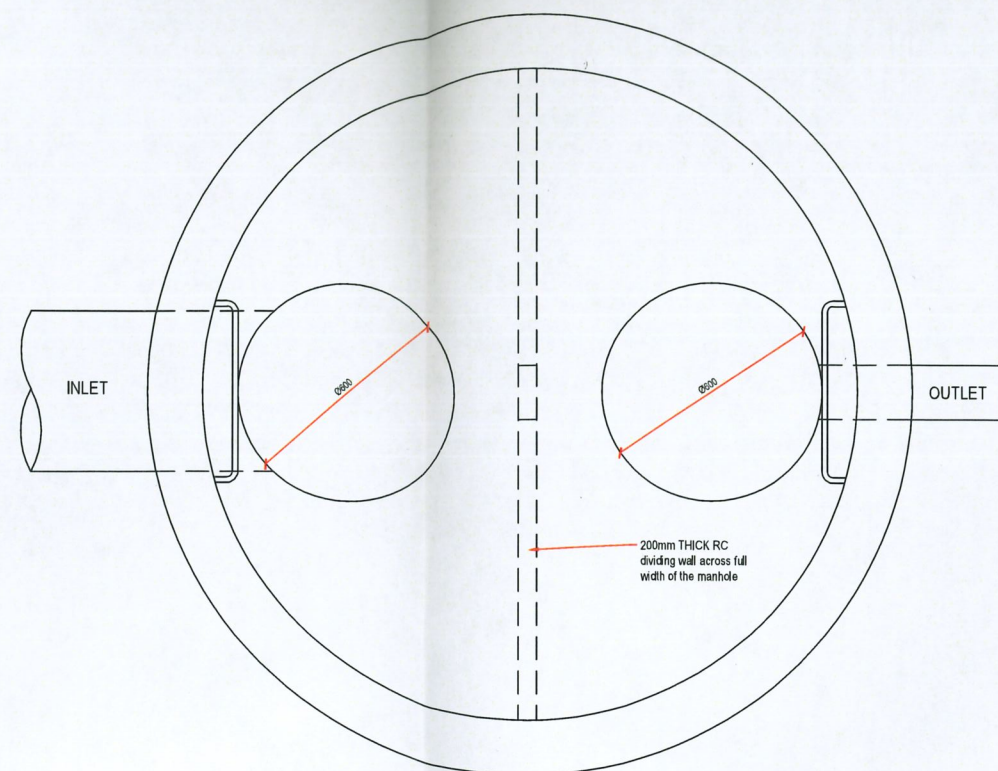
**MWP**  
ENGINEERING AND ENVIRONMENTAL CONSULTANTS  
CORR | TRALEE | LONDONDERRY | LIMERICK

DRAWN	CP	CHECKED	NT	APPROVED	BS
PROJECT NUMBER	23003	DATE	DEC.2022	SCALE @ A1	1:400
STATUS DESCRIPTION	FOR CONSTRUCTION				A
DRAWING NUMBER	23003 - MWP - SS-00-DR-C-2000				C09

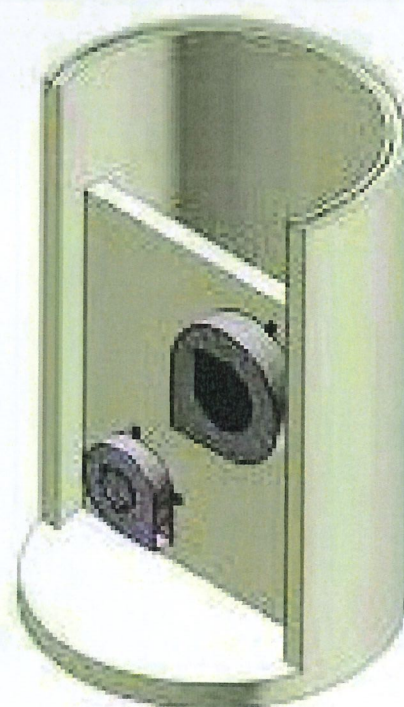




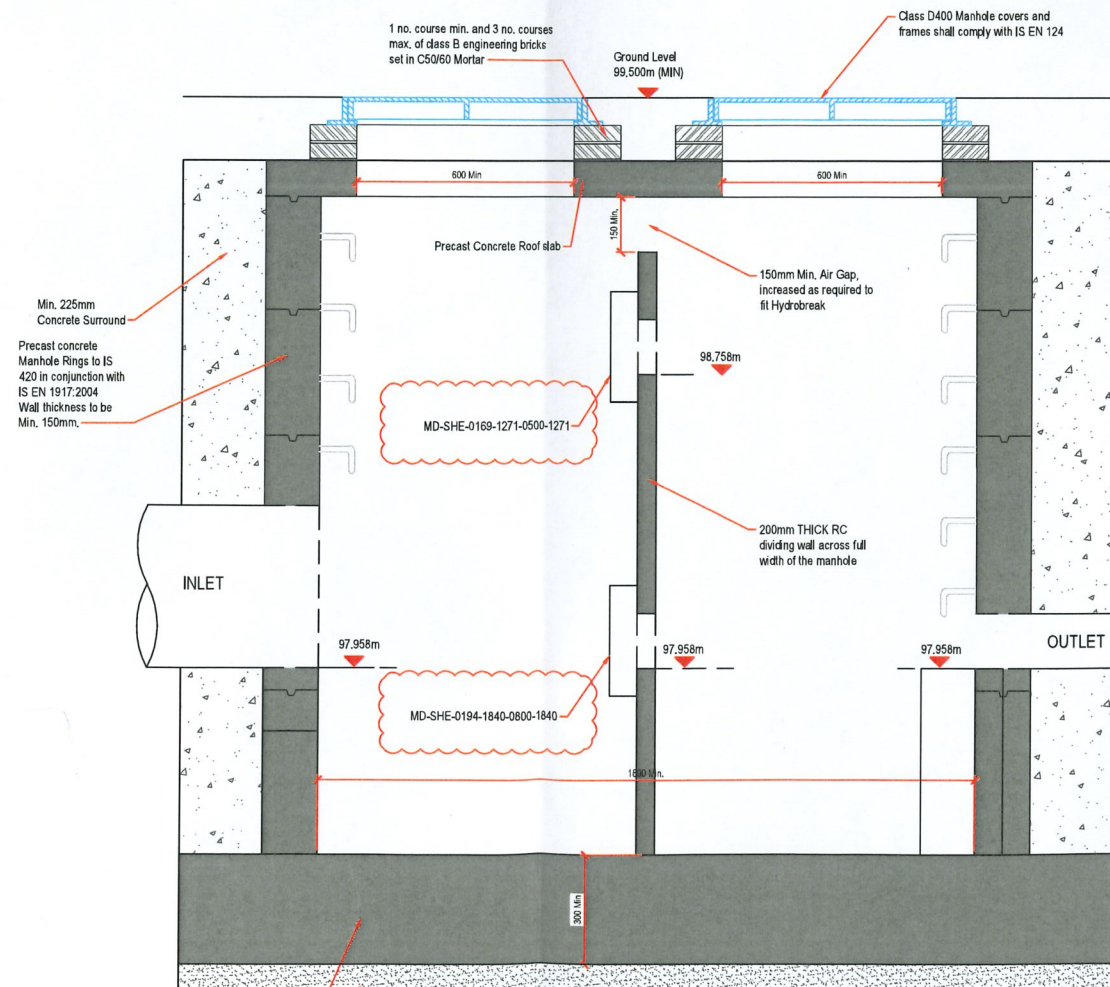
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DISCHARGE SPLIT WALL  
MANHOLE PLAN  
Scale 1:10



TYPICAL POSITIONING OF  
HYDRO BREAKS IN DISCHARGE  
SPLIT WALL MANHOLE



DISCHARGE SPLIT WALL  
MANHOLE SECTION  
Scale 1:10

Note:  
Refer To Drawing 23003-MWP-SS-XX-DR-C-2004 for further information regarding Manhole details

Note:  
All work to be in accordance with Engrid Functional Spec Document:  
- XDS-GFS-13-001-R2

CD4	21.12.22	ISSUED FOR CONSTRUCTION	NT	BS
CD3	23.09.22	ISSUED FOR CONSTRUCTION	NT	BS
CD2	16.09.22	ISSUED FOR CONSTRUCTION	NT	BS
CD1	05.09.22	ISSUED FOR CONSTRUCTION	NT	BS
REV	DATE	DESCRIPTION	BY	APP

PROJECT:  
LISLEA 110KV SUBSTATION

TITLE:  
DISCHARGE SPLIT WALL MANHOLE SECTION

CLIENT:  
**H&MV**  
ENGINEERING

**MWP**  
ENGINEERING AND ENVIRONMENTAL CONSULTANTS  
COB: | TRALCE | LONDON | LIMERICK

DESIGN:	CP	CHECKED:	NT	APPROVED:	BS
PROJECT NUMBER:	23003	DATE:	SEP.2022	SCALE @ A1:	AS SHOWN
STATUS DESCRIPTION:	FOR CONSTRUCTION				STATUS: A
DRAWING NUMBER:	23003 - MWP - SS - XX - DR - C - 2013				REV: C04



## 6.3 Geotechnical Review

The Geotechnical Review is included in Appendix G and is informed by the site investigation in Appendix F. The key outcomes are:

- The site comprises 1-1.5m of clays on gravels/sands.
- SPTs are generally increasing with depth.
- The geophysics carried out suggest firm/stiff ground predominantly. This is confirmed by the borehole provided.
- Dynamic probes provide data used to inform the settlement analysis of the ground.
- Settlements are conservative but are all limited to a 25mm total settlement limit.

A Ground Risk Register has been prepared following on from the Geotechnical Review and is included in Appendix H. A bearing capacity slip circle calculation is provided in Appendix L. A Britpave publication on the design life of stabilised soil is provided in Appendix G.

## 6.4 Drainage

### 6.4.1 Storm Water Network

The proposed drainage network is designed cater for the run-off generated from the building roofs, cable trenches and compound stone. Substation compounds predominantly drain by the lateral movement of rainfall through the compound stone and underlying stone uphill towards the edges of the compound area. This is facilitated by a grading the top of the stabilised soil to fall towards the compound edges, as shown on 23003-MWP-SS-ZZ-DR-C-1017. The perforated land drains are provided at the compound edges to intercept this run-off, and these convey this discharge to the infiltration basin. A separate network discharges runoff generated from the cable chambers and trafo bund including passing both this runoff through a petrol interceptor prior to it entering the infiltration basin. The IPP and Eirgrid building roofs bypass the petrol interceptor within the drainage network.

EN752: 2017, Drain and Sewer Systems Outside Buildings, Tb 2 states that no surcharging of the sewer network should occur during a 5-year return period. This approach has been adopted within the Microdrainage analysis. A Volumetric Run-Off Co-Efficient of 0.9 is taken for hardstand areas as advised by the South Dublin County Council Sustainable Drainage Explanatory Design and Evaluation Guide 2022. This is a worst-case upper threshold and higher than the Cv values for summer (0.75) and winter (0.84) are provided as advised by the TII *Design of Earthworks Drainage, Network Drainage, Attenuation and Pollution Control* (DN-DNG-03066). Cv is the proportion of the Percentage run off (PR) divided by the Percentage of catchment area covered by impervious surfaces. The PR was calculated using the methodology outlined within the CIRIA Suds Manual. The calculation shown below shows that for 100% permeability that the calculated cv value for the 100 year event is less than the design value of 0.9 used in Microdrainage. The PIMP values were selected as follows in **Table 6-1**. These values are deemed to be representative of the respective catchment types within the site. The r ratio which is the ratio of the M5-60 (15mm/hr) divided by the M5-2Day (54.9mm/hr) was calculated as 0.273 with the values obtained from a Depth Duration Frequency Table produced by Met Eireann for the site location.



Table 6-1: PIMP Values used in the Design

Catchment	PIMP Value (%)
Road	85
Buildings	95
Grass	20
Stabilised Soil	85

PR	percentage runoff	
PIMP	percentage impermeability of the sub-catchment	100%
Ifn	effective impermeability factor for a particular paved surface type	0.7
$\beta$	power coefficient for paved surface	0.5
Pipv	precipitation index for paved surface with rapid decay coefficient	0
PFpv	soil store depth for paved surface	10mm
SPR	standard percentage runoff (for both WRAP and HOST soil classes)	53%
PIs	precipitation index for pervious surface with decay coefficient	0
NAPIs	antecedent precipitation index for a particular pervious surface type (with 30-day decay coefficient)	10
Cr	power coefficient for pervious surface	0.8
PFs	soil store depth for a particular pervious surface type	35
PR		0.7
cv		0.7
	frequency adjustment factor for 100 year event	1.25
cv,100		0.875

The design head and design flow are as stated by the flow control device manufacturer. This design uses a complex flow-control system (2 hydrobrakes) with varying installation elevations. Drawing no. C2013 shows this detail.

Flows are based on the figures stated for run-off rates for the various return periods as stated within the Drainage Design Report produced by Jennings O'Donovan Engineers (Appendix I) in the planning application. The pertinent inputs are below.

$$Q_{1\text{-yr}} = 2.5 \text{ l/s}$$

$$Q_{30\text{-yr}} = 2.8 \text{ l/s}$$

$$Q_{100\text{-yr}} = 3.3 \text{ l/s}$$

$$\text{Area} = 0.2214\text{ha}$$

Their analysis focused on the runoff from the Transformers, Eirgrid Building, Customer Building & Concrete Roads only. It did not consider the runoff from the much larger compound as a whole. The compound being drained has a larger catchment



than used at planning as it caters for the runoff generated in these areas as well as the wider compound. The discharge rate has been recalculated using the same philosophy as the JOD report to take cognisance of this wider catchment.

$$Q_{1\text{-yr}} = 15.7\text{ l/s}$$

$$Q_{30\text{-yr}} = 30.4\text{ l/s}$$

$$Q_{100\text{-yr}} = 35.9\text{ l/s}$$

The infiltration pond provided to the south of the compound is a combined attenuation/infiltration pond. It is sized to allow as much infiltration as practicable into the underlying gravels while attenuating higher flow as required and discharging them to the 1yr, 30yr and 100yr events respectively. The Microdrainage analysis incorporates this infiltration with modelled behaviour of the system with the infiltration pond and conveyance system with the flow control to derive how the design will behave for the analysed storm events. The Microdrainage analysis is included in Appendix I.

The infiltration capacity of the soil at the location of the attenuation pond was assessed anecdotally through a visual inspection of trial holes at the location of the proposed pond during the May 2022 site walkover. This confirmed a perched water table that dissipated very quickly once the more permeable underlying gravels strata were reached. Figure 1 below gives a good representation of the geotechnical profile to the south of the site at the proposed location of the pond– clay on gravelly sand on gravel. It also shows the drop in water level once excavated by about 1m in a matter of minutes, indicating good percolation characteristics.



Figure 1 : Trial hole at attenuation pond location

Soil infiltration testing confirmed this assessment, with a discharge rate of  $2.5 \times 10^{-5}$  m/s recorded (Appendix I – Drainage). This verified that the model throttled the discharge to the estimated green field flow rates for the 1yr, 30yr and 100 yr events respectively.

The construction of the infiltration basin is provided in Section G of 23003-MWP-SS-00-DR-C-1003. The base of the infiltration basin extends to the level of the infiltration test at about 97.000m. Only the base is used in the calculations. A vortex flow-control device (Hydrobrake Optimum Flow) is modelled to attenuate the discharge to the limits stated previously from the



infiltration basin to the downstream catchment. The Microdrainage analysis estimates the highest water level to be 99.300m approximately. The top of the berm at 99.500m provides more than adequate freeboard, and also acts as an overflow relief at a level 1m lower than the compound level should something unexpected occur. A Combigrid protective layer is provided on the stabilised soil side of the pond to reduce the risk of degradation by water. We believe this risk to be extremely low in the first place, without this geogrid. An Enkamat erosion control geotextile is also provided to provide protection to all slopes.

500mm deep sump manholes are provided immediately downstream and upstream of the attenuation pond. These sump manholes are to assist with the removal of any sediment potentially generated by the runoff. The petrol interceptor also includes a silt trap which further mitigates the risk.

### **Foul Water Network**

A foul network is provided to facilitate the toilet in the Eirgrid building and IPP modular building. The foul from both buildings discharges to a concrete holding tank. The tank has a capacity of 5m<sup>3</sup>. A tank of this size would need emptying 2-3 times per year. A soil vent pipe is provided to facilitate removal of odours from the tank.

The flow rate assumed for the design is what is advised for an industrial office/factory type setting without a canteen given the nature and usage which is advised as being which is 50l/person/day within Irish Water's Code of Practice. This equates to 200l/week for the substation assuming 4 no. visitors per week. The volume of effluent that would be generated by the advised rates is estimated to be 0.8m<sup>3</sup>/month which equates to 4.8m<sup>3</sup> every 6 months. The proposed volume of the holding tank is 5m<sup>3</sup>.

### **6.4.2 Overland flows**

3 of the 4 sides of the compound are relatively benign in terms of the need for cut-off drains to intercept overland flow. Notwithstanding this, the proposed land drains act as cut-off drains for whatever minor flows may make their way to the site boundary. The larger cut to the west on the hillier ground will result in higher overland flows reaching the site. A v-notch drain to the west will intercept these flows and convey them downstream of the attenuation pond. The existing drain which is diverted flows through a culvert and a new open channel to the west and south of the site which has undergone a Section 50 application to the OPW. The purpose of the interceptor drain follows the philosophy in CIRIA C648 and the Site Development Manual to minimise the ingress of this flow into the site and to mimic the existing hydraulic regime. A runoff coefficient of 0.15 has been selected for the area draining into the interceptor drain as a representative value of the vegetation present and shallow slope. So far as reasonably practicable, it has been designed to convey the overland flow generated from a storm event of 75mm/hr.

### **6.4.3 River Diversion**

The existing stream through the site is to be diverted as per the provisions of planning. An updated Flood Risk assessment and Section 50 application is provided in this regard in Appendix E.