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Mrs. Suzanne McClure,
Brock McClure Planning & Development Consultants,
63 York Road,
Dun Laoghaire,
Co. Dublin

20 October 2021

Ref: P210203/so'r

Dear Suzanne,

RE: EQUINIX (IRELAND) LTD.,
PLOT 100, PROFILE PARK, NANGOR ROAD, CLONDALKIN, DUBLIN 22,
PLANNING REG. REF. SD21A/0186

Please find our response to Item No.'s 4 & 6, addressing the Request For Additional Information pertaining to the above project, as dated 30th August 2021, together with 6 No. copies of all documentation, as mentioned below:-

<u>Item 4:-</u>

Water:

(a) In order to assess the feasibility of a connection to public water infrastructure further information is requested as follows: The applicant is required to engage with Irish Water through the submission of a Pre-Connection Enquiry (PCE) in order to determine the feasibility of connection to the public water infrastructure. The Confirmation of Feasibility (COF) must be submitted to the planning department as the response to this further information request. Pre-connection enquiries can be made at

(b) It is unclear where the applicant proposes to make a connection to the public watermains network. The applicant is requested to submit a drawing in plan outlining the existing and proposed water supply layout for the development up to the point of connection to the public watermains. Maps of the public watermains and Wastewater drainage networks may be obtained, if available, for required locations in by emailing: datarequests@water.ie.

Foul:

(a) In order to assess the feasibility of a connection to public waste water infrastructure further information is requested as follows; The applicant is required to engage with Irish

Water through the submission of a Pre-Connection Enquiry (PCE) in order to determine the feasibility of connection to the public waste water infrastructure. The Confirmation of Feasibility (COF) must be submitted to the planning department as the response to this further information request.

(b) It is unclear where the applicant proposes to connect the foul water drainage from the development. The applicant is requested to submit a drawing showing existing and proposed foul water drainage layouts up to and including the point of connection to the public foul water sewer. The drawing shall include the location of all Aj's, manholes, pipe size, material type and direction of flow. The drawing shall clearly show that the foul and surface water systems are discharging to separate pipe networks. Maps of the public watermains and Wastewater drainage networks may be obtained, if available, for required locations in by emailing: datarequests@water.ie.

Response:-

Water (a): Confirmation of feasibility without requirements for infrastructure upgrade on the water network has been received from Irish Water, please see Annexure A.

Water (b): Please see revised Proposed Site Levels & Water Main Layout drawing attached in Annexure B (Drawing No: DB080-PIN-00-ZZ-DR-C-PLAN-1202) showing the existing water mains, proposed water mains and proposed connections point.

Foul (a): Confirmation of feasibility without requirements for infrastructure upgrade on the waste water network has been received from Irish Water, please see Annexure A.

Foul (b): Please see revised Foul Water Site Drainage drawing attached in Annexure B (Drawing No: DB080-PIN-00-ZZ-DR-C-PLAN-1206) showing the existing water mains, proposed water mains and proposed connections point.

Item 6:-

(a) The applicant is requested to submit a report showing greenfield run off rates and attenuation calculations for each surface water drainage catchment. The report shall include a breakdown of all surface types and run off coefficients for each surface water catchment area.

(b) The applicant is requested to submit a drawing which clearly shows: • All surface water catchment areas proposed. • The location of all proposed flow control devices and corresponding maximum discharge rates for each device. There shall be a flow control device inserted on the outfall of the proposed attenuation pond. The maximum surface water discharge rate from the site must not exceed 4.4 L/S

(c) The applicant is requested to minimise the use of underground attenuation systems on site. Where this cannot be achieved arch type systems should be installed as oppose to concrete tanks. The applicant is requested to submit a cross section detail of the proposed attenuation pond and underground attenuation systems.

(d) The applicant is requested to clarify what attenuation volumes are proposed for the development as the volumes referred to in the engineering report do not correlate with the submitted surface drainage plans.

(e) The applicant is requested to submit a drawing showing the inclusion of more Sustainable Drainage Systems (SuDS) for the development such as swales, filter drains, tree pits, rain gardens and Rainwater harvesting systems. A cross sectional detail is required of all proposed SuDS features.

(f) The applicant is requested to demonstrate how water pollution mitigation measures have been incorporated into the design regarding fuel storage onsite. Fuel tank leakages must not allow polluted water to enter surface water drainage network. All works shall comply with the Greater Dublin Regional Code of Practice for Drainage Works in this regard.

(g) The applicant is requested to confirm all petrol/oil interceptors proposed on the surface water drainage network shall be of Class 1 standard as per the requirements of the Greater Dublin Regional Code of Practice for Drainage Works.

Response:-

(a)
Please see Annexure C attached for the greenfield (Pre development) runoff rates.
Please see Annexure D Attached for the Post Development EPA SWMM simulation results for the runoff rates, attenuation volumes and catchment properties.
Please see Drawing DB080-PIN-00-ZZ-DR-C-PLAN-1212-External Works Plan attached in Annexure E showing the surface areas and catchments.

(b)
Please see revised Surface Water Site Drainage Layout drawing attached In Annexure E (Drawing No: DB080-PIN-00-ZZ-DR-C-PLAN-1207) showing the Hydrobrake positions, maximum outflow allowed and pond cross sections.

SWMH 13.2 will have a Hydrobrake with maximum outflow of 3.11 l/s. SWMH 14.1 will have a Hydrobrake with maximum outflow of 1.28 l/s. These 2 Hydrobrakes combined will limit the outflow to a maximum of 4.39 l/s for the site.

(c)
Attenuation Tank 1 and Attenuation Tank 3 will be a Stormtech attenuation tanks, please see details attached in Annexure F.

Attenuation Tank 2 will be a precast concrete attenuation tank due to space constraints, please see details attached in Annexure G.

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(d) The following attenuation volumes will be provided for the development as per drawing and SWMM hydraulic model:

Attenuation Facility	Volume (m^3)
Attenuation Tank 1	105 m^3
Attenuation Tank 2	128 m^3
Attenuation Tank 3	123 m^3
Attenuation Pond 1	848 m^3
Permeable Paving 1	183 m^3
Permeable Paving 2	709 m^3
TOTAL	2097 m^3

(e) Please refer to KLFA (Landscape Architects) landscaping layout for landscaping requirements.

(f) Fuelling and fuel storage areas will be constructed as a bunded area with a Class 1 oil inceptor preventing any pollution from entering the surface water drainage network.

(g) All Petrol/Oil Inceptors will be Class 1 as per the requirements of the Greater Dublin Regional Code of Practice for Drainage Works. It is proposed to use Conder (or similar approved) inceptors.

Should you have any queries, or require any further information or drawings, please do not hesitate to contact me.

Yours sincerely,

Shaun O'Reilly
Pinnacle Consulting Engineers
shaun.oreilly@iepinnacle.com
+353 1 231 1044

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APPENDIX A

LETTTER FROM IRISH WATER

Declan Malley

19-20 Hogan Place
Lower Grand Canal St
Dublin 2
Dublin

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office
Cork City.

www.water.ie

13 January 2021

Re: CDS20007552 pre-connection enquiry - Subject to contract | Contract denied

Connection for Business Connection of 1 unit at DBR Plot 100, Profile Business Park, Dublin

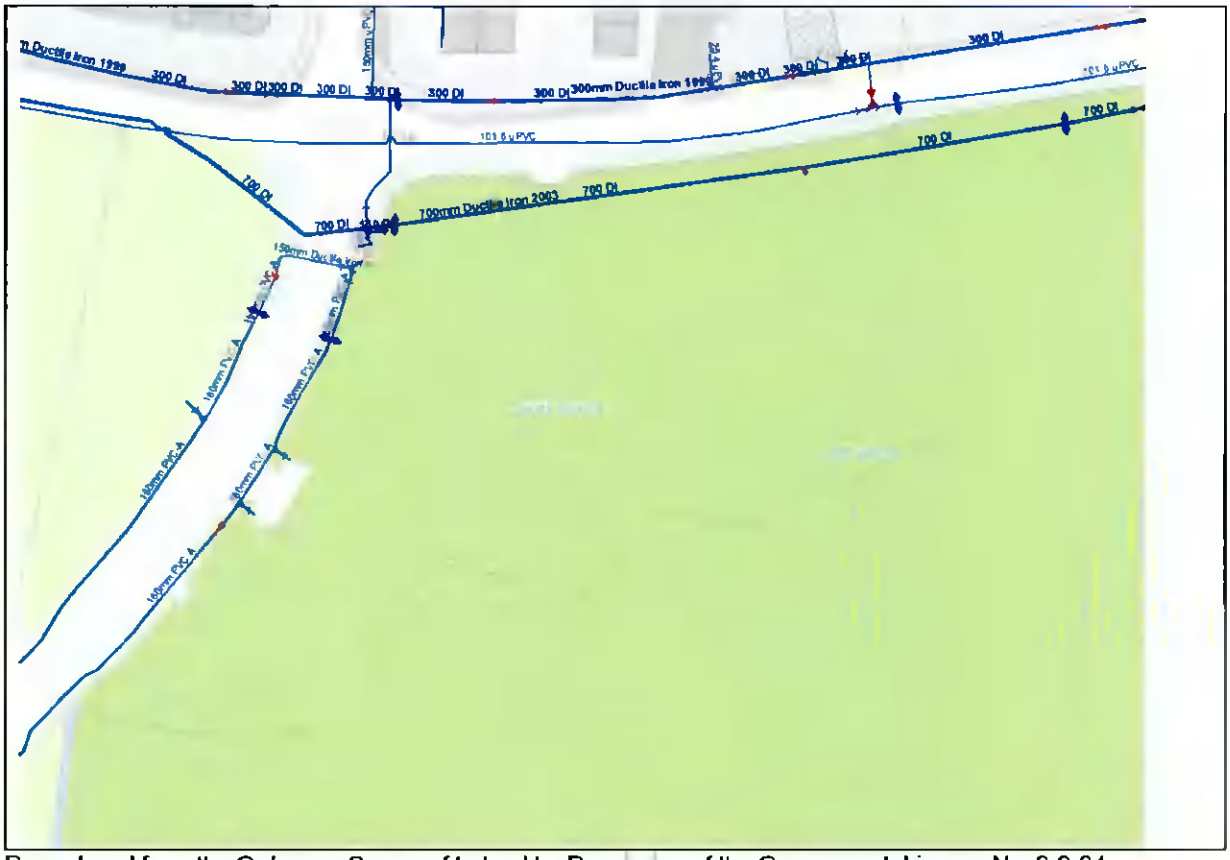
Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at DBR Plot 100, Profile Business Park, Dublin (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	OUTCOME OF PRE-CONNECTION ENQUIRY THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.
Water Connection	Feasible without infrastructure upgrade by Irish Water
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	• The Development should be connected to 300mm DI main in R134 road with installation of a bulk meter and associated telemetry system. • On site water storage will be required for the average day peak week demand rate of the business section for 24 hour period with a re-fill time of 12 hours. • The proposed development indicates that an important Irish Water asset is present on the site (700 mm DI main). The Developer has to demonstrate that proposed structures and works will not inhibit access for maintenance or endanger structural or functional integrity of the infrastructure during and after the works. A wayleave in favour of Irish Water will be required over the infrastructure that is not located within the Public Space.

Wastewater Connection	• The proposed Development connects via private wastewater infrastructure within Grange Castle Business Park. Please be advised that at connection application stage you have to provide written confirmation from the owner of the infrastructure that you have received legal permission to connect to and that the infrastructure has capacity and integrity to cater the additional load from the Development.
The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.	

The map included below outlines the current Irish Water infrastructure adjacent to your site:



Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Marina Byrne from the design team via email mzbyrne@water.ie For further information, visit **www.water.ie/connections.**

Yours sincerely,

Yvonne Harris

Head of Customer Operations

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APPENDIX B

PROPOSED SITE LEVELS & WATER MAIN LAYOUT
&
FOUL WATER SITE DRAINAGE DRAWING

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67a Patrick Street
Dun Laoghaire
Dublin

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Email dublin@iepinnacle.com
Website www.pinnacleconsultingengineers.com

Mrs. Suzanne McClure,
Brock McClure Planning & Development Consultants,
63 York Road,
Dun Laoghaire,
Co. Dublin

20 October 2021

Ref: P210203/S[illegible]'r

Dear Suzanne,

RE: EQUINIX (IRELAND) LTD.,
PLOT 100, PROFILE PARK, NANGOR ROAD, CLONDALKIN, DUBLIN 22,
PLANNING REG. REF. SD21A/0186

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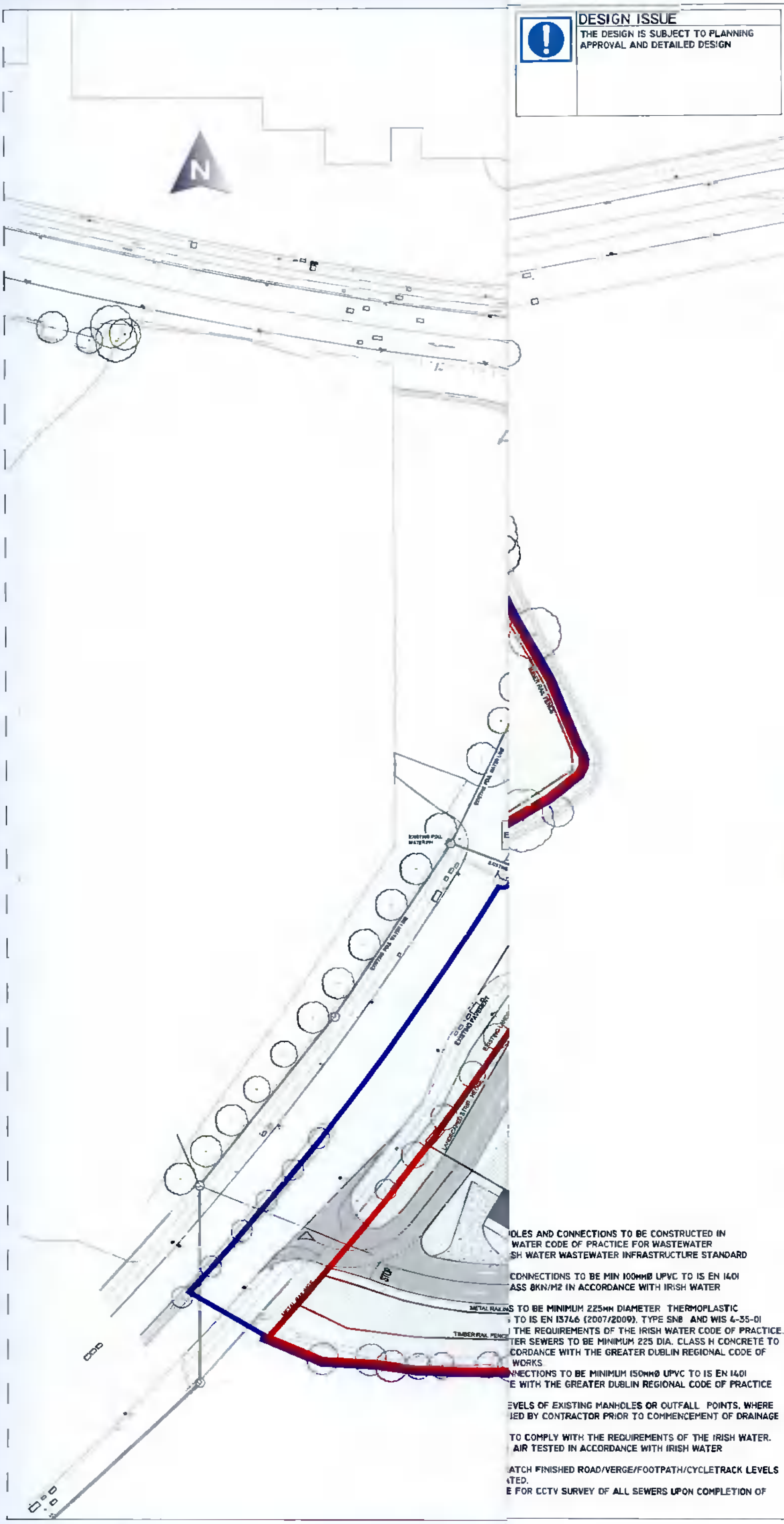
(a) In order to assess the feasibility of a connection to public waste water infrastructure further information is requested as follows; The applicant is required to engage with Irish



DESIGN ISSUE

THE DESIGN IS SUBJECT TO PLANNING APPROVAL AND DETAILED DESIGN

[illegible]OLES AND CONNECTIONS TO BE CONSTRUCTED IN
[illegible] WATER CODE OF PRACTICE FOR WASTEWATER
[illegible]SH WATER WASTEWATER INFRASTRUCTURE STANDARD

[illegible] CONNECTIONS TO BE MIN 100mmØ UPVC TO IS EN 1401
[illegible]ASS 8KN/M2 IN ACCORDANCE WITH IRISH WATER

[illegible]S TO BE MINIMUM 225mm DIAMETER THERMOPLASTIC
[illegible] TO IS EN 13746 (2007/2009). TYPE SN8 AND WIS 4-35-01
[illegible] THE REQUIREMENTS OF THE IRISH WATER CODE OF PRACTICE.
[illegible]TER SEWERS TO BE MINIMUM 225 DIA. CLASS H CONCRETE TO
[illegible]CORDANCE WITH THE GREATER DUBLIN REGIONAL CODE OF
[illegible] WORKS.
[illegible]NECTIONS TO BE MINIMUM 150mmØ UPVC TO IS EN 1401
[illegible]E WITH THE GREATER DUBLIN REGIONAL CODE OF PRACTICE

[illegible]EVELS OF EXISTING MANHOLES OR OUTFALL POINTS, WHERE
[illegible]ED BY CONTRACTOR PRIOR TO COMMENCEMENT OF DRAINAGE

[illegible] TO COMPLY WITH THE REQUIREMENTS OF THE IRISH WATER.
[illegible] AIR TESTED IN ACCORDANCE WITH IRISH WATER

[illegible]ATCH FINISHED ROAD/VERGE/FOOTPATH/CYCLETRACK LEVELS
[illegible]TED.
[illegible]E FOR CCTV SURVEY OF ALL SEWERS UPON COMPLETION OF

Client:

EQUINIX

HAZARD IDENTIFICATION LEGEND.

HAZARD IDENTIFICATION (If none state 'none relevant')	CONTROL AND MITIGATION MEASURES

NOTE:
Hazards listed above are only those considered significant risks and

a) not likely to be obvious to a competent contractor or other designers.
b) unusual or
c) likely to be difficult to manage effectively

LEGEND

PROPOSED PRIVATE SURFACE WATER SEWER
PROPOSED PRIVATE FOUL SEWER
EXISTING PRIVATE FOUL WATER SEWER
EXISTING PRIVATE SURFACE WATER SEWER
EXISTING PUBLIC FOUL SEWER
EXISTING PUBLIC SURFACE WATER SEWER
BDI MANHOLE BACKDROP
DRAINAGE CHANNEL
DRAINAGE RUN TO BE ABANDONED
TX INTERNAL FOUL GULLY PIPE
G ROAD GULLY
RE RODDING EYE
SU SUMP UNIT WITH RODDABLE AIR TRAP
SVP SOIL VENT PIPE
SS STUB STACK
AAV AIR ADMITTANCE VALVE
FIT FOUL INTERCEPTOR TRAP
RWP RAINWATER DOWNPIPE
SRWP SIPHONIC RAINWATER DOWNPIPE
69.200 PROPOSED LEVEL
69.200 EXISTING TIE IN LEVEL
67.72 EXISTING LEVEL
SITE BOUNDARY
CONCRETE ATTENUATION TANK
STORMTECH ATTENUATION TANK

REV	DATE	DESCRIPTION	DWN CHK APP
P02	17.09.2[illegible]	ISSUED FOR TENDER	FJ/YR/JM
P01	30.08.2[illegible]	ISSUED FOR FORMAL REVIEW	FJ/YR/JM

Key:

Project:
EQUINIX DB081

Drawing Title
FOUL WATER
SITE DRAINAGE

Drawing Number:
DB080-PIN-00-ZZ-DR-C-PLAN-1206

Scale	Paper Size	Purpose	Revision
1:500	A1	D2	P02

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SIXTH FLOOR PROSPECT HOUSE 100 NEW OXFORD STREET LONDON WC1A 1HB Tel: 0207 0433410

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APPENDIX C

SURFACE WATER DRAINAGE CALCULATIONS
PRE DEVELOPMENT (GREENFIELD)

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.022)

DB8 - IRELAND (1:100 Green Fields)
1:100 Green Fields
June 2021

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units ..... LPS
Process Models:
  Rainfall/Runoff ..... YES
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... NO
  Water Quality ..... NO
Infiltration Method ..... HORTON
Starting Date JAN-01-1999 00:00:00
Ending Date JAN-02-1999 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:02:00
Wet Time Step 00:00:30
Dry Time Step 01:00:00

WARNING 09: time series interval greater than recording interval for Rain Gage Main_Rain_Gage

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.273	121.694
Evaporation Loss	0.000	0.000
Infiltration Loss	0.217	97.033
Surface Runoff	0.008	3.766
Final Surface Storage	0.047	20.897
Continuity Error (%)	-0.002	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.008	0.084
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.008	0.084
Internal Outflow	0.000	0.000
Storage Losses	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
CAT_01	121.69	0.00	0.00	97.03	3.77	0.08	4.74	0.031

Analysis begun on: Thu Sep 23 15:34:33 2021
Analysis ended on: Thu Sep 23 15:34:34 2021
Total elapsed time: 00:00:01

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APPENDIX D

SURFACE WATER DRAINAGE CALCULATIONS POST DEVELOPMENT

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.022)
--------------------------------------------------------------

DB8 - IRELAND (1:100 Post development)
1:100 Post development
June 2021

***********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
***********************************************************

****************
Analysis Options
****************
Flow Units ..... LPS
Process Models:
  Rainfall/Runoff ..... YES
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... HORTON
Flow Routing Method ..... DYNWAVE
Starting Date ..... JAN-01-1999 00:00:00
Ending Date ..... JAN-02-1999 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:02:00
Wet Time Step ..... 00:00:30
Dry Time Step ..... 01:00:00
Routing Time Step ..... 2.00 sec


WARNING 09: time series interval greater than recording interval for Rain Gage Main_Rain_Gage

**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.271       121.694
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.016         7.133
Surface Runoff ...........         0.238       106.684
Final Surface Storage ....         0.018         7.903
Continuity Error (%) .....        -0.021


**************************        Volume        Volume
Flow Routing Continuity        hectare-m     10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.238         2.379
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.025         0.255
Internal Outflow .........         0.000         0.000
Storage Losses ...........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.211         2.113
Continuity Error (%) .....         0.478


*************************
Highest Continuity Errors
*************************
Node SW_5.4 (6.61%)
Node SW_5.1 (4.01%)
Node SW_3.1 (1.82%)
Node SW_3.5 (1.39%)


****************************
Time-Step Critical Elements
****************************
None


*********************************
Highest Flow Instability Indexes
*********************************
Link 5.5 (1)


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.16 sec
Maximum Time Step           :     2.00 sec
```

Percent in Steady State : 0.00
Average Iterations per Step : 1.17

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
CAT_01	121.69	0.00	0.00	2.53	116.30	0.08	3.32	0.956
CAT_02	121.69	0.00	0.00	1.26	118.52	0.24	10.88	0.974
CAT_03	121.69	0.00	0.00	1.26	118.52	0.14	6.26	0.974
CAT_04	121.69	0.00	0.00	3.16	115.13	0.25	9.72	0.946
CAT_05	121.69	0.00	0.00	12.63	94.12	0.77	13.66	0.773
CAT_06	121.69	0.00	0.00	1.26	117.82	0.28	12.84	0.968
CAT_07	121.69	0.00	0.00	3.16	114.87	0.23	7.63	0.944
CAT_08	121.69	0.00	0.00	5.05	112.80	0.11	4.85	0.927
CAT_09	121.69	0.00	0.00	5.05	112.64	0.09	3.54	0.926
CAT_10	121.69	0.00	0.00	12.63	99.99	0.20	4.64	0.822

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min
SW_1.3	JUNCTION	0.39	0.88	73.98	0 23:24
SW_2.3	JUNCTION	0.38	0.85	73.98	0 23:24
SW_3.1	JUNCTION	0.03	0.13	73.14	1 00:00
SW_3.5	JUNCTION	0.06	0.30	73.14	1 00:00
SW_3.6	JUNCTION	0.24	0.70	73.14	1 00:00
SW_4.2	JUNCTION	0.50	1.18	73.83	0 23:25
SW_5.1	JUNCTION	0.04	0.24	73.14	1 00:00
SW_5.4	JUNCTION	0.15	0.53	73.14	1 00:00
SW_5.5	JUNCTION	0.21	0.64	73.14	1 00:00
SW_7.2	JUNCTION	0.08	0.36	73.14	1 00:00
SW_8.2	JUNCTION	0.15	0.53	73.14	1 00:00
SW_9.3	JUNCTION	0.38	0.96	73.23	0 23:29
SW_9.4	JUNCTION	0.44	1.05	73.23	0 23:29
SW_10.1	JUNCTION	0.39	0.98	73.23	0 23:29
Outfall_1	OUTFALL	0.00	0.00	72.08	0 00:00
Outfall_2	OUTFALL	0.00	0.00	71.80	0 00:00
Att_Tank_1	STORAGE	0.43	0.95	73.98	0 23:24
Att_Tank_2	STORAGE	0.56	1.28	73.83	0 23:25
Att_Tank_3	STORAGE	0.54	1.23	73.23	0 23:29
Pond_1	STORAGE	0.42	0.99	73.14	1 00:00
PermPav_2	STORAGE	0.07	0.18	73.68	1 00:00
PermPav_1	STORAGE	0.04	0.10	73.64	1 00:00

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr
SW_1.3	JUNCTION	3.32	3.32	0 15:15	0.046	0.087
SW_2.3	JUNCTION	6.25	6.25	0 15:15	0.081	0.155
SW_3.1	JUNCTION	0.00	1.69	0 21:20	0.000	0.108
SW_3.5	JUNCTION	9.72	11.72	0 21:14	0.151	0.380
SW_3.6	JUNCTION	0.00	34.56	0 11:15	0.000	0.767
SW_4.2	JUNCTION	10.88	10.88	0 15:15	0.140	0.237
SW_5.1	JUNCTION	0.00	1.81	0 19:15	0.000	0.056
SW_5.4	JUNCTION	0.00	2.66	0 18:31	0.000	0.054
SW_5.5	JUNCTION	0.00	15.95	0 11:15	0.000	0.288
SW_7.2	JUNCTION	12.84	12.84	0 15:15	0.165	0.276
SW_8.2	JUNCTION	7.63	7.63	0 15:15	0.141	0.234
SW_9.3	JUNCTION	4.84	4.84	0 15:15	0.069	0.115
SW_9.4	JUNCTION	0.00	8.37	0 15:15	0.000	0.205
SW_10.1	JUNCTION	3.53	3.53	0 15:15	0.053	0.088
Outfall_1	OUTFALL	0.00	3.11	1 00:00	0.000	0.178
Outfall_2	OUTFALL	0.00	1.28	0 23:29	0.000	0.077
Att_Tank_1	STORAGE	0.00	9.49	0 21:14	0.000	0.240
Att_Tank_2	STORAGE	0.00	10.87	0 15:15	0.000	0.236
Att_Tank_3	STORAGE	0.00	8.36	0 15:15	0.000	0.202
Pond_1	STORAGE	0.00	52.92	0 10:14	0.000	1.031
PermPav_2	STORAGE	13.66	13.66	0 23:15	0.519	0.765
PermPav_1	STORAGE	4.64	4.64	0 15:15	0.129	0.202

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
SW_1.3	JUNCTION	14.00	0.585	0.875
SW_2.3	JUNCTION	14.00	0.555	0.295
SW_3.5	JUNCTION	0.19	0.002	1.098
SW_3.6	JUNCTION	9.81	0.397	0.688
SW_4.2	JUNCTION	14.00	0.878	0.472
SW_5.4	JUNCTION	5.85	0.232	1.078
SW_5.5	JUNCTION	8.57	0.337	0.968
SW_7.2	JUNCTION	1.79	0.062	1.438
SW_8.2	JUNCTION	5.86	0.232	1.078
SW_9.3	JUNCTION	14.00	0.738	0.987
SW_9.4	JUNCTION	14.00	0.828	1.017
SW_10.1	JUNCTION	14.00	0.753	1.222
Att_Tank_1	STORAGE	14.00	0.655	0.245
Att_Tank_2	STORAGE	14.00	0.978	0.322
Att_Tank_3	STORAGE	14.00	1.008	1.117
Pond_1	STORAGE	14.00	0.692	0.508
PermPav_2	STORAGE	14.00	0.150	0.220
PermPav_1	STORAGE	14.00	0.076	0.304

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	E&I Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
Att_Tank_1	0.048	36	0	0.105	80	0 23:24	1.69
Att_Tank_2	0.056	35	0	0.128	80	0 23:25	1.50
Att_Tank_3	0.054	23	0	0.123	52	0 23:29	1.28
Pond_1	0.350	26	0	0.848	64	1 00:00	3.11
PermPav_2	0.277	18	0	0.709	45	1 00:00	1.10
PermPav_1	0.074	10	0	0.183	24	1 00:00	0.36

****
Outfall Loading Summary
****

Outfall Node	Flow Freq. Pcnt.	Avg. Flow LPS	Max. Flow LPS	Total Volume 10^6 ltr
Outfall_1	58.36	2.62	3.11	0.178
Outfall_2	58.36	1.10	1.28	0.077
System	58.36	3.72	4.38	0.255

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
1.3	CONDUIT	3.28	0 21:14	0.05	0.02	1.00
2.3	CONDUIT	6.22	0 21:14	0.09	0.03	1.00
3.1	CONDUIT	1.75	0 17:05	0.36	0.04	0.72
3.5	CONDUIT	18.29	0 19:15	1.03	0.10	1.00
3.6	CONDUIT	40.12	0 10:14	0.79	0.20	1.00
4.2	CONDUIT	10.87	0 15:15	0.15	0.13	1.00
5.1	CONDUIT	2.66	0 18:31	0.36	0.03	0.90
5.4	CONDUIT	2.99	0 18:21	0.15	0.03	1.00
5.5	CONDUIT	22.30	0 11:15	0.92	0.25	1.00
7.2	CONDUIT	12.83	0 23:15	0.29	0.07	1.00
8.2	CONDUIT	7.64	0 19:15	0.66	0.09	1.00
9.3	CONDUIT	4.84	0 15:15	0.12	0.11	1.00
9.4	CONDUIT	8.36	0 15:15	0.21	0.12	1.00
10.1	CONDUIT	3.53	0 15:15	0.09	0.08	1.00

Oriface_Tank_1	ORIFICE	1.69	0	21:20
Oriface_Tank_2	ORIFICE	1.50	0	23:21
Oriface_Tank_3	ORIFICE	1.28	0	23:29
Oriface_Pond_1	ORIFICE	3.11	1	00:00
PP_Oriface_2	ORIFICE	1.10	1	00:00
PP_Oriface_1	ORIFICE	0.36	1	00:00

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Avg. Froude Number	Avg. Flow Change
		--- Fraction of Time in Flow Class ----								
1.3	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.0000
2.3	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.0000
3.1	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.23	0.0000
3.5	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.07	0.0002
3.6	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.02	0.0007
4.2	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.0001
5.1	1.00	0.00	0.00	0.00	0.53	0.05	0.00	0.00	0.10	0.0000
5.4	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.01	0.0001
5.5	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.02	0.0010
7.2	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.03	0.0001
8.2	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.04	0.0001
9.3	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.0001
9.4	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.0001
10.1	1.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.0000

****
Conduit Surcharge Summary
****

Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
1.3	14.00	14.00	14.00	0.01	0.01
2.3	14.00	14.00	14.00	0.01	0.01
3.5	0.19	0.19	0.19	0.01	0.01
3.6	9.81	9.81	9.81	0.01	0.01
4.2	14.00	14.00	14.00	0.01	0.01
5.4	5.84	5.84	5.85	0.01	0.01
5.5	8.57	8.57	8.57	0.01	0.01
7.2	1.79	1.79	1.79	0.01	0.01
8.2	5.86	5.86	5.86	0.01	0.01
9.3	14.00	14.00	14.00	0.01	0.01
9.4	14.00	14.00	14.00	0.01	0.01
10.1	14.00	14.00	14.00	0.01	0.01

Analysis begun on: Thu Sep 23 15:02:31 2021
Analysis ended on: Thu Sep 23 15:02:32 2021
Total elapsed time: 00:00:01

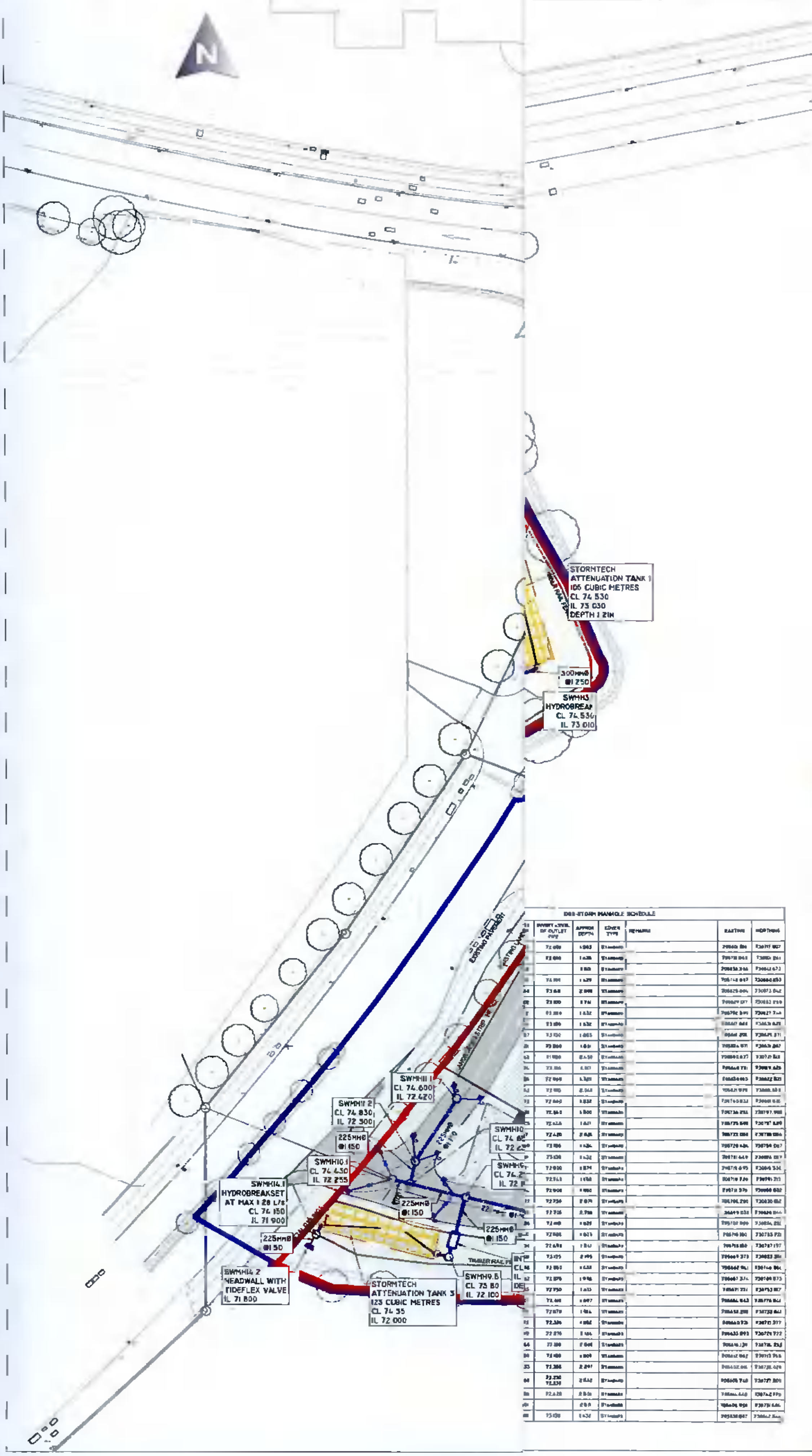
PINNACLE
CONSULTING ENGINEERS

APPENDIX E

SURFACE WATER SITE DRAINAGE LAYOUT DRAWING

DESIGN ISSUE

THE DESIGN IS SUBJECT TO PLANNING APPROVAL AND DETAILED DESIGN



Client:

EQUINIX

HAZARD IDENTIFICATION LEGEND:

HAZARD IDENTIFICATION (If none state 'none relevant')	CONTROL AND MITIGATION MEASURES

NOTE:
Hazards listed above are only those considered significant risks and

a) not likely to be obvious to a competent contractor or other designers,
b) unusual or
c) likely to be difficult to manage effectively

LEGEND

- PROPOSED PRIVATE SURFACE WATER SEWER
- PROPOSED PRIVATE FOUL SEWER
- EXISTING PRIVATE FOUL WATER SEWER
- EXISTING PRIVATE SURFACE WATER SEWER
- EXISTING PUBLIC FOUL SEWER
- EXISTING PUBLIC SURFACE WATER SEWER
- BD MANHOLE BACKDROP
- DRAINAGE CHANNEL
- DRAINAGE RUN TO BE ABANDONED
- TX INTERNAL FOUL GULLY PIPE
- G ROAD GULLY
- RE RODDING EYE
- SU SUMP UNIT WITH RODDABLE AIR TRAP
- SVP SOIL VENT PIPE
- SS STUB STACK
- AAV AIR ADMITTANCE VALVE
- FIT FOUL INTERCEPTOR TRAP
- RWP RAINWATER DOWNPIPE
- SRWP SIPHONIC RAINWATER DOWNPIPE
- 89 200 PROPOSED LEVEL
- 89 200 EXISTING TIE IN LEVEL
- + 87 72 EXISTING LEVEL
- SITE BOUNDARY
- CONCRETE ATTENUATION TANK
- STORMTECH ATTENUATION TANK

REV	DATE	DESCRIPTION	DWN	CHK	APP
P02	17.09.21	ISSUED FOR TENDER	FJ/RJM		
P01	20.08.21	ISSUED FOR FORMAL REVIEW	FJ/RJM		

Key:

Project:
EQUINIX DB081

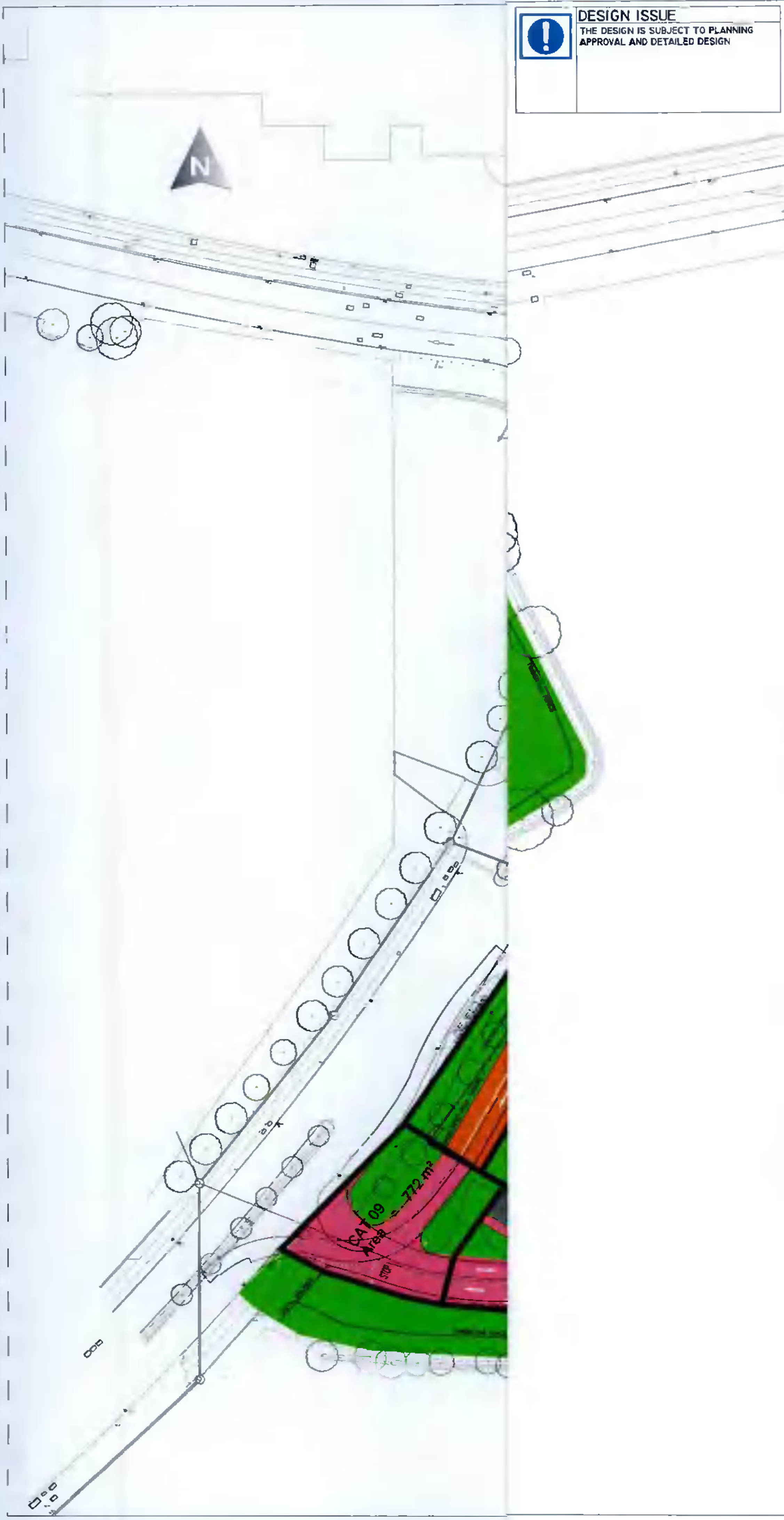
Drawing Title:
SURFACE WATER
SITE DRAINAGE

Drawing Number:
DB080-PIN-00-ZZ-DR-C-PLAN-1207

Scale:	Paper Size:	Purpose:	Revision:
1:500	A1	D2	P02

PINNACLE
CONSULTING ENGINEERS

SIXTH FLOOR PROSPECT HOUSE 100 NEW OXFORD STREET LONDON WC1A 1HB Tel: 0207 0433410



DESIGN ISSUE
THE DESIGN IS SUBJECT TO PLANNING APPROVAL AND DETAILED DESIGN

Client
EQUINIX

HAZARD IDENTIFICATION LEGEND

HAZARD IDENTIFICATION (if none state 'none relevant')	CONTROL AND MITIGATION MEASURES

NOTE:
Hazards listed above are only those considered significant risks and:

a) not likely to be obvious to a competent contractor or other designers.
b) unusual; or
c) likely to be difficult to manage effectively

KEY

- SITE ACCESS ROAD (A=2286 70m²/c=0.8)
- GRAVEL (A=2,291 80m²/c=0 5)
- PERMEABLE ASPHALT/PAVING (A=3,129 43m²/c=0.6)
- BUILDING FLOOR SLABS/ROOF (A=2,205 30m²/C=1)
- LANDSCAPED AREAS (REF LANDSCAPE ARCHITECTS PLANS) (A=10,685 30m²)
- CONCRETE SERVICE YARD (A=2 032.22m²/C=0.8)
- CONCRETE FOOTPATH (A=1,953 05m²/C=0.8)
- STANDARD ROAD TARMAC (A=1,103 63m²/C=0 8)
- 150mm CONC UPSTAND

REV	DATE	DESCRIPTION	DWN CHK APP
P02	17.08.21	ISSUED FOR TENDER	FJ/VR/JM
P01	20.08.21	ISSUED FOR FORMAL REVIEW	FJ/VR/JM

Key:

Project:
EQUINIX DB081

Drawing Title:
CATCHMENTS MAP AND SURFACING TYPES

Drawing Number:
DB080-PIN-00-ZZ-DR-C-PLAN-1212

Scale:	Paper Size:	Purpose:	Revision
1:500	A1	D2	P02

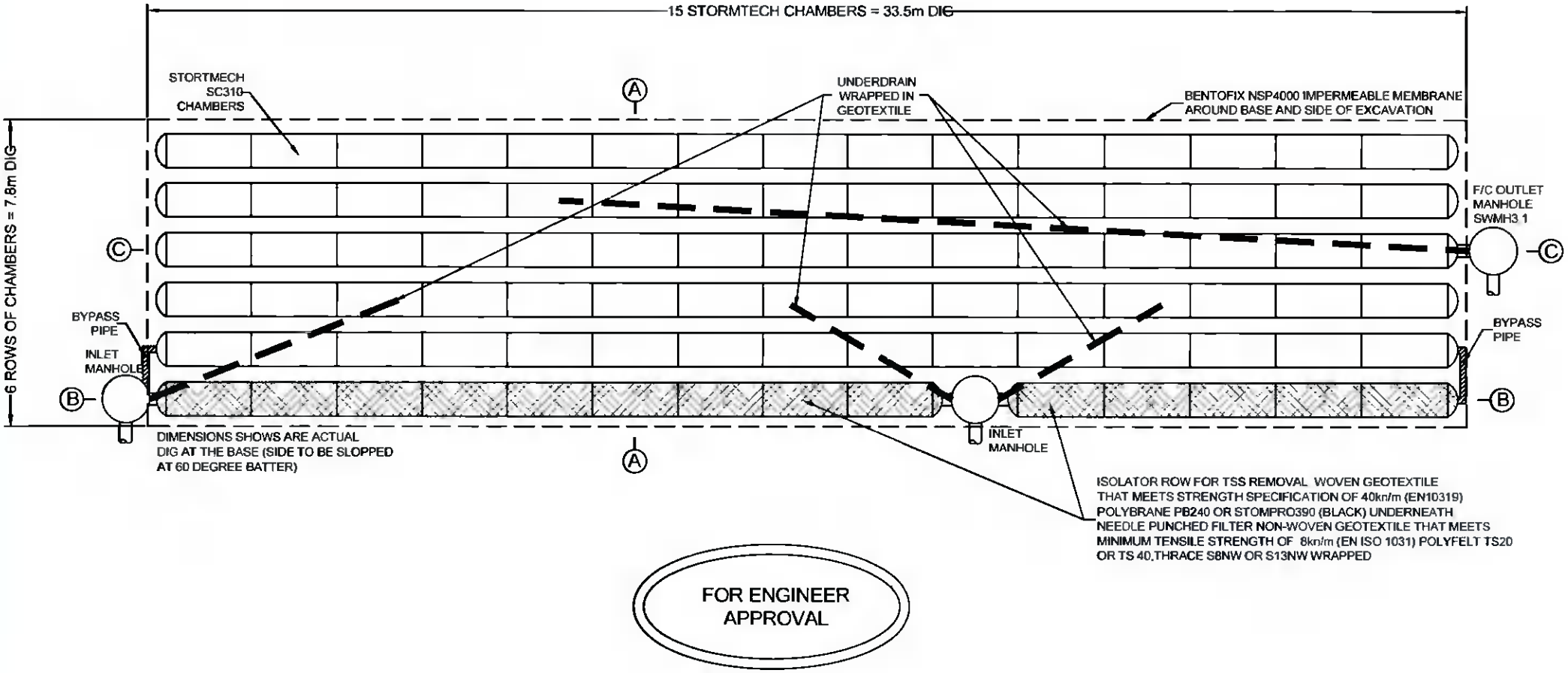
PINNACLE
CONSULTING ENGINEERS

SIXTH FLOOR PROSPECT HOUSE 100 NEW OXFORD STREET LONDON WC1A 1HB Tel: 0207 0433410

PINNACLE
CONSULTING ENGINEERS

APPENDIX F

STORMTECH ATTENUATION TANK DETAILS

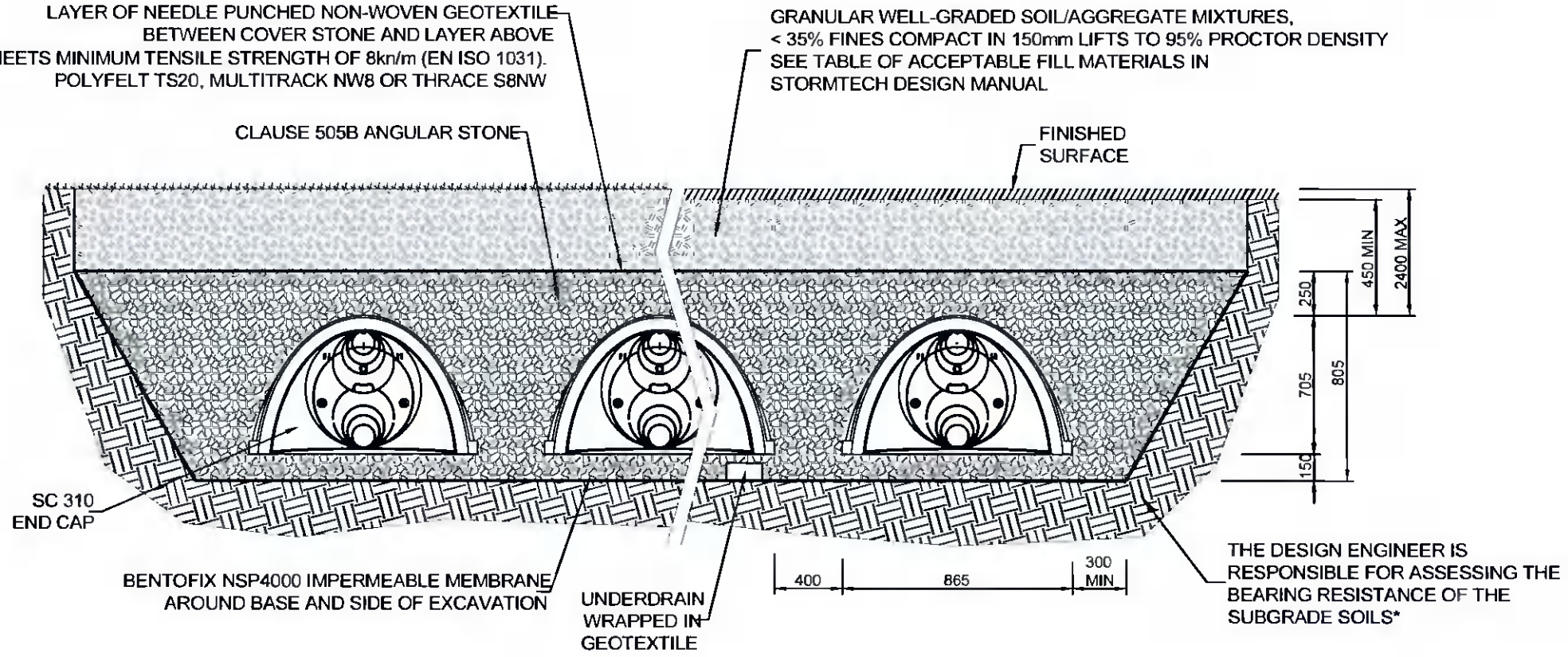


FOR ENGINEER APPROVAL

SITE: EQUINIX - PROFILE PARK, LUCAN, TANK 1 120m3	JN210609 DRAWING NO.		1 PAGE NO.	28/07/21 DATE.
TITLE: PLAN	NTS SCALE	LP DRAWN.	LP CHECKED.	A REVISION.

StormTech Resolute Group

FOR ENGINEER APPROVAL

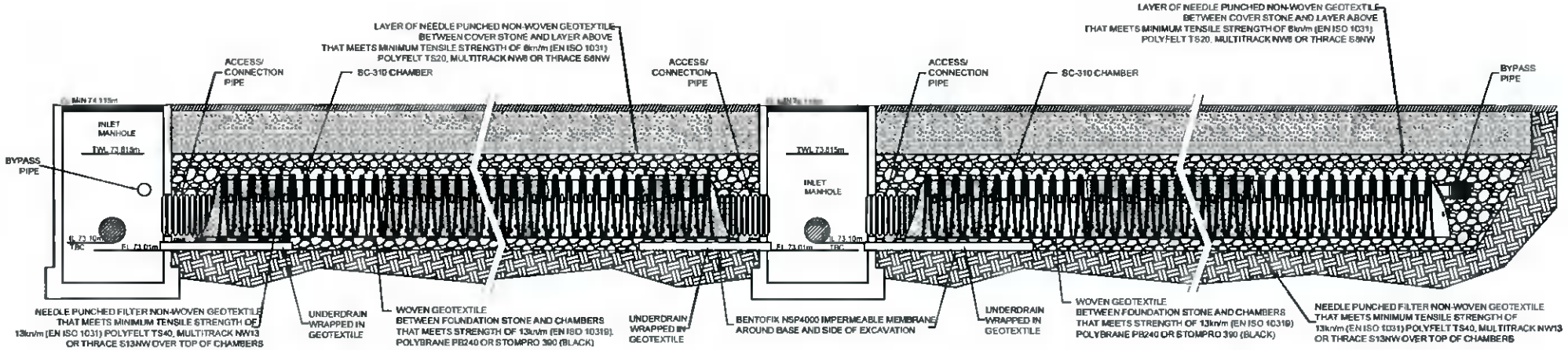


* REFER TO STORMTECH DESIGN MANUAL

SITE: EQUINIX - PROFILE PARK, LUCAN, TANK 1 120m3	JN210609 DRAWING NO.		2 PAGE NO.	28/07/21 DATE.
TITLE: CROSS SECTION A-A CHAMBER	NTS SCALE	LP DRAWN.	LP CHECKED.	A REVISION.

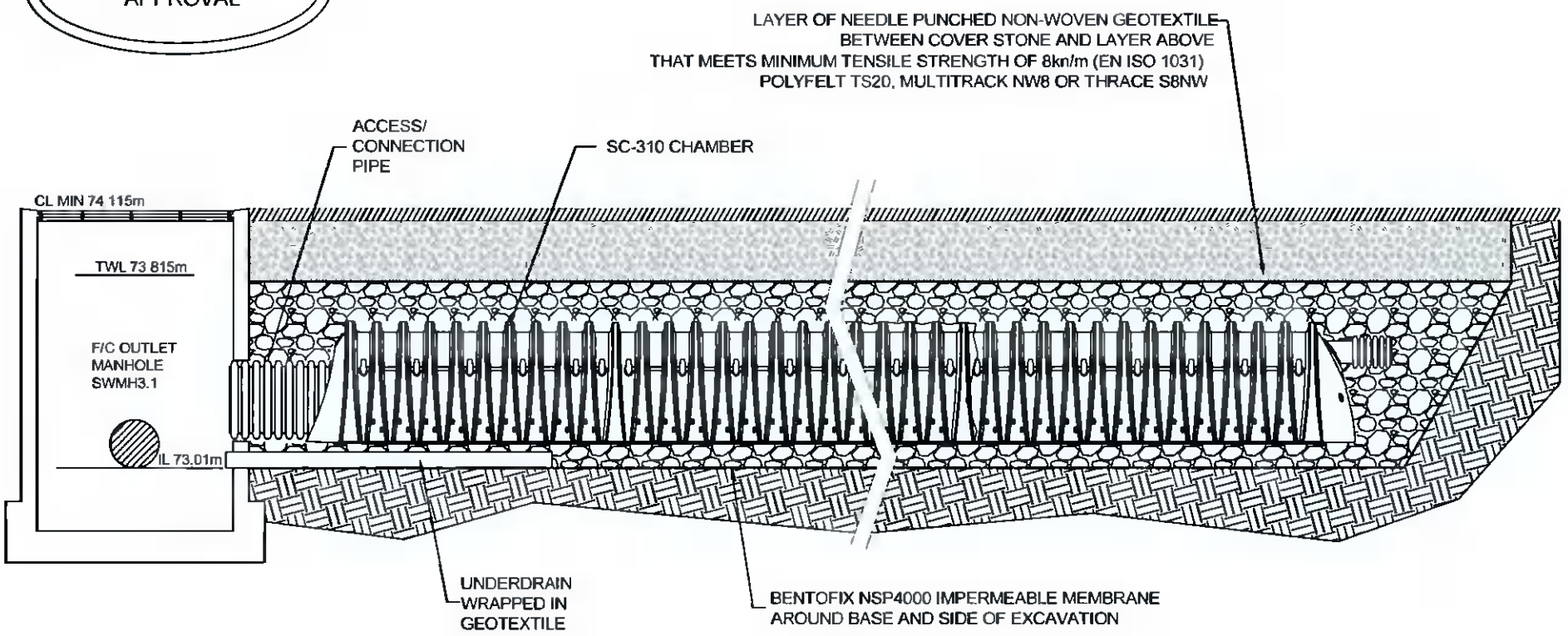
StormTech Resolute Group

FOR ENGINEER APPROVAL

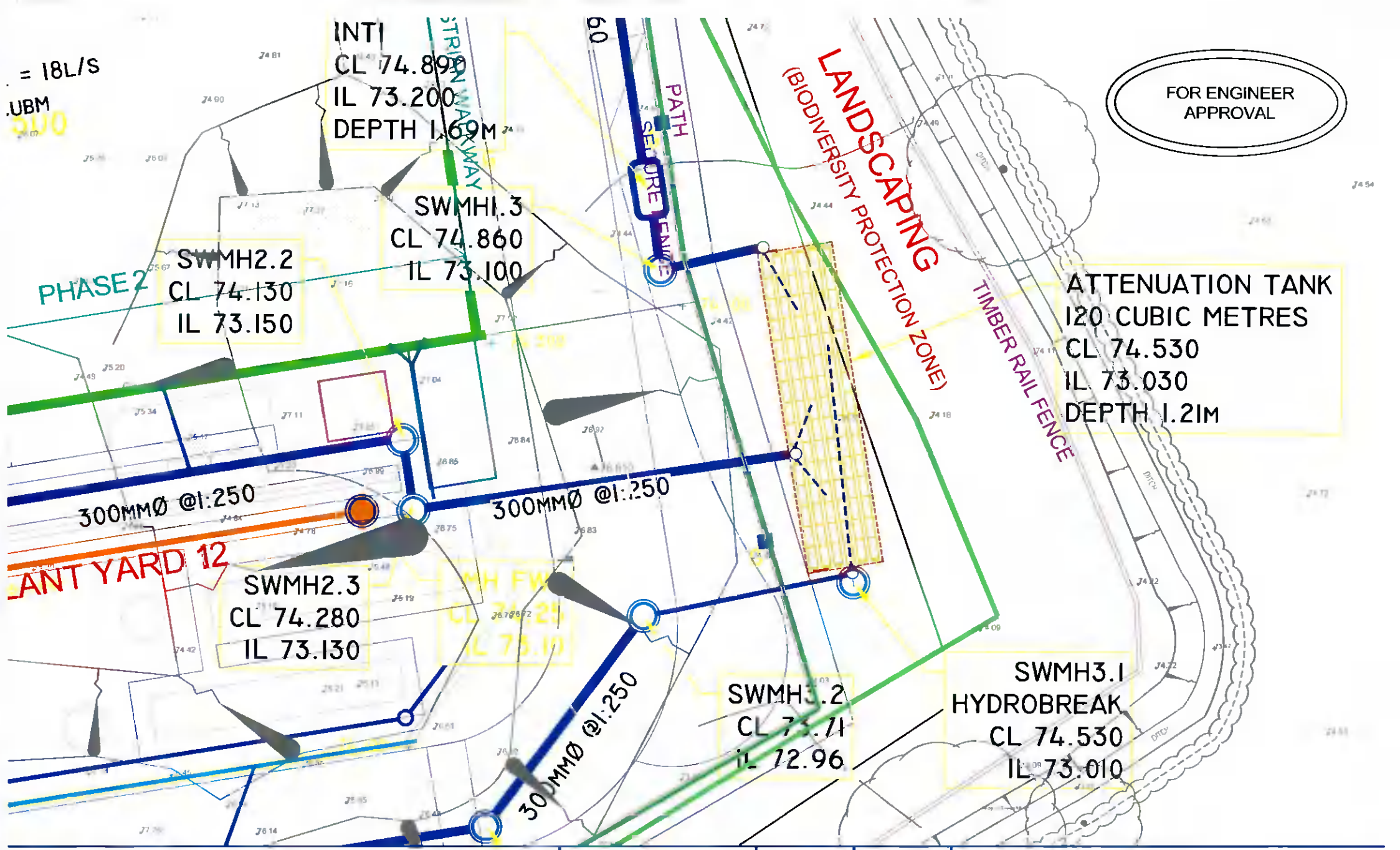


SITE: EQUINIX - PROFILE PARK, LUCAN, TANK 1 120m3	JN210609 DRAWING NO.		3 PAGE NO.	28/07/21 DATE.	StormTech Resolute Group
TITLE: CROSS SECTION B-B ISOLATOR ROW DETAIL	NTS SCALE	LP DRAWN.	LP CHECKED.	A REVISION.	

FOR ENGINEER APPROVAL



SITE: EQUINIX - PROFILE PARK, LUCAN, TANK 1 120m3	JN210609 DRAWING NO.		4 PAGE NO.	28/07/21 DATE.	StormTech Resolute Group
TITLE: CROSS SECTION C-C OUTLET ROW DETAIL	NTS SCALE	LP DRAWN.	LP CHECKED.	A REVISION.	



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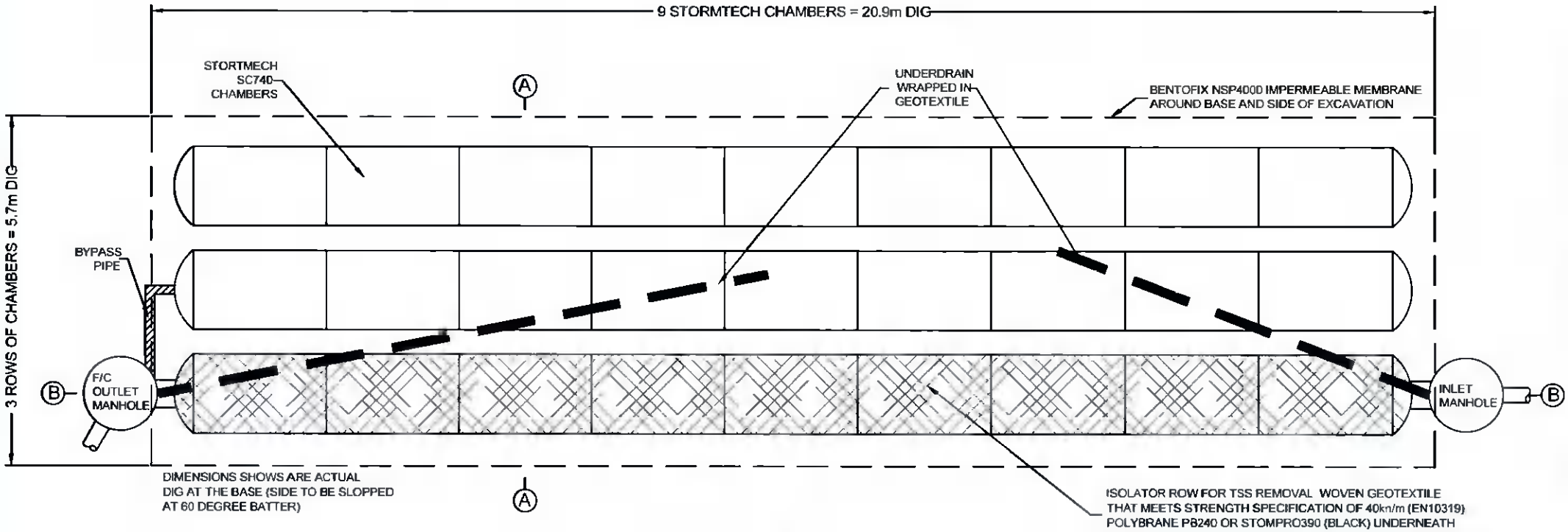
TITLE: SITE PLAN OVERLAY	NTS SCALE	LP DRAWN	LP CHECKED.	A REVISION

StormTech Resolute Group



FOR ENGINEER APPROVAL

SITE: EQUINIX - PROFILE PARK, LUCAN, TANK 3 95m3	JN210609 DRAWING NO.		1 PAGE NO.	28/07/21 DATE.
TITLE: PLAN	NTS SCALE	LP DRAWN.	LP CHECKED.	A REVISION.

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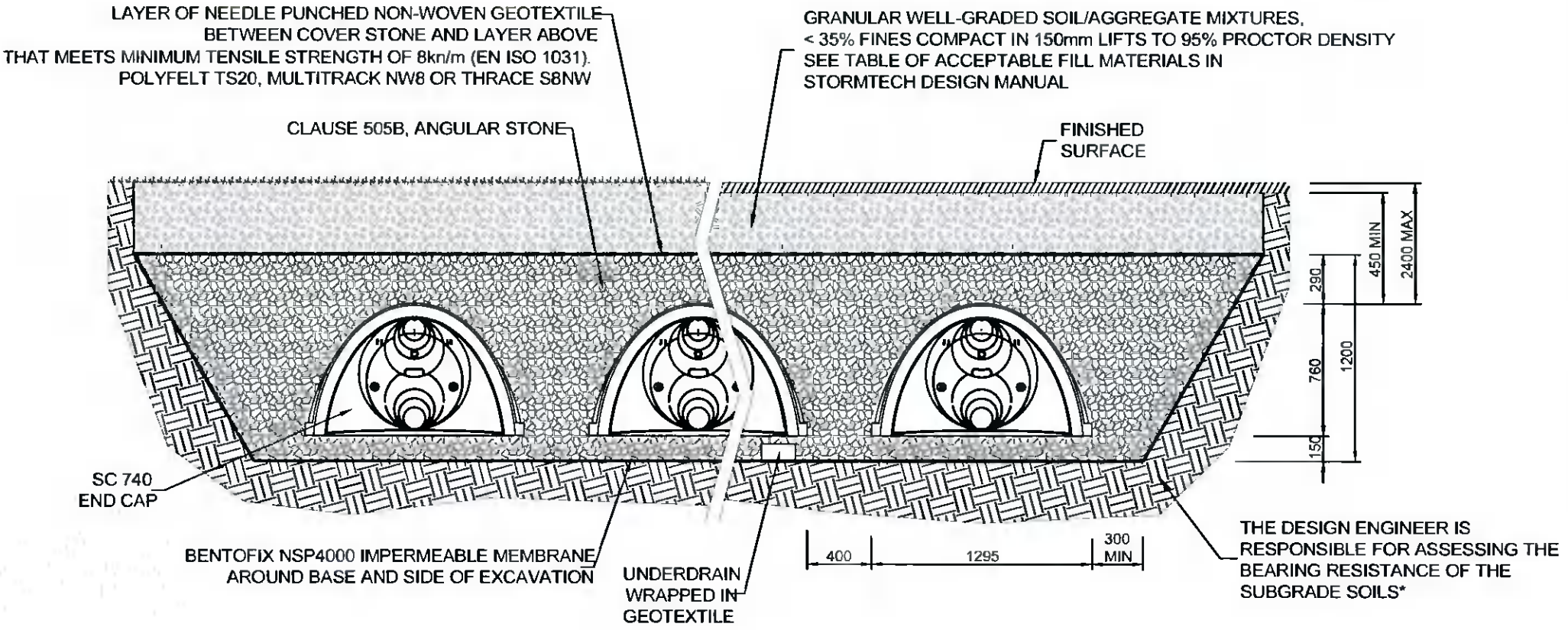
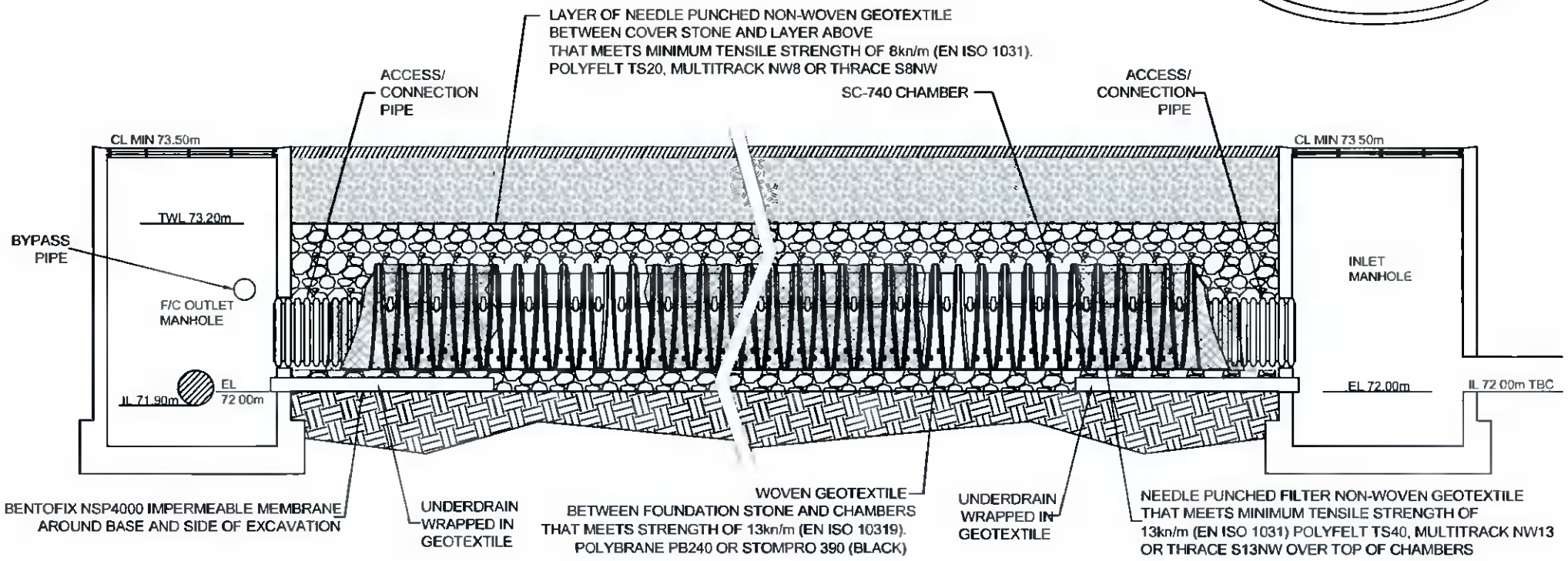


* REFER TO STORMTECH DESIGN MANUAL

SITE: EQUINIX - PROFILE PARK, LUCAN, TANK 3 95m3	JN210609 DRAWING NO.		2 PAGE NO.	28/07/21 DATE.
TITLE: CROSS SECTION A-A CHAMBER	NTS SCALE	LP DRAWN.	LP CHECKED.	A REVISION.

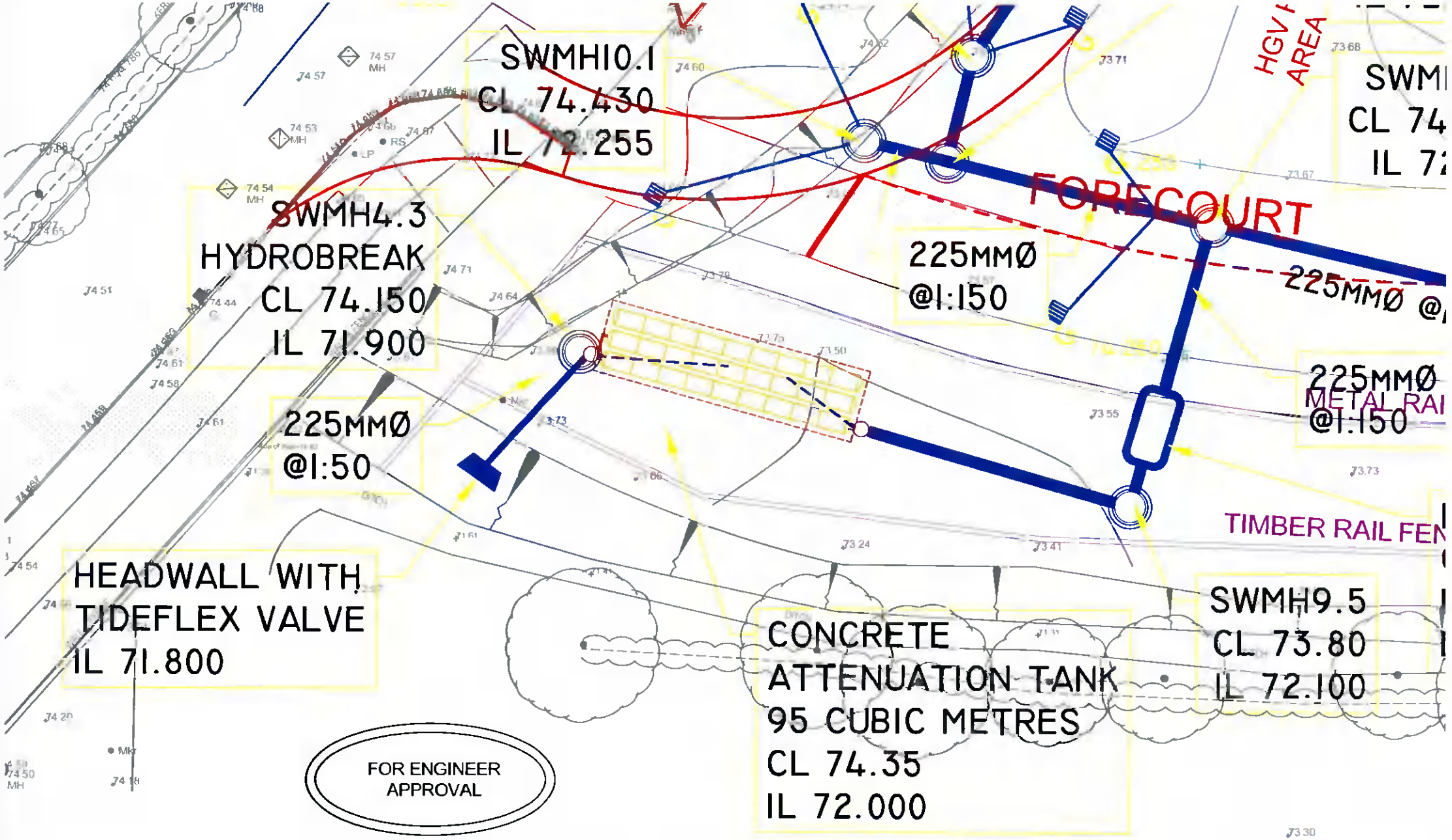
StormTech Resolute Group

FOR ENGINEER APPROVAL



SITE: EQUINIX - PROFILE PARK, LUCAN, TANK 3 95m3	JN210609 DRAWING NO.		3 PAGE NO.	28/07/21 DATE.
TITLE: CROSS SECTION B-B ISOLATOR ROW DETAIL	NTS SCALE	LP DRAWN.	LP CHECKED.	A REVISION.

StormTech Resolute Group



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TITLE: SITE PLAN OVERLAY	NTS SCALE	LP DRAWN	LP CHECKED.	A REVISION

StormTech Resolute Group

PINNACLE
CONSULTING ENGINEERS

APPENDIX G

PRECAST CONCRETE ATTENUATION TANK

CARLOW CONCRETE

DRAWING TITLE: EQUINIX DATACENTRE, DUBLIN
1.1m Dp. MODULAR WATER RETAINING TANK
PROPOSAL DRAWING

TO PRECAST WALL TYPES

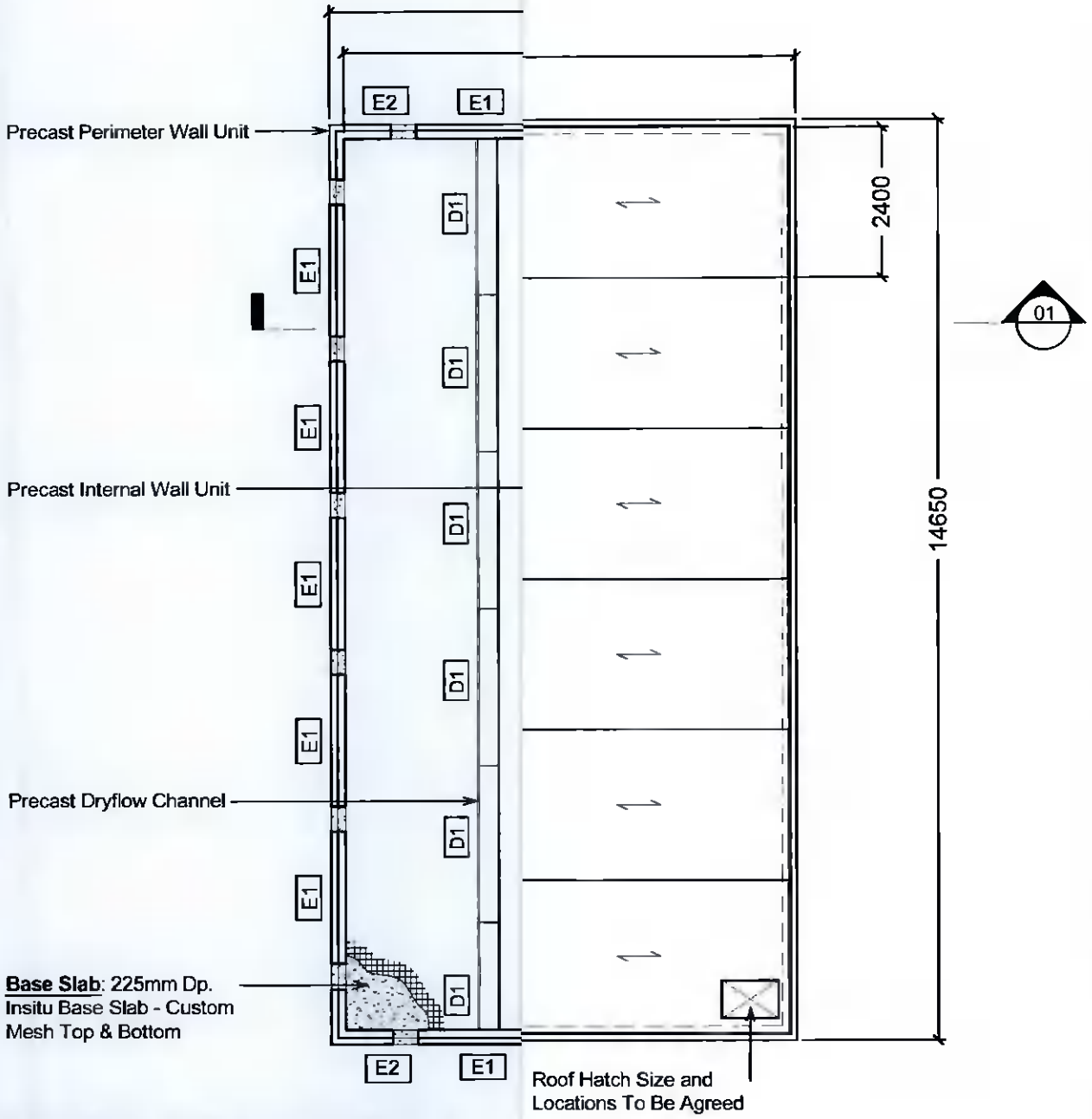
	QUANTITY	HEIGHT	WIDTH	WEIGHT
	16	1.575m	2.100m	1.69T
	4	1.575m	1.625m	1.31T
	2	1.000m	4.80m	2.36T
	1	1.000m	3.80m	1.87T
	6	N/A	2.50m	0.43T

UMES

13.8m³
32.0m³
18.5m³
2.3m³
%

KEY TO PRECAST SLABS

DESCRIPTION	QUANTITY	HEIGHT	TOTAL AREA
Precast Wide Slab	12	0.125m	141m2



BASE PLAN: 1.1m Deep Modular Tank

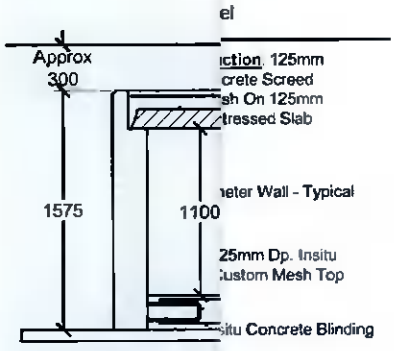
Estimated Storage Volume: 140m³

A3

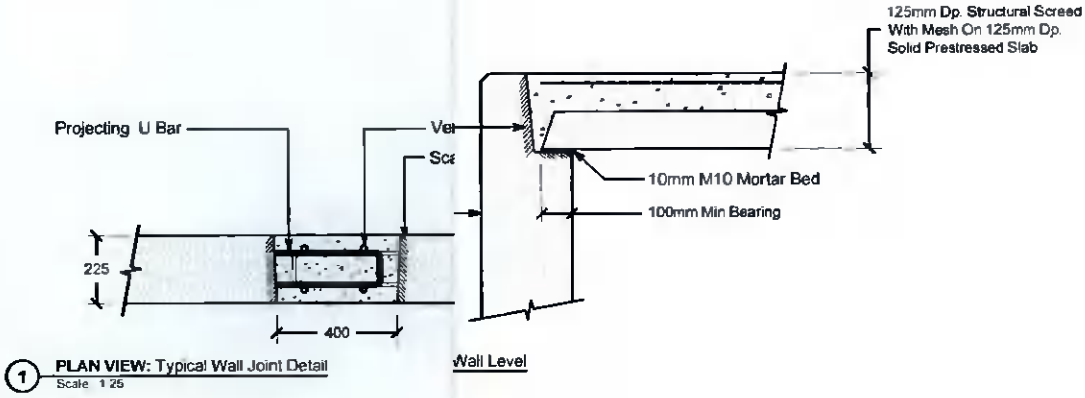
CARLOW CONCRETE

A3

DRAWING TITLE:	EQUINIX DATACENTRE, DUBLIN 1.1m Dp. MODULAR WATER RETAINING TANK PROPOSAL DRAWING



SECTION 01
Scale 1:50



1 **PLAN VIEW:** Typical Wall Joint Detail
Scale 1:25

SIM