Appendix A – Condition 8 Technical Note

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Technical Note – 170188-MNP-ZZ-ZZ-RP-C-0001

Project:	**KS DC Manchester**	Job No:	**223169**
Subject:	**Drainage conditions**	Revision:	**P02**
Prepared by:	**Andreww Dushyanthan**	Date:	**23rd September 2024**

This technical note has been prepared to provide a response with supporting documentation in relation to drainage condition 8 stated in the planning permission letter from Manchester City Council (Planning reference: 137424/FO/2023) for the proposed redevelopment at Simon House, Brownley Road, Manchester, M22 5RA.

Condition 8 – Non statutory Technical Standards

'No development hereby permitted shall be occupied until surface water drainage works have been implemented in accordance with Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacements national standards and details that have been submitted to and approved in writing by the Local Planning Authority.'

Response:

- The sections below refer to the performance requirements stated in National Standard: DEFRA -Sustainable Drainage Systems: Non-Statutory technical standards for sustainable drainage systems (March 2015).

Standard/ Reference		Site Location
National Standards/ S1	Where the drainage system discharges to a surface water body that can accommodate uncontrolled surface water discharges without any impact on flood risk from that surface water body (e.g. the sea or a large estuary) the peak flow control standards (S2 and S3 below) and volume control technical standards (S4 and S6 below) need not apply.	Not applicable. It should be noted that there are no such surface water bodies within vicinity of the site and therefore standards S2, S3, S4 and S6 will always apply.
National Standards/ S2	For greenfield developments, the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event should never exceed the peak greenfield runoff rate for the same event.	Not applicable. Not a greenfield development.
National Standards/ S3	For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate	Compliant. The site is proposed drain to: - public sewer via flow control device at a discharge rate of 2.07l/s

	from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event	This is less than the calculated greenfield runoff rate of 4.42l/s (refer to FRA). Therefore, there is no increase in the rate of discharge from the existing condition
National Standards/ S4	Where reasonably practicable, for greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event should never exceed the greenfield runoff volume for the same event.	Not applicable. Not a greenfield development.
National Standards/ S5	Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to that development.	Compliant. The site is proposed drain to: - Existing discharge volume for 1in100 year, 6hour storm is 156.2m3, with the proposed volume at 56.2m3. - There is no increase in hardstanding area. - Cellular storage tank to accommodate runoff volume with proposed flow control.
National Standards/ S6	Where it is not reasonably practicable to constrain the volume of runoff to any drain, sewer or surface water body in accordance with S4 or S5 above, the runoff volume must be discharged at a rate that does not adversely affect flood risk	Compliant Surface Water to be discharged at a rate of 2.07l/s.
National Standards/ S7	The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 1 in 30 year rainfall event	Compliant. MicroDrainage results show no flooding in the 1 in 30 year event.
National Standards/ S8	The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1 in 100 year rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water (e.g. pumping station or electricity substation) within the development	Compliant. MicroDrainage results show no flooding in the 1 in 100 year event +40% climate change, with flooding of less 1m3 at +45% climate change.
National Standards/ S9	The design of the site must ensure that, so far as is reasonably practicable, flows resulting from rainfall in excess of a 1 in 100 year rainfall event are managed in exceedance routes that minimise the risks to people and property.	Compliant. Majority of site area consists of building. Any overland flows will be contained within the site away from the building in extreme rainfall events.

Condition 8 – Informative

'A finalized drainage layout showing all components, outfalls, levels and connectivity.'

Response:

- Refer to attached drainage strategy layout showing all proposed manholes, pipes, outfall connection and SuDS features. Drainage details also included, with details of access points to the attenuation tank from manufacturers' spec also included.
- Also refer to attached cover slab details for proposed attenuation tank.
- Also refer to attached details for proposed services and ductwork layout.

'Maximized integration of green SuDS components (utilizing infiltration or attenuation) if practicable.'

Response:

- Drainage strategy utilizes use of below ground attenuation tanks and french drains as per the details set out in the approved Flood Risk Assessment and Sustainable Drainage Strategy (SuDS) Report by Lyons O'Neill Structural Engineers. Also refer to attached drainage layout.

'Details of surface water attenuation that offers a reduction in surface water runoff rate in line with the Manchester Trafford and Salford Strategic Flood Risk Assessment, i.e. at least a 50% reduction in runoff rate compared to the existing rates with the aim of reducing to the Greenfield runoff rates, as the site is located within Conurbation Core Critical Drainage Area.'

Response:

- The proposed surface water discharge rate of 2.07l/s is a significant reduction to the existing rates, as well as lower than the greenfield runoff rate of 4.42l/s. This has been agreed with United Utilities via S106 application. Also refer to Table 7 of the Flood Risk Assessment for the betterment comparison.
- With regards to the reduced outlet discharge rate and blockages, the outlet includes a 55mm orifice to reduce the outflow discharge rate to 2.07l/s, however the risk of blockages will be low due to the inclusion of 300mm catchpit manholes as well as gullies and channels with traps/silt buckets throughout the surface water drainage system.

'An existing and proposed impermeable areas drawing to accompany all discharge rate calculations.'

Response:

- As stated in the FRA and SuDS report, the total application site has an area of 7572m2. The proposed developed area is equivalent to 3480m2, where there is no change in impermeable areas. All areas will be positively drained and hence discharged out of site.

'Runoff volume in the 1 in 100 year, 6 hours rainfall shall be constrained to a value as close as is reasonable practicable to the greenfield runoff volume for the same event, but never to exceed the runoff volume from the development site prior to redevelopment.'

Response:

- Refer to attached Microdrainage calculations. Existing discharge volume for 1in100 year, 6hour storm is 156.2m3, with the proposed volume at 56.2m3.
- Proposed drainage network has been modelled for all storm events at 1 in 100 year storm event plus climate change, with proposed discharge below greenfield rates.

'Evidence that the drainage system has been designed (unless an area is designated to hold and/or convey water as part of the design) so that flooding does not occur during a 1 in 100 year rainfall event with allowance for 45% climate change.'

Response:

- Refer to attached Mircrodrainage calculations. Proposed drainage network will cater for all storm events up to 1 in 100-year storm event, plus 40% climate change with no flooding. For 1 1in 100 year storm event plus 45% climate change, minimal flooding of less than 1m3 is expected, which will be contained within the car park area with local ponding.

'Assessment of overland flow routes for extreme events. Overland flow routes need to be designed to convey the flood water in a safe manner in the event of a blockage or exceedance of the proposed drainage system capacity including inlet structures. A layout with overland flow routes needs to be presented with appreciation of these overland flow routes with regards to the properties on site and adjacent properties off site.'

Response:

- Refer to attached overland flows drawings. Majority of site area consists of building and hence minimal overland flow will exist. Any overland flows will be contained within the site away from the building in extreme rainfall events.

'Progression through the drainage hierarchy shall be evidence based and supported by site investigation. Results of ground investigation carried out under Building Research Establishment Digest 365. Site investigations should be undertaken in locations and at proposed depths of the proposed infiltration devices. Proposal of the attenuation that is achieving half emptying time within 24 hours. If no ground investigations are possible or infiltration is not feasible on site, evidence of alternative surface water disposal routes (as follows) is required.'

Response:

- With reference to GEA's ground investigation report from the 15th August 2023, the site is underlain by superficial Glacial Till overlying the Bollin Mudstone Member. Boreholes have recorded topsoil to 0.5m depth beneath which was sandy silty clay. Below the clay is recorded laminated sandstone, siltstone and 'greasy' clays to the maximum depth of 16.4m The nature of the geology suggests that soakage via infiltration will be very limited. This is confirmed within the report on section 6.5, where soakage testing measured very low soakage rates. Therefore, any infiltration techniques will be negligible.

'Where surface water is connected to the public sewer, agreement in principle from United Utilities is required that there is adequate spare capacity in the existing system taking future development requirements into account. An email of acceptance of proposed flows and/or new connection will suffice.'

Response:

- The proposed surface water discharge rate of 2.07l/s is a significant reduction to the existing rates, as well as lower than the greenfield runoff rate of 4.42l/s. This has been agreed with United Utilities via S106 application.

'For sites where proposed development would cause pollution risk to surface water, evidence of pollution control measures (preferably through SuDS) is required.'

Response:

- Majority of the site area is the building roof area, with very low risk of oil pollution or contamination anticipated from these areas, and only roof water being discharged.

- No petrol interceptors are required due to the number of car parking not exceedingly more than 50 spaces or 800m2 in area.

'Hydraulic calculation of the proposed drainage system.'

Response:

- Refer to attached Microdrainage calculations. Proposed drainage network has been modelled for all storm events at 1 in 100 year storm event plus climate change, with proposed discharge rates limited to 2.07l/s.
- As mentioned previously, proposed drainage network will cater for all storm events up to 1 in 100-year storm event, plus 40% climate change with no flooding. For 1 1in 100 year storm event plus 45% climate change, minimal flooding of less than 1m3 is expected, which will be contained within the car park area with local ponding and away from the building.

'Construction details of flow control and SuDS elements.'

Response:

- Refer to attached drainage details sheets showing details of all proposed manholes, pipes, and SuDS features.

Appendix A – Microdrainage Calculation (Existing 6 hour storm)

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.359	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.273	4-8	0.077

Total Area Contributing (ha) = 0.350

Total Pipe Volume (m^3) = 0.497

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.359
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	360
Return Period(s) (years)	100
Climate Change (%)	0

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flow / Cap.	Overflow (l/s)
1.000	1	360 minute 100 year Summer I+0%	100.000	99.188	-0.137	0.33	
1.001	2	360 minute 100 year Summer I+0%	100.000	98.901	-0.074	0.78	

PN	US/MH Name	Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
1.000	1	0.094	156.404	27.5	OK
1.001	2	0.202	156.155	27.4	OK

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Appendix B – Microdrainage Calculation (Proposed 6 hour storm)

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.358
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	360
Return Period(s) (years)	100
Climate Change (%)	45

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flow / Cap.	Overflow (l/s)
S1.000	SSW01	360 minute 100 year Winter I+45%	60.850	59.483	-0.088	0.22	
S1.001	SSW02	360 minute 100 year Winter I+45%	60.850	59.481	0.416	0.28	
S2.000	SSW03	360 minute 100 year Winter I+45%	60.850	59.481	0.039	0.19	
S1.002	SSW04	360 minute 100 year Winter I+45%	60.850	59.479	0.693	0.19	
S3.000	SJUNC	360 minute 100 year Winter I+45%	60.850	59.351	0.776	0.04	
S1.003	SSW05	360 minute 100 year Winter I+45%	60.850	59.479	1.029	0.10	

PN	US/MH Name	Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
S1.000	SSW01	0.037	77.708	9.1	OK
S1.001	SSW02	3.006	107.770	12.7	SURCHARGED
S2.000	SSW03	0.073	77.696	9.1	SURCHARGED
S1.002	SSW04	5.298	180.943	20.7	SURCHARGED

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Maximum Vol (m^3)	Discharge Vol (m^3)	Pipe Flow (l/s)	Status
S3.000	SJUNC	213.995	-187.698	1.3	SURCHARGED*
S1.003	SSW05	1.833	56.197	1.5	SURCHARGED

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Appendix C – Microdrainage Calculation (Proposed drainage network)

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.199	4-8	0.149

Total Area Contributing (ha) = 0.348

Total Pipe Volume (m^3) = 8.371

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Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
S1.000	75.000	0.506	148.2	0.107	5.00	0.0	0.600	o	225	Pipe/Conduit
S1.001	32.000	0.279	114.7	0.044	5.00	0.0	0.600	o	225	Pipe/Conduit
S2.000	75.000	0.656	114.3	0.107	5.00	0.0	0.600	o	225	Pipe/Conduit
S1.002	7.000	0.186	37.6	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
S3.000	3.000	0.050	60.0	0.000	5.00	0.0	0.600	o	225	Pipe/Conduit
S1.003	29.453	0.225	130.9	0.090	5.00	0.0	0.600	o	150	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
S1.000	59.346	0.107	0.0	1.07	42.6
S1.001	58.840	0.151	0.0	1.22	48.5
S2.000	59.217	0.107	0.0	1.22	48.6
S1.002	58.486	0.258	0.0	2.57	181.7
S3.000	58.350	0.000	0.0	1.69	67.3
S1.003	58.300	0.348	0.0	0.88	15.5

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.107	0.107	0.107
1.001	-	-	100	0.044	0.044	0.044
2.000	-	-	100	0.107	0.107	0.107
1.002	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.090	0.090	0.090
				Total	Total	Total
				0.348	0.348	0.348

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0	Number of Offline Controls 0	Number of Time/Area Diagrams 0
Number of Online Controls 1	Number of Storage Structures 1	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.359		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: SSW05, DS/PN: S1.003, Volume (m³): 3.4

Unit Reference	MD-SHE-0055-2100-2500-2100
Design Head (m)	2.500
Design Flow (l/s)	2.1
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	55
Invert Level (m)	58.300
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.500	2.1	Kick-Flo®	0.494	1.0
Flush-Flo™	0.240	1.2	Mean Flow over Head Range	-	1.5

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.1	1.200	1.5	3.000	2.3	7.000	3.4
0.200	1.2	1.400	1.6	3.500	2.5	7.500	3.5
0.300	1.2	1.600	1.7	4.000	2.6	8.000	3.6
0.400	1.2	1.800	1.8	4.500	2.8	8.500	3.7
0.500	1.0	2.000	1.9	5.000	2.9	9.000	3.8
0.600	1.1	2.200	2.0	5.500	3.0	9.500	3.9
0.800	1.3	2.400	2.1	6.000	3.1		
1.000	1.4	2.600	2.1	6.500	3.3		

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Storage Structures for Storm

Cellular Storage Manhole: SJUNC, DS/PN: S3.000

Invert Level (m) 58.350 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	224.0	200.0	1.001	0.0	256.6
1.000	224.0	256.6			

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.358
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
S1.000	SSW01	59.432	-0.139	0.000	0.29		0.023	6.017	12.1	OK
S1.001	SSW02	58.936	-0.129	0.000	0.37		0.121	8.492	16.9	OK
S2.000	SSW03	59.297	-0.145	0.000	0.26		0.021	6.017	12.3	OK
S1.002	SSW04	58.651	-0.135	0.000	0.27		0.347	14.509	29.4	OK
S3.000	SJUNC	58.519	-0.056	0.000	0.04		36.202	-10.506	1.2	OK*
S1.003	SSW05	58.636	0.186	0.000	0.08		0.795	19.565	1.2	SURCHARGED

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.358
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
S1.000	SSW01	59.495	-0.076	0.000	0.71		0.041	14.718	29.6	OK
S1.001	SSW02	59.223	0.158	0.000	0.79		1.658	20.770	36.1	SURCHARGED
S2.000	SSW03	59.353	-0.089	0.000	0.64		0.037	14.719	30.1	OK
S1.002	SSW04	59.045	0.259	0.000	0.59		3.491	35.488	63.6	SURCHARGED
S3.000	SJUNC	58.866	0.291	0.000	0.04		110.226	-19.544	1.2	SURCHARGED*
S1.003	SSW05	58.903	0.453	0.000	0.08		1.182	47.861	1.2	SURCHARGED

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.358
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
S1.000	SSW01	60.841	1.270	0.000	1.04		0.421	26.595	43.0	FLOOD RISK
S1.001	SSW02	60.263	1.198	0.000	1.32		3.359	37.535	59.9	SURCHARGED
S2.000	SSW03	60.398	0.956	0.000	0.97		0.332	26.595	45.8	SURCHARGED
S1.002	SSW04	60.230	1.444	0.000	0.09		6.150	226.987	9.5	SURCHARGED
S3.000	SJUNC	59.351	0.776	0.000	0.04		214.319	-20.781	1.3	SURCHARGED*
S1.003	SSW05	60.230	1.780	0.000	0.13		2.682	248.220	1.9	SURCHARGED

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.358
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	100
Climate Change (%)	45

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
S1.000	SSW01	60.851	1.280	0.544	1.06		0.968	27.547	43.8	FLOOD
S1.001	SSW02	60.850	1.785	0.017	0.16		3.542	127.678	7.4	FLOOD
S2.000	SSW03	60.850	1.408	0.088	0.11		0.548	91.404	5.4	FLOOD
S1.002	SSW04	60.849	2.063	0.000	0.11		6.849	215.039	12.2	FLOOD RISK
S3.000	SJUNC	59.351	0.776	0.000	0.04		214.984	-23.358	1.3	SURCHARGED*
S1.003	SSW05	60.848	2.398	0.000	0.14		3.381	120.602	2.1	FLOOD RISK

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Appendix D – Drainage Strategy and Details

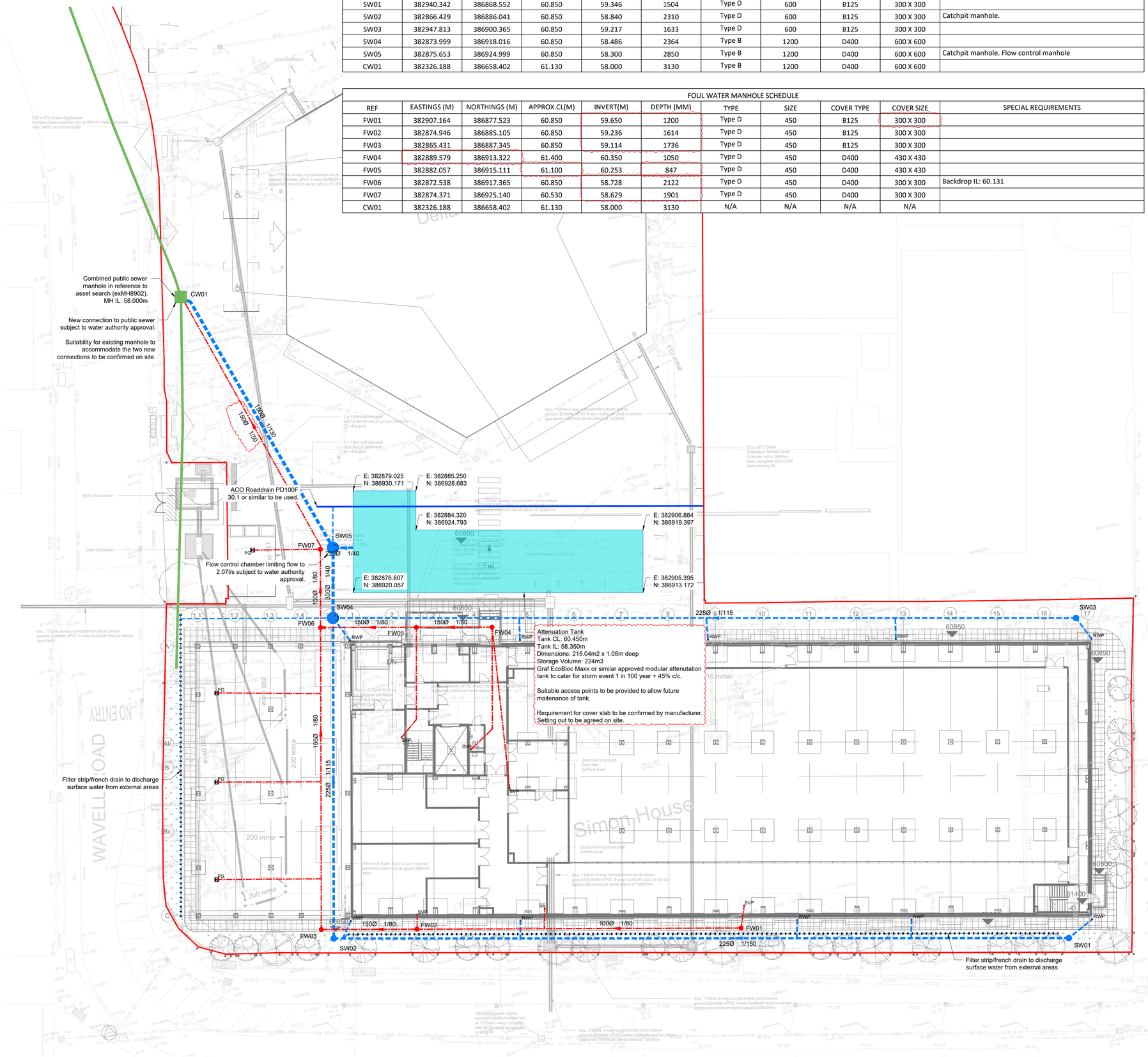
2023 Mason Navarro Pledge

SURFACE WATER MANHOLE SCHEDULE

REF	EASTINGS (M)	NORTHINGS (M)	APPROX.CL(M)	INVERT(M)	DEPTH (MM)	TYPE	SIZE	COVER TYPE	COVER SIZE	SPECIAL REQUIREMENTS
SW01	382940.342	386868.552	60.850	59.346	1504	Type D	600	B125	300 X 300	
SW02	382866.429	386886.041	60.850	58.840	2310	Type D	600	B125	300 X 300	Catchpit manhole.
SW03	382947.813	386900.365	60.850	59.217	1633	Type D	600	B125	300 X 300	
SW04	382873.999	386918.016	60.850	58.486	2364	Type B	1200	D400	600 X 600	
SW05	382875.653	386924.999	60.850	58.300	2850	Type B	1200	D400	600 X 600	Catchpit manhole. Flow control manhole
CW01	382326.188	386658.402	61.130	58.000	3130	Type B	1200	D400	600 X 600	

FOUL WATER MANHOLE SCHEDULE

REF	EASTINGS (M)	NORTHINGS (M)	APPROX.CL(M)	INVERT(M)	DEPTH (MM)	TYPE	SIZE	COVER TYPE	COVER SIZE	SPECIAL REQUIREMENTS
FW01	382907.164	386877.523	60.850	59.650	1200	Type D	450	B125	300 X 300	
FW02	382874.946	386885.105	60.850	59.236	1614	Type D	450	B125	300 X 300	
FW03	382865.431	386887.345	60.850	59.114	1736	Type D	450	B125	300 X 300	
FW04	382889.579	386913.322	61.400	60.350	1050	Type D	450	D400	430 X 430	
FW05	382882.057	386915.111	61.100	60.253	847	Type D	450	D400	430 X 430	
FW06	382872.538	386917.365	60.850	58.728	2122	Type D	450	D400	300 X 300	Backdrop IL: 60.131
FW07	382874.371	386925.140	60.530	58.629	1901	Type D	450	D400	300 X 300	
CW01	382326.188	386658.402	61.130	58.000	3130	N/A	N/A	N/A	N/A	



General Drainage Specification

1. All private drains shall be constructed and commissioned in accordance with the relevant sections of the Building Regulations Approved Documents and relevant British Standards.
2. All rainwater pipes to be 150Ø. All other pipework to be 100Ø minimum unless noted otherwise.
3. Private surface water drains shall be laid at a minimum gradient of 1 in 100 or to the gradients and invert levels shown.
4. Private foul water drains shall be laid at a minimum gradient of 1 in 80 or to the gradients and invert levels shown
5. Foul pipework connections to first access point shall be laid at a minimum gradient of 1 in 40 or to the levels shown.
6. All connections to be made soffit to soffit unless noted otherwise.
7. Pipe bedding to be Class 'B' bedding for rigid pipes and Class 'T' bedding for flexible pipes (100 mm granular bed and surround).
8. Where cover to soffit of pipe is less than 600 mm in private areas, the following shall apply:-
   a) Vitrified clay pipes - provide a 100 mm min. thick concrete bed and surround (instead of class 'B' & 'T' bedding) and a 13 mm thick compressible filler at each joint.
   b) uPVC pipes - provide a concrete bridging (in addition to class 'B' or 'T' bedding) in accordance with appendix A15, Building Regulations part 'H'.
9. All concrete indicated in the construction of drainage infrastructure (pipe bedding, bridging, manholes etc) shall be standardised prescribed concrete ST2 and is to conform to BS EN 206-1 and BS 8500-2. The maximum aggregate size shall be 20mm.
10. Foundations adjacent to pipe runs or manholes are to have their formation level set above the invert level no higher than the equivalent of the horizontal distance between the pipe/excavation trench and the foundation, minus 500mm.
11. Excavations for manholes, pipe runs etc located within a 45 degree load distribution splay from any adjoining existing foundations, are to be adequately supported for the duration of the works and pipe runs protected as note 8 above.
12. Where excavations for pipe runs are parallel and in close proximity to each other and/or other service trenches, The Contractor shall ensure that adequate safety measures, including temporary shoring, are provided in line with current health & safety legislation and good practice. Particular attention is to be paid to adjacent trenches of differing invert levels.
13. All existing drainage found on site during the works shall be investigated, its operational status confirmed and the following applied:-
    a) Inoperative drainage shall be cut back and pipe runs filled with concrete grout.
    b) 'Live' drainage shall be advised to the engineer.

General

1.1. This drawing is to be read in conjunction with all Architect's, Engineer's and Services Engineer's drawings and specifications.
1.2. Do not scale from any of the Civils drawings. All dimensions to be verified on site and any discrepancies should be highlighted.
1.3. All materials to comply with the relevant British Standard.

Legend

Surface Water	Description
	New surface water drain
	New surface water manhole (Size indicated on Manhole Schedule)
	New modular storage tank
RWP	New rain water down pipe
GP	New yard gully
	Filter Strip/French Drain
	Linear Drainage Channel

Foul	Description
	New foul water drain
	Backdrop
	New shallow foul inspection chamber (typ. 450mmØ) upto 1200mm deep
SVP	New soil and vent pipe
FG	New foul gully

Combined	Description
	Existing combined sewer
	Existing combined sewer manhole
	New combined sewer manhole (Size indicated on Manhole Schedule)

General	Description
	Site Boundary

⚠ Setting out of internal foul drainage points by others.

⚠ Potential that existing services may require diverting to accommodate the proposed building.

⚠ These drawings are based on TTSP drawings 3447-TSP-ZZ-02-DR-A-20-002 and 3447-TSP-ZZ-XX-DR-A-00-002

⚠ CCTV drainage survey to be undertaken to confirm details of existing drainage.

⚠ Cover depth for attenuation tank based on existing topographical levels.

⚠ Contractor to confirm setting out of tank in line with the requirements of the below ground drainage shown on plan.

REV	COMMENTS	DATE	CHK
C03	Revised as clouded Background survey updated	23.09.24	RJ
C02	Revised as clouded Background survey updated	15.04.24	RJ
C01	Construction Issue	27.03.24	RJ
P03	Stage 4 Issue	26.01.24	RJ
P02	Revised Stage 3 Issue	23.08.23	RJ
P01	Stage 3 Issue	31.07.23	RJ

STATUS

CONSTRUCTION

mnp
mason navarro pledge
Consulting Civil and Structural Engineers
LONDON · MANCHESTER · HITCHIN
0203 9265613 0161 8701197 01462 632012
Email: office@mnp.co.uk
www.mnp.co.uk

CLIENT

TTSP

PROJECT

KS DC Manchester

DRAWING TITLE

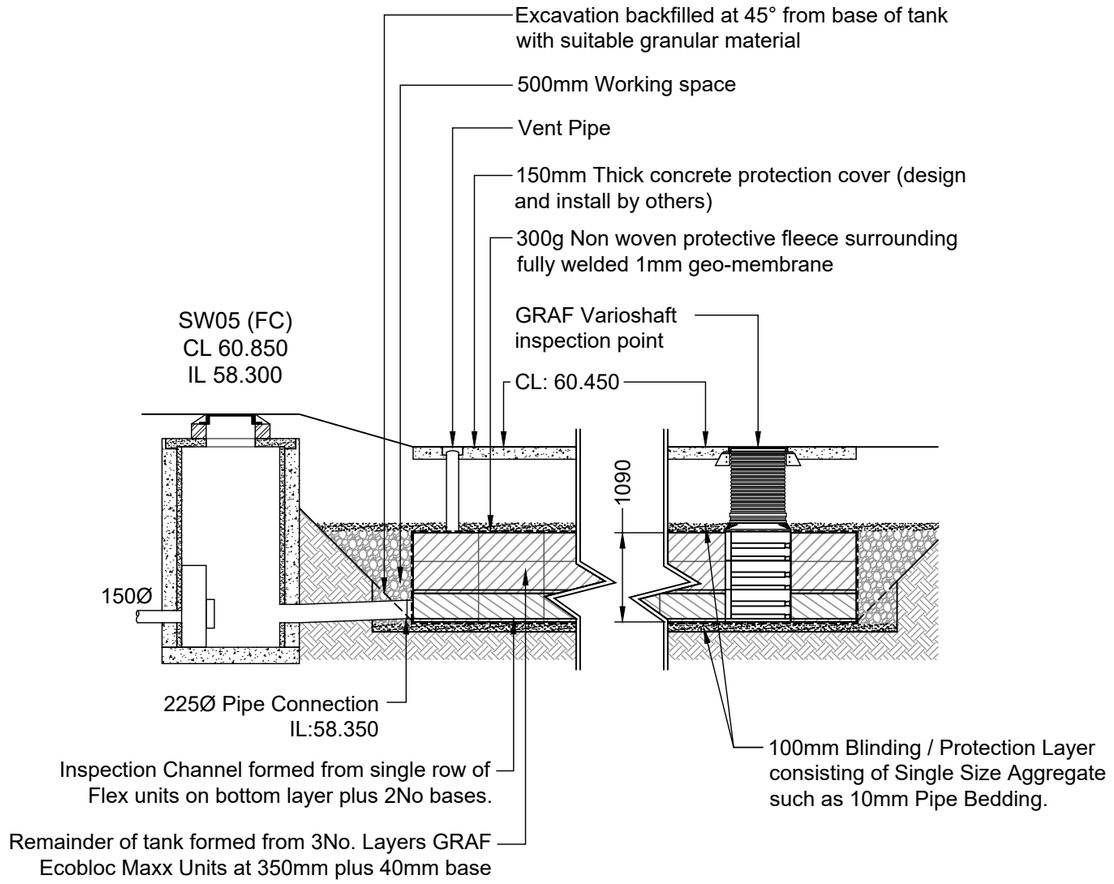
Drainage General Arrangement

SCALE @ A1	DRAWN BY	DATE
1:200	AGD	August 2023

MNP No.	STATUS CODE	REV
223169	**S4**	**C03**

Ref No.
170188-MNP-ZZ-XX-DR-C-01800

A3

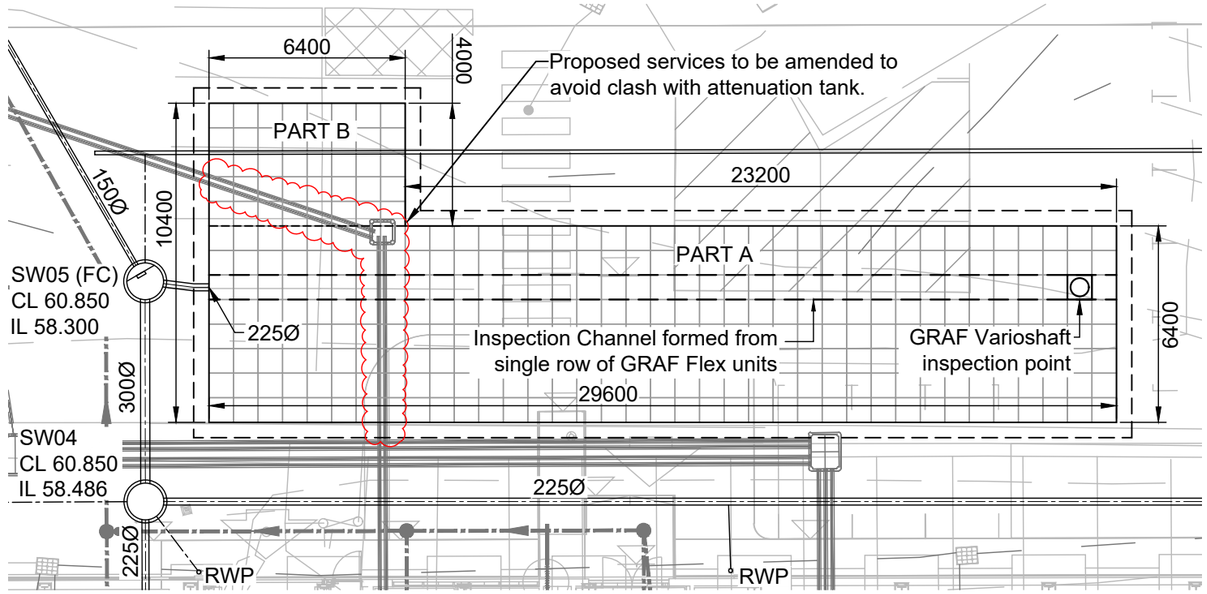


Proposed Section
(Scale 1:75)

Part A:
29.6 x 6.4 x 1.09m deep
Part B:
6.4 x 4.0 x 1.09m deep

Total Vol = 234.394m³
Net Vol ≈ 225.018m³
At 96% min Void Ratio
971 GRAF Ecobloc Maxx units
336 Maxx base units
37 GRAF Ecobloc Flex units
37 Flex base units
149 Maxx & 1 Flex end units (pairs)

Extents of excavation to be an additional 500mm around the perimeter of the tank



Proposed Plan
(Scale 1:200)

NOTES

1. Proposed Hydro WMS layout.
2. All dimensions are in millimetres, all elevations in metres unless otherwise stated.
3. All temporary and enabling works by others.
4. All dimensions of fabricated items are nominal and may vary within manufacturing tolerances.

REV	AMENDMENT	DATE

HydroWMS
Complete Water Management Solutions

HYDRO WMS LTD
RANDOLPH HOUSE 3
7-41 LONGSHUT LANE WEST
STOCKPORT
SK2 6RX
Tel/Fax: 0161 4563476
brian.byrne@hydro-wms.co.uk
www.hydro-wms.co.uk

CLIENT: -	STATUS: FOR APPROVAL	DATE: 28/03/2024	DRAWN: WS	CHECKED:
JOB TITLE: KS DC Manchester	DRAWING TITLE: Proposed Attenuation Tank Details	SCALE: 1:200@ A3	PROJECT No.:	
		DRAWING No.: 001	REV.: -	

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	2.500	2.070
Flush-Flo™	0.245	1.210
Kick-Flo®	0.493	0.994
Mean Flow		1.493

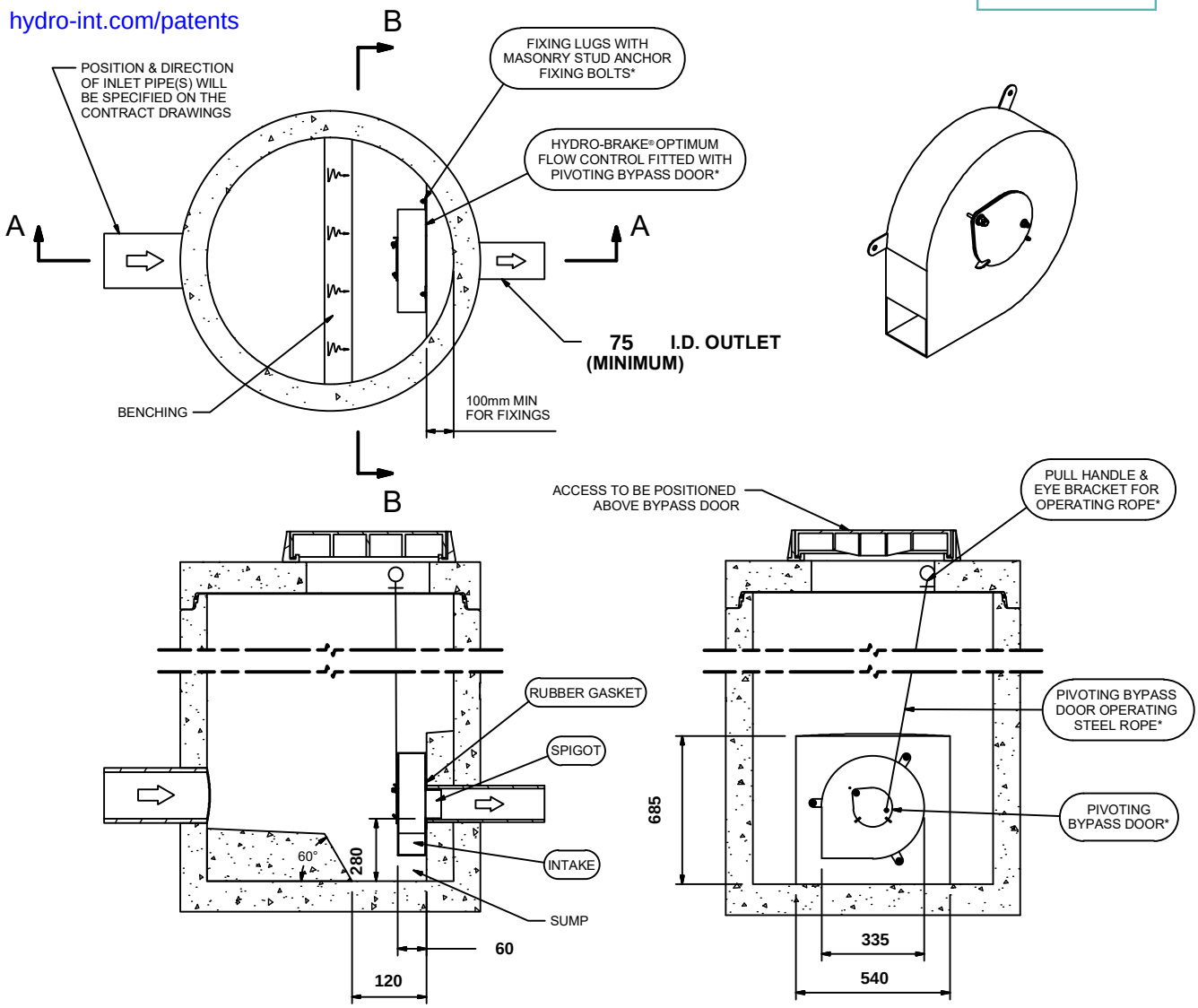
Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Indicative Weight: 10 kg

BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE 08/4596

wrc approved PT/503/0422 Valid: 01/04/2022 - 31/03/2027

hydro-int.com/patents



SECTION A-A

SECTION B-B

IMPORTANT: LIMIT OF HYDRO INTERNATIONAL SUPPLY
THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS
* WHERE SUPPLIED
HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE

The head/flow characteristics of this SHE-0055-2070-2500-2070 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

Hydro International A CRH COMPANY

DATE	18/06/2024 10:42
SITE	KS DC Manchester
DESIGNER	Andrew Dushyanthan
REF	223169

SHE-0055-2070-2500-2070
Hydro-Brake® Optimum

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Hydro International Ltd • Unit 2, Rivermead Court • Kenn Business Park • Windmill Road • Kenn • Clevedon • BS21 6FT • Tel: 01275 878371 • www.hydro-int.com • Email: Enquiries@hydro-int.com

ad@mnp.co.uk

EcoBloc Maxx with Inspect Flex

STORMWATER ATTENUATION & SOAKAWAY CRATES

GRAF

Product Specification Sheet

EcoBloc Maxx is manufactured from selected recycled material and is designed for deeper applications which may be subject to regular and heavy traffic loadings, e.g. cars and HGV's. When combined with EcoBloc Inspect Flex it has the ability to be camera inspected and jetted.

Technical Specification

	Crate	Baseplate
Product Code	402200	402201
Colour	Black	Black
Dimensions (mm)	800 x 800 x 350	800 x 800 x 40
Weight	9kg	4kg
Gross Volume	225 litres	25 litres
Net Volume	217 litres	20 litres
Void Ratio	96%	80%
Inspectable	Yes	
Vertical Loading	31 tonnes/m² (310kN/m²)	
Lateral Loading	8.4 tonnes/m² (84kN/m²)	
BBA Approved	Yes - certificate 15/5200	



Maximum depth of installation - to base of units (m)[1]

Maximum depth of installation

Typical soil type	Soil weight kN/m2	Angle of internal friction (degrees)[2]	Landscaped areas	Vehicle weight <9 tonnes[3]	Vehicle weight <30 tonnes	Vehicle weight <60 tonnes
Over consolidated stiff clay	20	24	2.75	2.50	2.25	2.25
Silty sandy clay	19	26	3.25	3.00	2.50	2.50
Loose sand and gravel	18	30	3.75	3.50	3.25	3.25
Medium dense sand and gravel	19	34	4.25	4.00	3.75	3.50
Dense sand and gravel	20	38	4.75	4.50	4.25	4.25

It is advised that structural design calculations are carried out prior to work commencing. Installation depths and loadings outside of those covered in this table may be permissable depending on site conditions. Contact Graf UK Ltd for more information.

Minimum & maximum cover depths

	Landscaped area	Vehicle weight <3 tonnes[4]	Vehicle weight <9 tonnes	Vehicle weight <12 tonnes	Vehicle weight <30 tonnes	Vehicle weight <60 tonnes
Minimum cover depth (m)	0.30	0.50	0.70	0.80	0.90	1.10[5]
Maximum cover depth (m)	2.75	2.50	2.50	2.30	2.30	2.25

Other vehicle loads are possible. Please contact Graf UK for technical advice.

Notes:

1. Without groundwater present. EcoBloc Maxx with Flex may be used where groundwater is present, contact Graf UK for technical advice.
2. The design is very sensitive to small changes in the assumed value of ϕ, therefore, it is recommended that these values are confirmed by a chartered geotechnical engineer.
3. Applicable for car parks or other areas trafficked only by cars or LGVs. Infrequent accidental load from heavier vehicles may be possible.
4. This category should be used when considering landscaped areas that may be trafficked by ride on mowers.
5. Including 200mm concrete slab.

Assumptions made:

- Ground above and to the sides of the tank is horizontal.
- Shear planes or other weaknesses are not present within the structure of the surrounding soil.

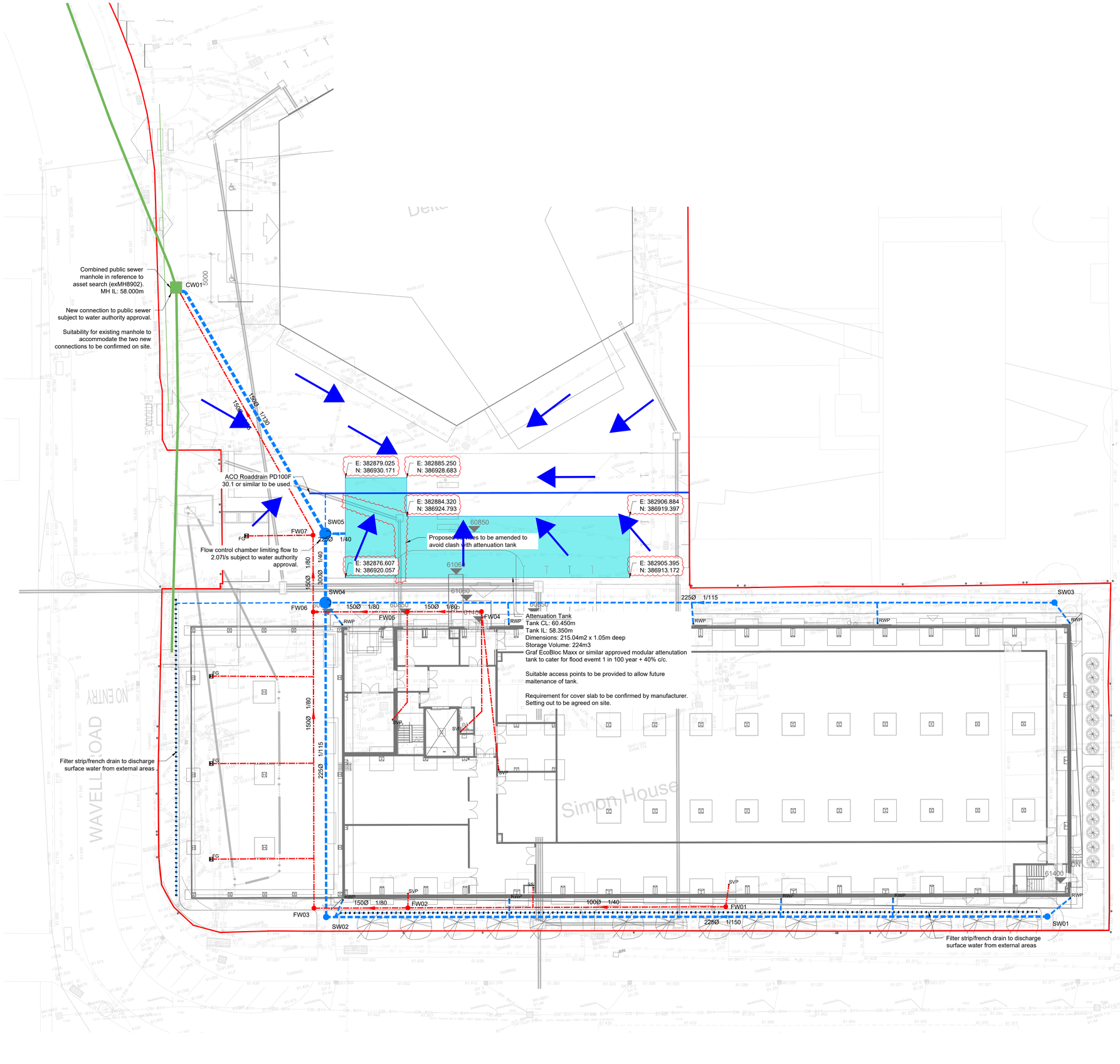
T: 01608 661500 E: info@grafuk.co.uk
www.grafuk.co.uk

Stormwater Management

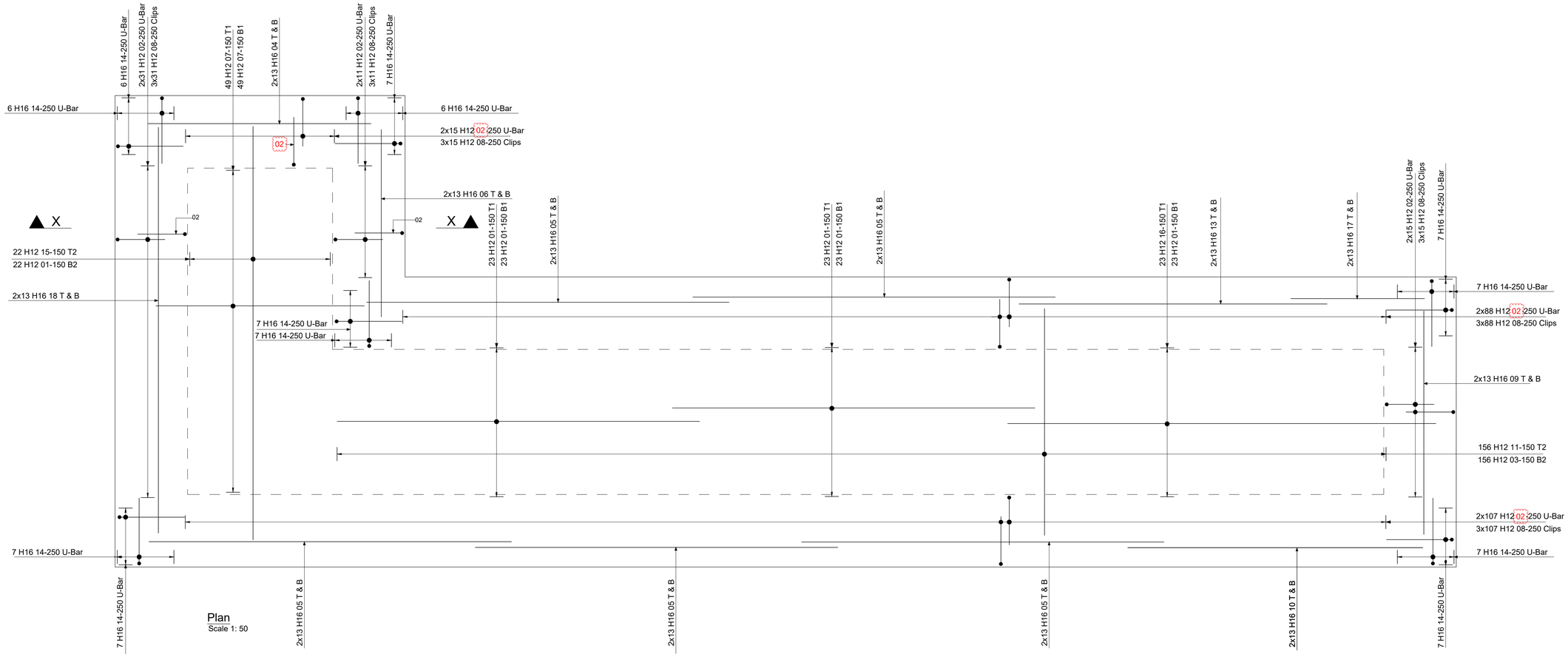
Appendix E – Overland Flows Sketch

2023 Mason Navarro Pledge

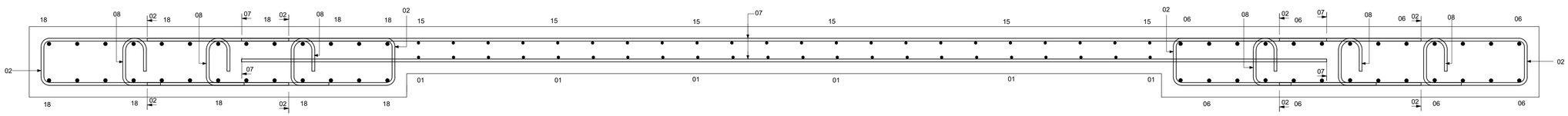
170188-MNP-XX-XX-SK-C-00001
REV P01
DATE 05.06.2024
BY AGD
OVERLAND FLOWS FOR EXCEEDENCE STORM EVENTS



Appendix F – Cover Slab Details



Plan
Scale 1: 50



Section X-X
Scale 1: 10

NOTES

1. ALL REINFORCEMENT BARS TO BE GRADE B DUCTILITY.
2. CONCRETE GRADE RC32 / 40
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S, SERVICE ENGINEERS, AND MASON NAVARRO PLEDGE DRAWINGS AND SPECIFICATIONS.
4. COVER TO REINFORCEMENT - 50mm SIDES
5. SPLICE BARS TO BE CENTRALLY PLACED ABOUT THE SUPPORT.
6. FOR LAYOUT SEE DRAWING:
   170188-MNP-ZZ-FN-DR-S-01020
7. ABBREVIATIONS:-
   - T1:- FIRST LAYER OF TOP STEEL.
   - B1:- FIRST LAYER OF BOTTOM STEEL.
   - T2:- SECOND LAYER OF TOP STEEL.
   - B2:- SECOND LAYER OF BOTTOM STEEL.
   - UB:- U BAR.
   - NF:- NEAR FACE .
   - FF:- FAR FACE.
   - EF:- EACH FACE.
   - AP:- ALTERNATELY PLACED.
   - AS:- ALTERNATELY STAGGERED.
   - LLB1:- LONG LEG BOTTOM OF BOTTOM.
   - LLT1:- LONG LEG TOP OF TOP.
   - LLB2:- LONG LEG SECOND LAYER OF BOTTOM.
   - LLT2:- LONG LEG SECOND LAYER OF TOP.
8. MINIMUM LAP LENGTHS TO BE:
   H10.....500 H20.....1000
   H12.....600 H25.....1250
   H16.....800 H32.....1600

REV	COMMENTS	DATE	CHK
C01	Construction Issue	28/05/24	LH

STATUS

CONSTRUCTION

mason navarro pledge
Consulting Civil and Structural Engineers
LONDON · MANCHESTER · HITCHIN
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CLIENT

KEYSOURCE

PROJECT

KS DC MANCHESTER

DRAWING TITLE

RC DETAILS FOR ATTENUATION TANK

SCALE @ A1	DRAWN BY	DATE
1:25	JS	23/05/24

MNP No.	STATUS CODE	REV
223169		**C01**

Ref No.
170188-MNP-ZZ-00-DR-S-00504

170188	-	MNP	-	ZZ	-	00	-	SH	-	S	-	00504		00504		

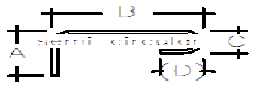
mason navarro pledge

Bending Schedule

MNP No.	Drawing No.	Page No.	Revision
223169	00504	1 of 1	

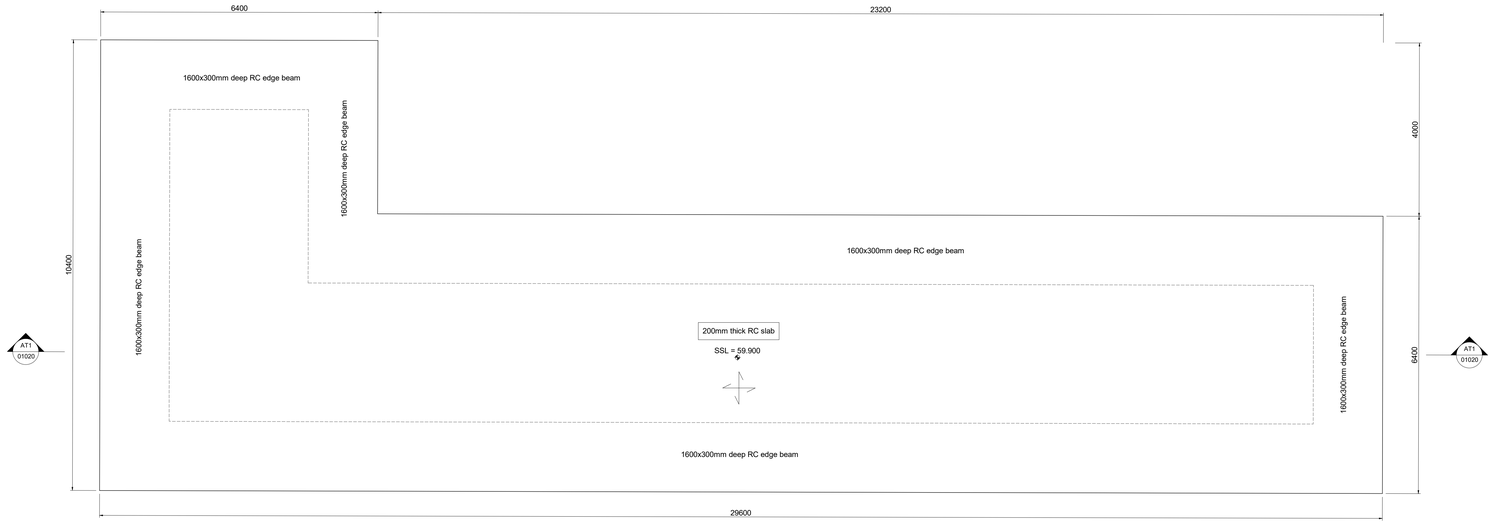
Revision	C01			
KC DC MANCHESTER	Originator/Date	JS 28/05/24		
RC DETAILS FOR ATTENUATION TANK	Ch.d by/Date	LH		

Location	Bar mark	Type and Size	Number of groups	Number in each	Total number	Length of each bar	Shape code	All bending dimensions are in accordance with BS8666:2005 A mm	B mm	C mm	D mm	E/r mm	REV
Attenuation Tank	01	H12	1	137	137	8000	00						
	02	H12	1	534	534	2275	21	1050	200	(1050)			
	03	H12	1	156	156	5000	00						
	04	H16	1	26	26	4950	00						
	05	H16	1	130	130	8000	00						
	06	H16	1	26	26	4150	00						
	07	H12	1	98	98	4600	00						
	08	H12	1	801	801	525	99	160	200	100	(140)		
Attenuation Tank	09	H16	1	26	26	4950	00						
	10	H16	1	52	52	6525	00						
	11	H12	1	156	156	5000	00						
	13	H16	1	26	26	6800	00						
	14	H16	1	81	81	3025	21	1450	175	(1450)			
	15	H12	1	22	22	9125	00						
	16	H12	1	23	23	9475	00						
	17	H16	1	26	26	2950	00						
	18	H16	1	26	26	8950	00						



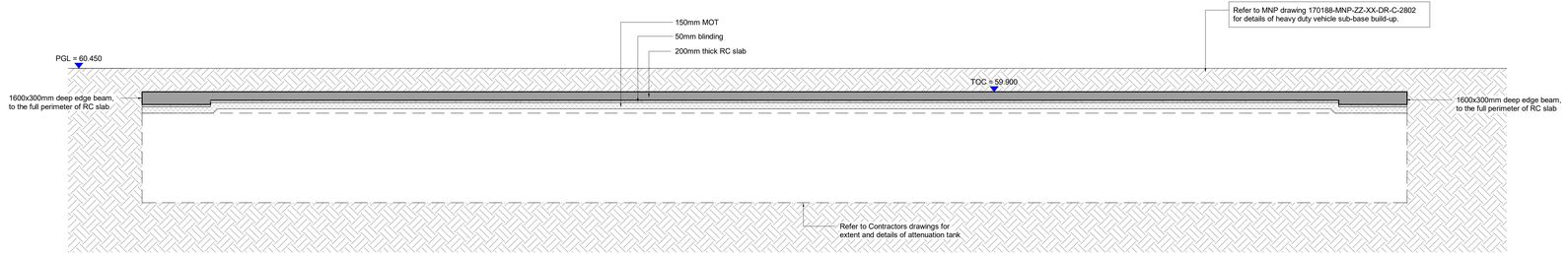
B=Steel reinforcement grade B500B to BS4449 2005
S=Stainless steel reinforcement to BS6744 2001
X=For Steel other than H and S

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External RC Slab Over Attenuation Tank

1 : 50



Section AT1

1 : 50

Attenuation Tank Cover Slab Notes:

- C35/45 concrete;
- RC slab design based on crane outrigger load of 560 kN;
- Crane outriggers must be spread over a min. area of 1600x1600mm;
- Max. vertical load capacity of attenuation tank is 113kN/m2;
- Made ground to be excavated and backfilled in compacted layers with granular fill, proof rolled and any soft sports infilled. Plate bearing tests will need to be conducted to prove the 100kN/m^2 bearing capacity at formation level.

General:

1. MNP drawings are to be read in conjunction with:
   - General notes drawing: 170188-MNP-ZZ-XX-DR-S-01000
   - Relevant documents, Specifications, Architectural and Services drawings, including approved building work drawings.
   - Building Information Model (BIM)
2. All dimensions are in mm except levels which are in metres and relate to [ordnance datum].
3. Do not scale from this drawing. Work to figured dimensions only.
4. The contractor should notify CA of any discrepancies between the structural drawings and specifications or other drawings before work commences.

REV	COMMENTS	DATE	CHKD
C01	Construction Issue	23.05.2024	TA

STATUS: CONSTRUCTION

mnp
mason navarro pledge
Consulting Civil and Structural Engineers
HITCHIN · MANCHESTER · LONDON
01462 432012 · 0161 8701197 · 0203 9295513
office@mnp.co.uk · www.mnp.co.uk

CLIENT: Keysource

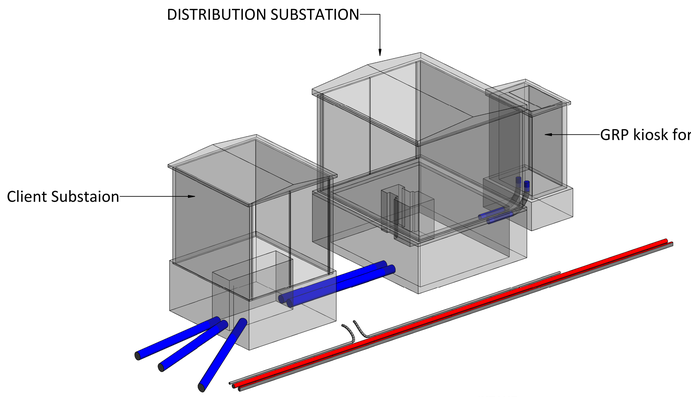
PROJECT: KS DC Manchester

DRAWING TITLE: External RC Slab Over Attenuation Tank

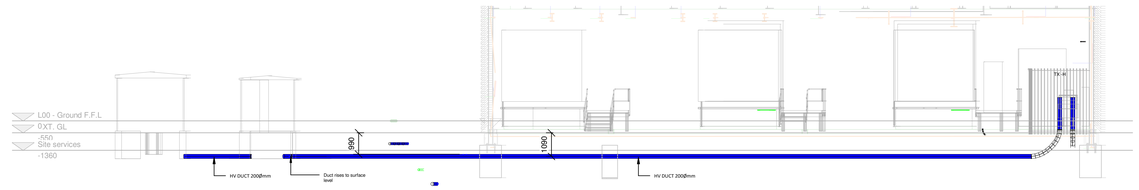
SCALE @ A0	DRAWN BY	DATE	REF No.
As indicated	GS	MAY 2024	170188- MNP - ZZ - FN - DR - S - 01020

MNP No.	STATUS CODE	REV
223169	S5	C01

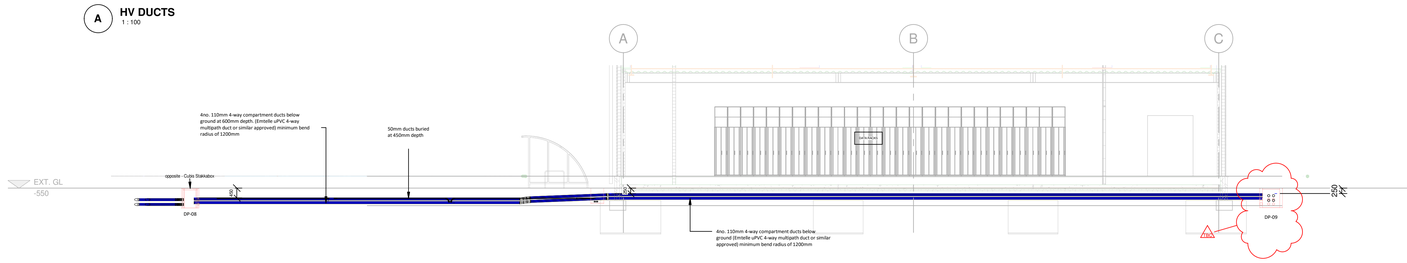
Appendix G – Proposed Services and Ductwork



2 **INTAKE GRP**

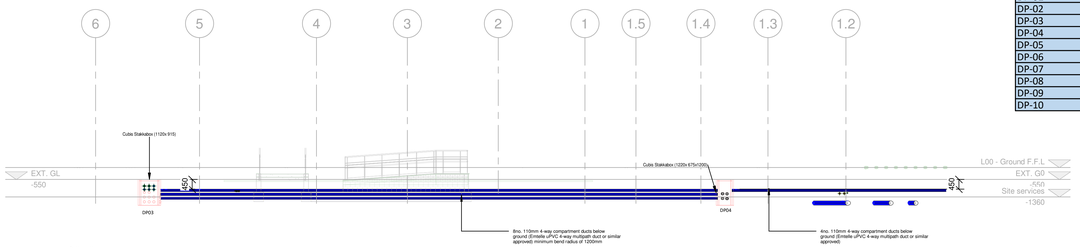


A **HV DUCTS**
1 : 100

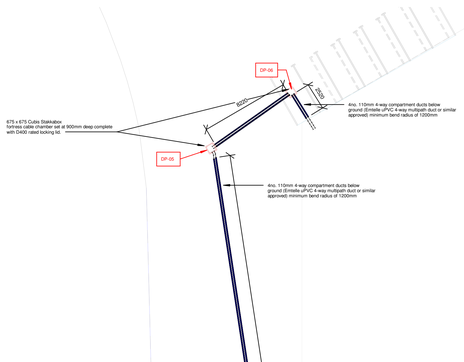


B **DATA DUCTS**
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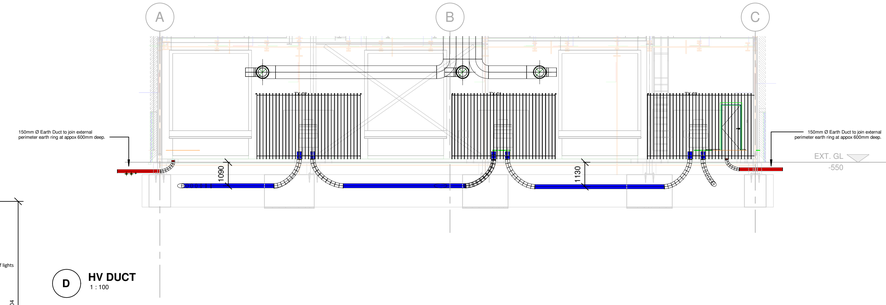
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DP-02	Ultima (Standard)	B125	900	805	805
DP-03	Ultima (Connect)	D400	1200	1120	915
DP-04	Ultima (Connect)	E600	1200	1220	675
DP-05	Ultima (Standard)	E600	900	805	805
DP-06	Ultima (Standard)	E600	900	805	805
DP-07	Ultima (Connect)	B125	700	600	600
DP-08	Ultima (Standard)	D400	900	805	805
DP-09	Ultima (Standard)	B125	900	800	800
DP-10	Ultima (Connect)	B125	900	1200	900



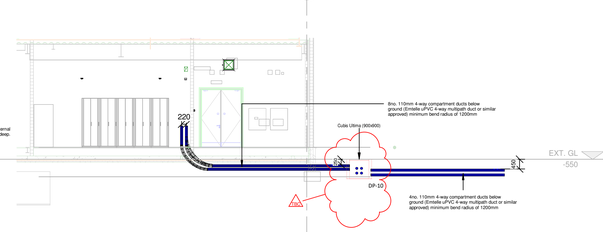
C **DATA DUCTS.**
1 : 100



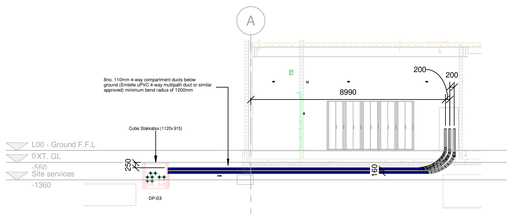
1 **Below Ground Ductwork**
1 : 200



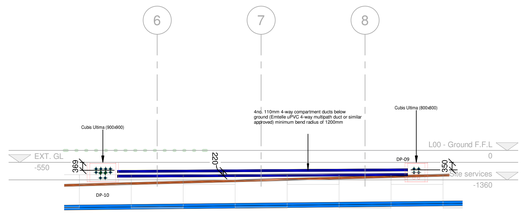
D **HV DUCT**
1 : 100



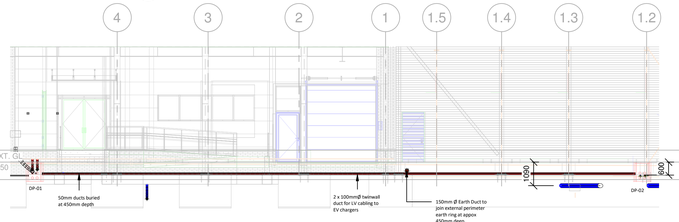
E **MMR 1 DATA DUCT**
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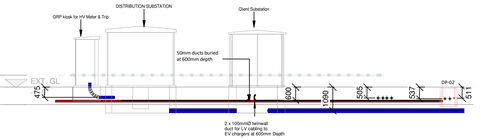
F **MMR 2 DATA DUCT**
1 : 100



G **DATA DUCT.**
1 : 100



H **EV DUCT**
1 : 100



J **HV INTAKE GRP**
1 : 100

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

THE DESIGN TEAM HAVE HIGHLIGHTED UNUSUAL AND SIGNIFICANT RISKS ONLY THAT MAY NOT BE OBVIOUS TO A COMPETENT CONTRACTOR. THEY ARE TO ASSIST WITH RISK REDUCTION ONLY AND ARE NOT NECESSARILY COMPREHENSIVE. IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT.

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE DESIGNER'S RISK ASSESSMENT.

INFORMATION RELATED TO CLEANING & MAINTENANCE IS INCLUDED IN THE H&S FILE.

NO SIGNIFICANT OR UNUSUAL RISKS THAT WILL NOT BE OBVIOUS TO A COMPETENT CONTRACTOR HAVE BEEN IDENTIFIED FOR CONSTRUCTION, MAINTENANCE, CLEANING, DECOMMISSIONING OR DEMOLITION.

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS TO BE VERIFIED BY CONTRACTOR.
3. FINISHED FLOOR LEVEL 400mm ABOVE FLOOR SLAB.

LEGEND:

- EXISTING.
- UNDERGROUND DUCT.
- DUCT FLEX.
- CUBIS STAKKABOX

C03	DESIGN AMENDED	JO	SA	SA	03.06.24
C01	CONSTRUCTION ISSUE	JO	SA	SA	10.04.24
Rev	Description	Drwn	Chkd	Appd	Issued Date

Drawing Status: CONSTRUCTION ISSUE

KEYSOURCE
3 City Place
Tel 0345 204 3333 Beehive Ring Road
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Client: TELEDATA

Site: MANCHESTER

Project: MCR2

Title: BELOW GROUND DUCTWORK

Setup Date	Scale	Size	Rev
01/02/24	As indicated	A0	C02

Dwg No. 170188-KSL-XX-00-DR-E-41000

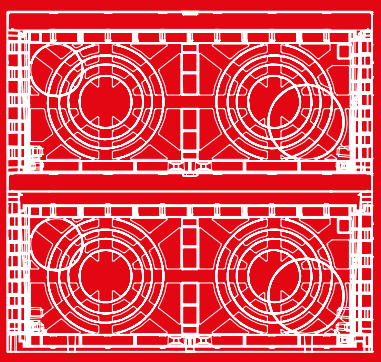
File Name :

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Appendix H – Manufacturers' Specification

EcoBloc System
Stormwater management





EN Salesfolder EcoBloc System
950431 – 35-2



Production site in Dachstein (France)

Production site in Teningen (Germany) near Freiburg

GRAF – Setting standards in quality

Otto Graf GmbH has been supplying high-quality plastic products to its customers for 50 years. In 1974, GRAF developed its first pioneering range of rainwater harvesting products. Today we are market leader in numerous countries for Rainwater Harvesting Systems.

High Quality Manufacturing

Graf continuously invests in the expansion of its headquarters in Teningen, near Freiburg (Breisgau). The facility has now an approximate area of 155,000 m² and is one of the most modern production facilities for plastic products in the world.
Our choice of Germany for the new production site was easy. On the one hand, we feel an obligation to the site because of our history. On the other, we would like to offer our customers products of the highest quality.

Where quality comes first

To ensure consistent high product quality, you need optimised production processes and outstanding quality management. Every individual tank at the new production site in Teningen is checked for dimensional accuracy, wall thickness and weight.
All production parameters, e.g. material composition, machine settings and the staff involved in the production process, are documented for each individual product.

Our goal: your satisfaction

More than 100,000 satisfied customers already benefit from the advantages of GRAF products.

Manufacturing certified according to ISO 9001

Manufacturing certified according to ISO 50001

Internationally proven: GRAF infiltration technology



Warehouse, Kent (UK)



Housing development, Singapur (SG)



Energy supplier, Warwick (UK)



Daycare centre, Lörrach (DE)



University of Agriculture, Prague (CZ)



Industrial building, Tumeltsham (AT)

EcoBloc
Stormwater management system

Various applications

- ✓ Rainwater infiltration
- ✓ Stormwater attenuation
- ✓ Rainwater harvesting



Fully integrated shaft

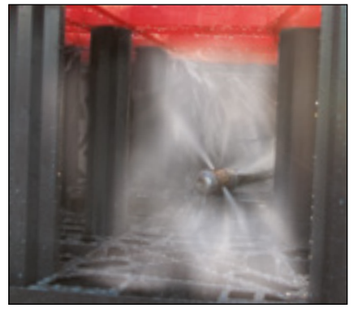
The Vario 800 flex shaft system (page 12) can be directly installed in an EcoBloc infiltration or infiltration/attenuation system. The connection surfaces of the inspection channels in the Vario 800 flex shaft system are accurately matched to the EcoBloc system.

Optimum connection positions

Optimum connection positions ensure full use of infiltration ditch volume.

Lorry-bearing up to 60 tons

The GRAF EcoBloc Inspect flex has a heavy-duty lorry-bearing capacity of 60 tons with an 800 mm (2' 7.5") earth covering.



High pressure jetting possible

GRAF EcoBloc Inspect flex can easily resist high pressure jetting.





Easy to inspect

The standard inspection channel allows the entire infiltration/attenuation system to be monitored effectively. The EcoBloc Inspect flex allows access by commercially available inspection cameras. This has been confirmed by several independent testing authorities.



High storage volume

GRAF infiltration modules have three times the storage volume of a standard gravel infiltration ditch. One module therefore takes the place of around 1300 kg (1,4 tons) of gravel or a 50 m (164') drainage pipe. Since you don't have to excavate so much soil and enjoy great value for money compared with a standard gravel infiltration ditch, the GRAF modules save you hard-earned cash!

Service life of over 50 years

A durable product design ensures sustainability. The GRAF EcoBloc system and the Vario 800 flex shaft system is designed for a service life of over 50 years.

Easy to install

The modules are fitted simply, at speed and in various ways. They can be installed without heavy machinery – one EcoBloc Inspect flex module weighs just 8 kg (17.6 lbs), even only 7 kg (15.4 lbs) for one EcoBloc light



Up to 97 % reservoir volume

The GRAF EcoBloc light has a gross volume of 225 litres (59.4 US gal.) and a reservoir volume of 219 litres (57.9 US gal.). With a reservoir volume in excess up to 97 %, it is a market-leading product. The EcoBloc variants maxx and Inspect flex still offer a reservoir coefficient of 96 % despite their high load-bearing capacity.

Installation depth of up to 5 metres (16' 4.8")

Even under very heavy loads, GRAF EcoBloc Inspect flex modules can be installed at a depth of up to 5 metres (16' 4.8"). This means that up to 14 layers are possible. Please consult GRAF when the installation depth is greater than 5 metres.

GRAF EcoBloc Configurator

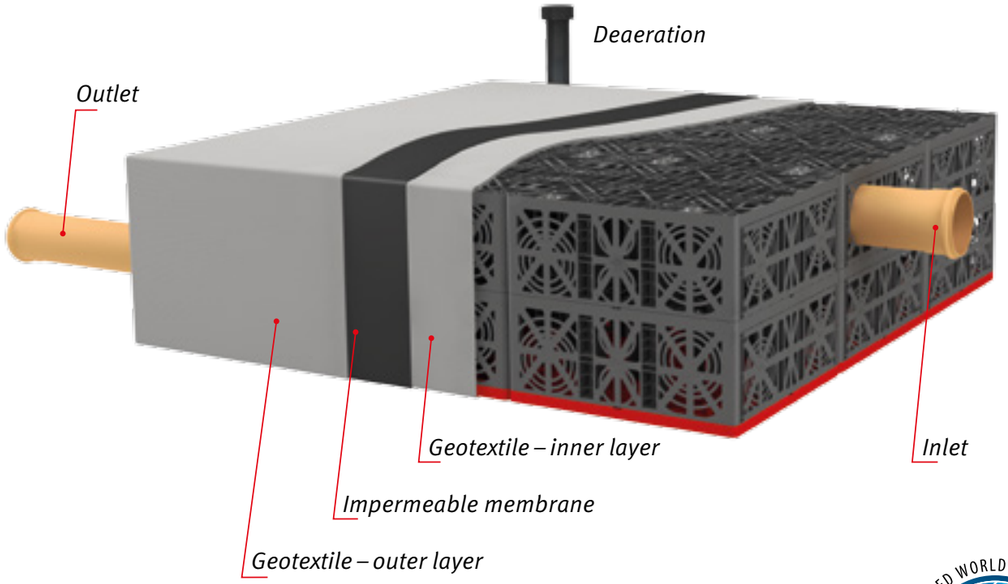
Please ask your GRAF sales consultant for your login account information to the GRAF EcoBloc Configurator.



Application and logistics

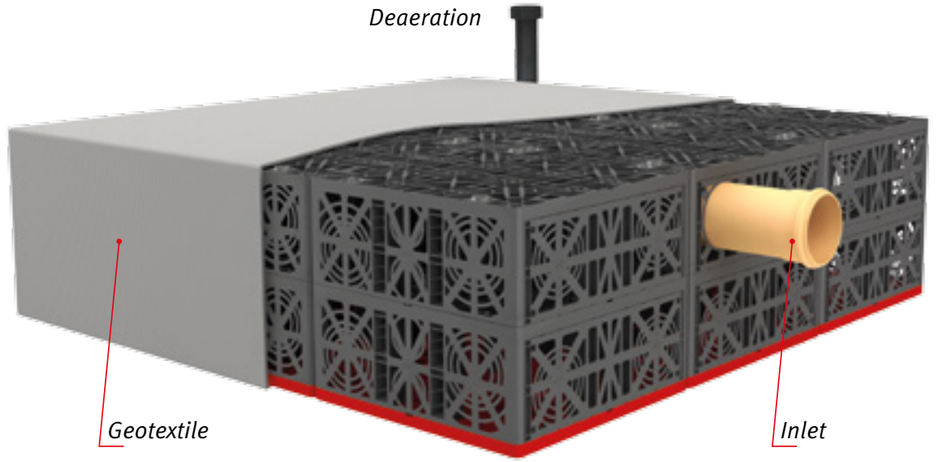
Stormwater attenuation

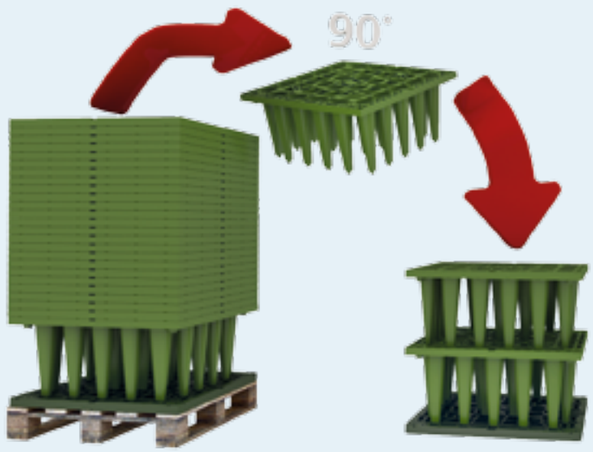
The controlled discharge of rainwater is increasingly important during heavy rain. The GRAF EcoBloc modules can be also surrounded by an impermeable membrane, which prevents water from escaping from the system unchecked. Restricted outflow allows the water to be discharged into the sewage system in a controlled manner.



Rainwater infiltration

Local infiltration of rainwater is gaining in importance. As we cover over more and more ground with concrete, we are interrupting the natural water cycle. The GRAF EcoBloc modules combine environmental management of rainwater with the opportunity to protect against flooding. It stores rainwater and gradually releases it back into groundwater reserves.







1. Stackable

To save space during transport, the EcoBloc maxx and EcoBloc light modules are stacked into each other. This minimizes transport costs, storage space in stock and CO_2 emissions.

2. Easy installation

The EcoBloc base plate forms the foundations of each EcoBloc system. Up to 14 EcoBloc modules can be fitted on one base plate.

3. Ready

The side faces are sealed with EcoBloc end plates. The EcoBloc system can be adapted to match individual requirements.

Eco-friendly product – green logistics

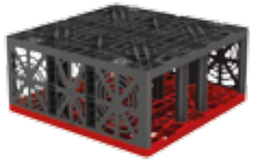
One lorry can transport up to 2700 EcoBloc light units. That corresponds to a volume of 610 m³ (161,145 US gal.). This reduces carbon emissions during transport by 85 %!





The system at a glance

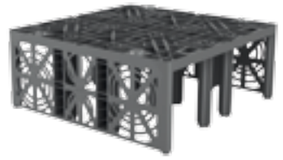
EcoBloc Inspect flex



- Lorry-bearing 60 tons/HS-25
- 150 m³ (39,625 US gal.)/Truck
- Inspectable
- High pressure jetting possible

Load ★★★★★
Logistics ★★★

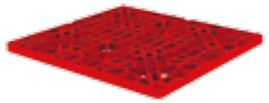
DIBt Z-42.1-526 certification no.



EcoBloc Inspect flex
DN 100 (4")/150 (6")/200 (8") connecting surfaces

Volume	Length	Width	Height	Weight	Colour	Order no.
205 l (54.2 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	320 mm (12.6")	8 kg (17.6 lbs)	grey	402005

Webcode G4107



EcoBloc Inspect flex base plate
Forms the foundation of the EcoBloc Inspect flex system

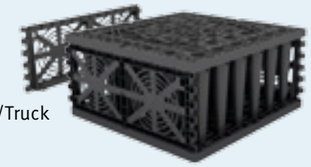
Volume	Length	Width	Height	Weight	Colour	Order no.
25 l (6.6 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	40 mm (1.6")	4 kg (8.8 lbs)	grey	402006



EcoBloc Inspect flex end plates
The front ends of an EcoBloc Inspect flex system are sealed by end plates with DN 100 (4")/150 (6")/200 (8") contact surfaces

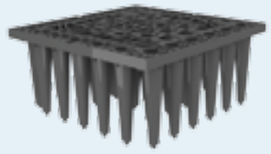
Item	Colour	Order no.
EcoBloc Inspect flex end plates (Set 2 units)	grey	402002

EcoBloc maxx



- Lorry-bearing 40 tons/HS-20
- 410 m³ (108,310 US gal.)/Truck

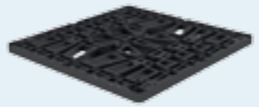
Load ★★★★
Logistics ★★★★



EcoBloc maxx
Connecting surfaces on EcoBloc maxx end plates

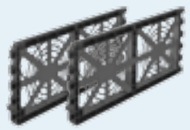
Volume	Length	Width	Height	Weight	Colour	Order no.
225 l (59.4 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	350 mm (13.8")	9 kg (19.8 lbs)	grey	402200

Webcode G4108



EcoBloc maxx base plate
Forms the foundation of the EcoBloc maxx system

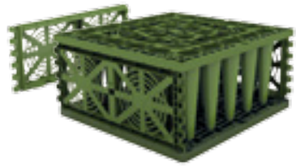
Volume	Length	Width	Height	Weight	Colour	Order no.
25 l (6.6 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	40 mm (1.6")	4 kg (8.8 lbs)	grey	402201



EcoBloc maxx end plates
The outside surface of an EcoBloc maxx system is sealed by end plates with contact surfaces DN 100 (4") / 150 (6") / 200 (8") / 250 (10")

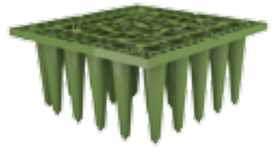
Item	Colour	Order no.
EcoBloc maxx end plates (Set 2 units)	grey	402203

EcoBloc light



- Lorry-bearing 12 tons
- 610 m³ (161,145 US gal.)/Truck

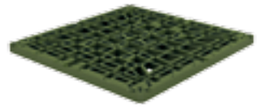
Load ★★
Logistics ★★★★★



EcoBloc light
Connecting surfaces on EcoBloc light end plates

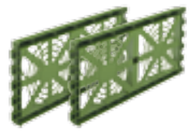
Volume	Length	Width	Height	Weight	Colour	Order no.
225 l (59.4 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	350 mm (13.8")	7 kg (15.4 lbs)	green	402300

Webcode G4109



EcoBloc light base plate
Forms the foundation of the EcoBloc light system

Volume	Length	Width	Height	Weight	Colour	Order no.
25 l (6.6 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	40 mm (1.6")	4 kg (8.8 lbs)	green	402301



EcoBloc light end plates
The outside surface of an EcoBloc light system is sealed by end plates with contact surfaces DN 100 (4") / 150 (6") / 200 (8") / 250 (10")

Item	Colour	Order no.
EcoBloc light end plates (Set 2 units)	green	402303

EcoBloc System accessories



EcoBloc connectors
For horizontal connection

Order no. 402015	Set 10 units
Order no. 402018	Set 25 units
Order no. 402020	Set 50 units
Order no. 402025	Set 200 units



Deaeration end
DN 100 (4")

Order no. 369017



Adaptor plate

Order no. 402030	DN 300 (12")
Order no. 402031	DN 400 (16")
Order no. 402032	DN 500 (20")



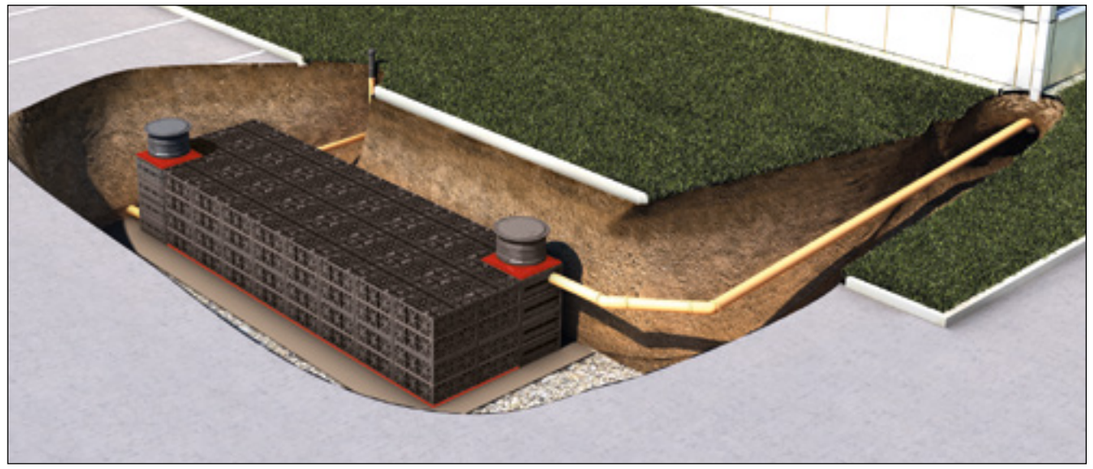
GRAF-Tex geotextile
size of 2.50 x 2.50 m (8' 2.4" x 8' 2.4")

Order no. 231006

Sold by the metre, roll width 5 m (16' 4.8")

Order no. 231002

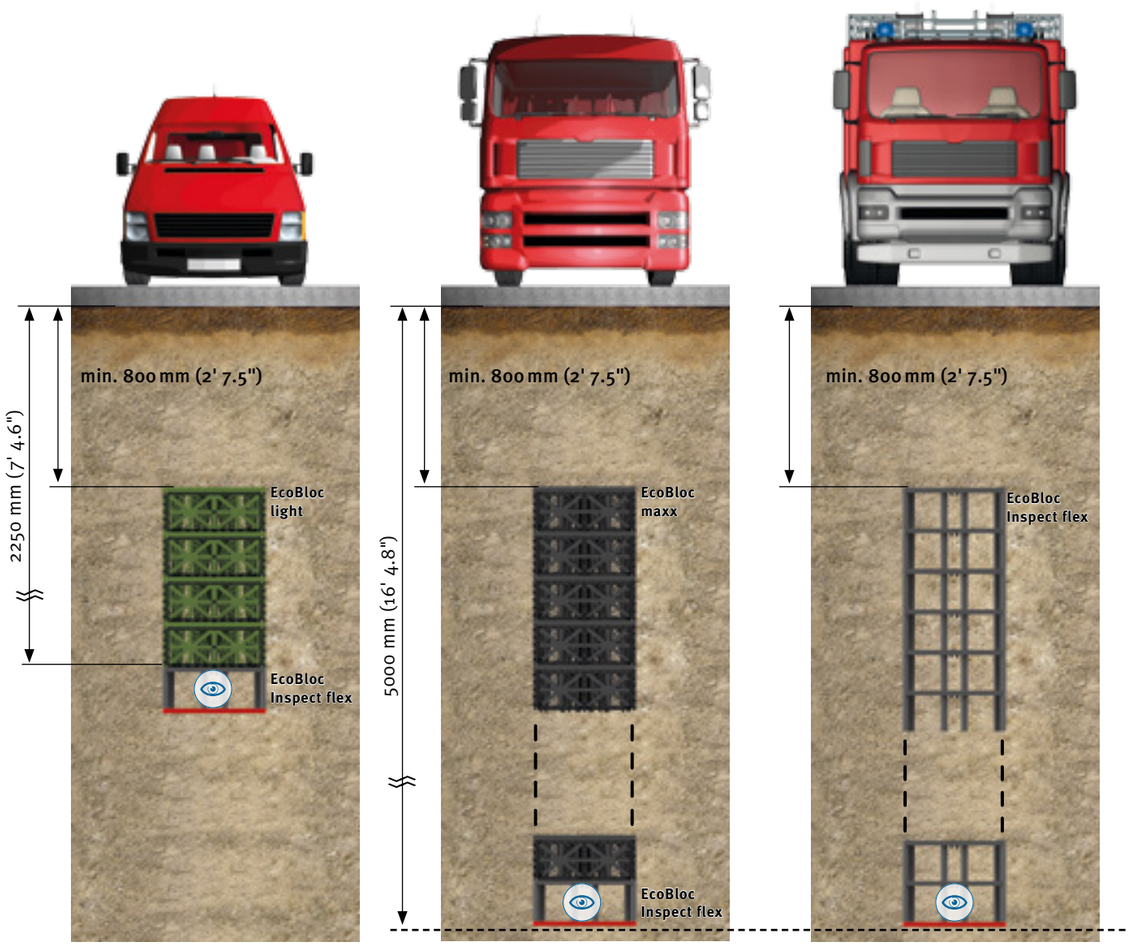
Applications and loads



12 tons / H-10 / H-15

40 tons / HS-20

60 tons / HS-25



Technical data sheet





Infiltration module		EcoBloc Inspect flex	EcoBloc maxx	EcoBloc light
Gross volume		205 l (54.2 US gal.)	225 l (59.4 US gal.)	225 l (59.4 US gal.)
Net volume		195 l (51.5 US gal.)	217 l (57.3 US gal.)	219 l (57.9 US gal.)
Storage coefficient		96 %	96 %	97 %
Inspectable		•		
High pressure jetting possible		•		
Load				
Load	Short-term	max. 100 kN/m²	max. 100 kN/m²	max. 75 kN/m²
	Long-term	max. 59 kN/m²	max. 59 kN/m²	max. 35 kN/m²
Without traffic load	min. earth covering	250 mm (9.8")	250 mm / 500 mm [1] (9.8") / (1' 7.7") [1]	250 mm [2] (9.8") [2]
	max. earth covering	2750 mm (9')	2750 mm / 2000 mm [1] (9') / (6' 6.7") [1]	1500 mm / 1250 mm [2] (4' 11") / (4' 1,2") [2]
	max. installation depth	5000 mm (16' 4.8")	5000 mm (16' 4.8")	2500 mm (8' 2.4")
	max. number of layers	14	13	6
Vehicle	min. earth covering	250 mm (9.8")	250 mm / 500 mm [1] (9.8") / (1' 7.7") [1]	500 mm / o.r. [2] (1' 7.7") / o.r. [2]
	max. earth covering	2750 mm (9')	2750 mm / 2000 mm [1] (9') / (6' 6.7") [1]	1250 mm / o.r. [2] (4' 1.2") / o.r. [2]
	max. installation depth	5000 mm (16' 4.8")	5000 mm (16' 4.8")	2250 mm (7' 4.6")
	max. number of layers	14	13	4
Lorry 12/H-10/H-15	min. earth covering	500 mm (1' 7.7")	500 mm / 800 mm [1] (1' 7.7") / (2' 7.5") [1]	800 mm / o.r. [2] (2' 7.5") / o.r. [2]
	max. earth covering	2750 mm (9')	2750 mm / 2000 mm [1] (9') / (6' 6.7") [1]	1000 mm / o.r. [2] (3' 3.3") / o.r. [2]
	max. installation depth	5000 mm (16' 4.8")	5000 mm (16' 4.8")	2250 mm (7' 4.6")
	max. number of layers	13	12	4
Lorry 30	min. earth covering	500 mm (1' 7.7")	500 mm / 800 mm [1] (1' 7.7") / (2' 7.5") [1]	
	max. earth covering	2500 mm (8' 2.4")	2500 mm / 1750 mm [1] (8' 2.4") / (5' 8.9") [1]	
	max. installation depth	5000 mm (16' 4.8")	5000 mm (16' 4.8")	
	max. number of layers	13	12	
Lorry 40/HS-20	min. earth covering	500 mm (1' 7.7")	800 mm (2' 7.5") [1]	
	max. earth covering	2250 mm (7' 4.5")	2250 mm / 1500 mm [1] (7' 4.5") / (4' 11") [1]	
	max. installation depth	5000 mm (16' 4.8")	5000 mm (16' 4.8")	
	max. number of layers	13	11	
Lorry 60/HS-25	min. earth covering	800 mm (2' 7.5")		
	max. earth covering	2000 mm (7' 4.5")		
	max. installation depth	5000 mm (16' 4.8")		
	max. number of layers	13		
Connections				
DN 100 (4")		•	•	•
DN 150 (6")		•	•	•
DN 200 (8")		•	•	•
DN 250 (10")		–	•	•
DN 300 (12")		• [3),4)]	• [3),4)]	• [3),4)]
DN 400 (16")		• [3),4)]	• [3),4)]	• [3),4)]
DN 500 (20")		• [4)]	• [4)]	• [4)]
Measurements				
Length		800 mm (2' 7.5")	800 mm (2' 7.5")	800 mm (2' 7.5")
Width		800 mm (2' 7.5")	800 mm (2' 7.5")	800 mm (2' 7.5")
Height		320 mm (12.6")	350 mm (13.8")	350 mm (13.8")
Weight		8 kg (17.6 lbs)	9 kg (19.8 lbs)	7 kg (15.4 lbs)

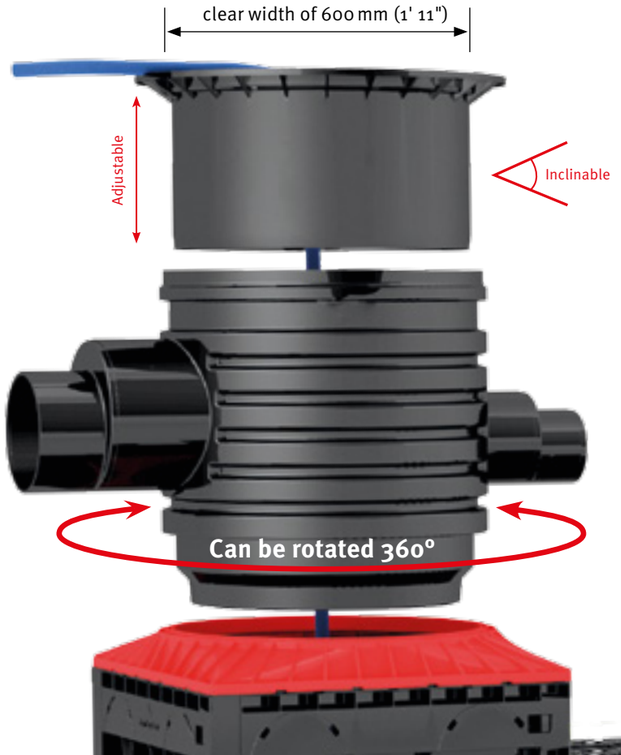
[1] When combined with EcoBloc Inspect flex

[2] Values on request when combined with EcoBloc Inspect flex

[3] Optionally available with Vario shaft (page 12)

[4] Optionally available with adaptor plates (page 9)

Vario 800 flex shaft system







Flexible use

The GRAF Vario 800 shaft provides easy access to all EcoBloc modules. It can be used in many different ways:

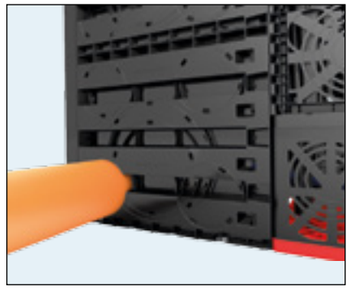
- ✓ As an inspection shaft
- ✓ As an inlet shaft
- ✓ As a filter shaft
- ✓ As a flow control shaft

Easy to inspect

The Vario 800 shaft allows easy access to the EcoBloc system by commercially available inspection cameras. This has been confirmed by several independent testing authorities.

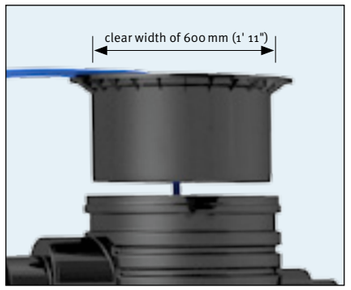
Lorry-bearing up to 60 tons

The GRAF Vario 800 shaft has a heavy-duty lorry-bearing capacity of 60 tons with an 800 mm (2' 7.5") earth covering. The fibreglass reinforced material gives the shaft extra strength.



Connection surfaces up to DN 400 (16")

The Vario 800 comes with DN 200 (8"), DN 300 (12") and DN 400 (16") connection surfaces. The optional, freely rotating inlet module can be connected to pipes of sizes DN 150 (6"), DN 200 (8"), DN 250 (10") and DN 300 (12").

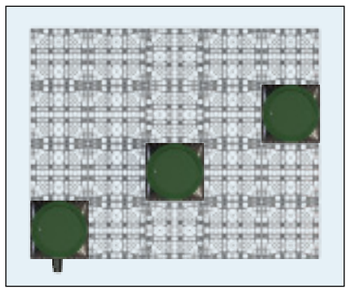


Wide access

The Vario 800 is terminated at the top by GRAF telescopic dome shafts. With a clear width of 600 mm, it gives easy access to the shaft. The base of the shaft itself is 800 x 800 mm (2' 7.5") x (2' 7.5") in size, providing sufficient space for all possible applications.

No additional excavation

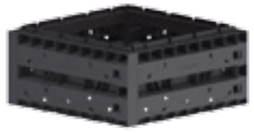
The Vario 800 flex shaft system can be directly installed in an EcoBloc infiltration or detention system. The connection surfaces of the inspection channels in the Vario 800 flex shaft system are accurately matched to the EcoBloc system.



Can be positioned in any location

The dimensions of the Vario 800 shaft enable free positioning within the EcoBloc system. The corner position enables the connection of large pipe diameters of up to DN 400 (16") on the two side panels. The central position offers ideal access to the inspection camera from all directions. Using the optional inlet module, a connection of up to DN 300 (12") can be made with a freely defined angle.

Vario 800 flex shaft system



Vario 800 flex, type 1
shaft body for one or more layer of EcoBloc system

Volume	Length	Width	Height	Weight	Colour	Order no.
230 l (60.7 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	355 mm (1' 2")	16 kg (35.3 lbs)	grey	450050

Webcode G9303



Vario 800 flex, type 2
shaft body for two or more layer of EcoBloc system

Volume	Length	Width	Height	Weight	Colour	Order no.
420 l (113.5 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	660 mm (2' 2")	27 kg (59.5 lbs)	grey	450051

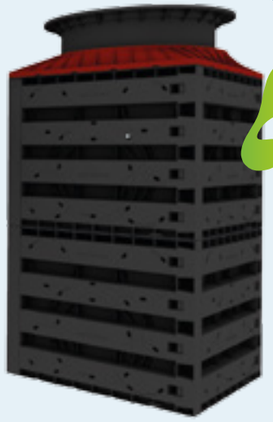


Vario 800 flex, base/cover set
base- and cover for Vario 800 flex shaft

Item	Colour	Order no.
set consisting out of Vario base- and cover plate	grey	450052







1. Stackable

To save space during transport and storage, the parts of the Vario 800 are stacked into each other. This minimizes transport costs and CO_2 emissions.

2. Easy installation

Groups of four wall elements are connected in a few simple steps and without tools to form a single height unit of the Vario 800. The height can be easily adjusted to the EcoBloc tank depth. A shaft cover and base plate complete the element.

3. Ready

GRAF accessory components can now be added to the Vario 800 shaft as required.

Accessories

Shaft components

Infiltration filter strainer DN 600 (24")
Made entirely from stainless steel, mesh width 0.75 mm (0.03")
Order no. 340523



Infiltration inlet module DN 600 (24")
Incl. profile seal for telescopic dome shaft; DN 150 (6")/ DN 200 (8")/ DN 250 (10")/ DN 300 (12") connections
Order no. 330360



Infiltration connecting piece 1000 DN 600 (24")
With DN 200 (8") contact surface, incl. profile seal, length 1000 mm (3' 3.3"), 750 mm (2' 5.5"), 500 mm (1' 7.7")
Order no. 371015



Infiltration connecting piece 1000 DN 600 (24")
With DN 200 (8") pipe connections, incl. profile seal, length 1000 mm (3' 3.3"), 750 mm (2' 5.5"), 500 mm (1' 7.7")
Order no. 371016



Retention accessories

Choke drain DN 100 (4")
Incl. emergency overflow and DN 100 (4") connector seal; flow rate of 1.0 l (0.26 US gal.)/sec. up to 6.5 l (1.72 US gal.)/sec.
Order no. 330547



Choke drain DN 150 (6")
Incl. emergency overflow and DN 150 (6") connector seal; flow rate of 2.0 l (0.53 US gal)/sec. up to 16 l (4.22 US gal.)/sec.
Order no. 330598



Tank Covers

Mini telescopic dome shaft
Suitable for pedestrian loading, height adjustable from 140 – 340 mm (5.5" – 13.4")
Order no. 371010



Maxi telescopic dome shaft
Suitable for pedestrian loading, height adjustable from 140 – 440 mm (5.5" – 17.3")
Order no. 371011



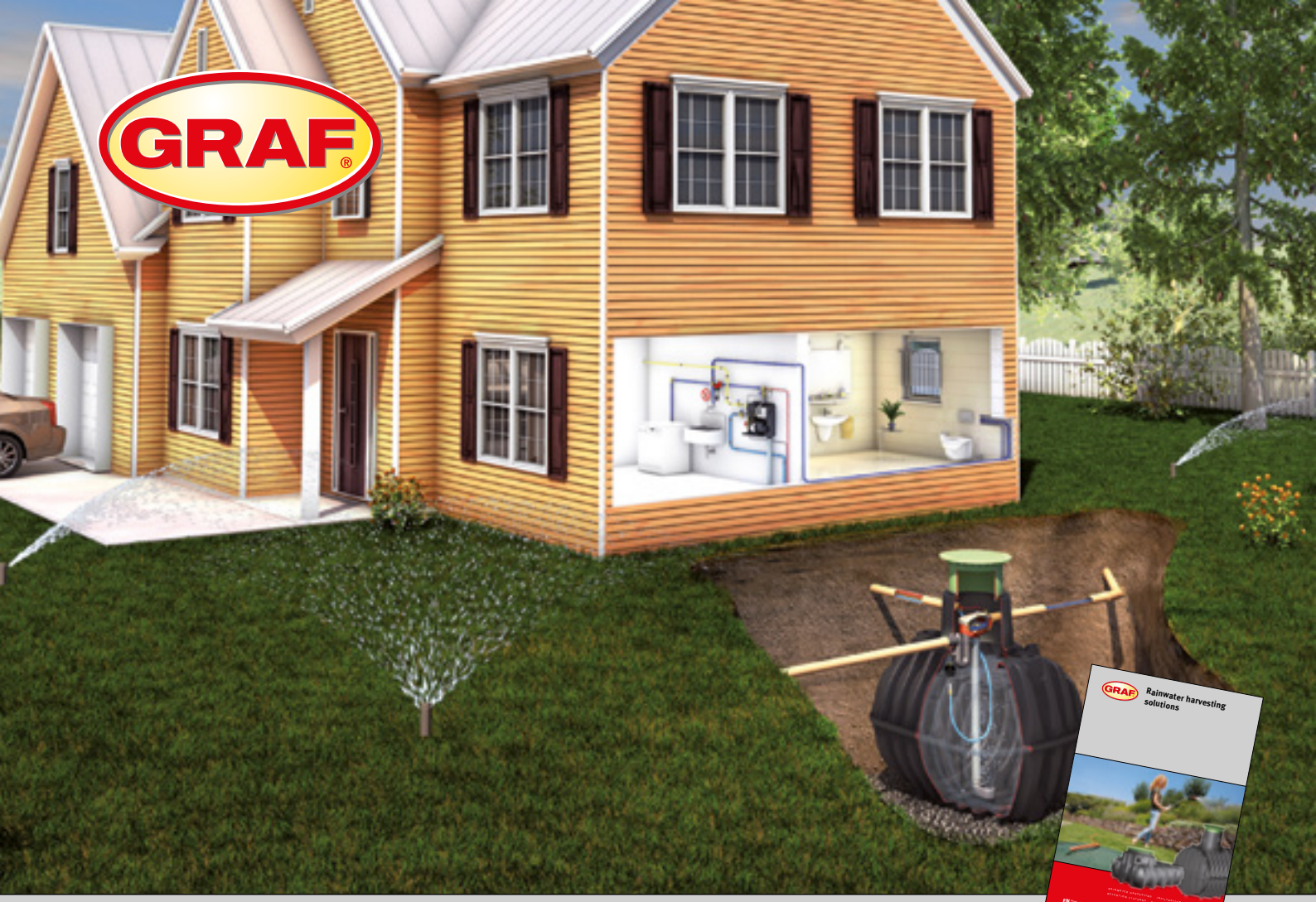
Cast iron telescopic dome shaft
Suitable for vehicle loading, height adjustable from 140 – 440 mm (5.5" – 17.3")
Order no. 371020



Cover and compensating ring to be provided on site

Telescopic dome shaft lorry
Suitable for lorry-bearing loading, height adjustable from 140 – 440 mm (5.5" – 17.3")
Order no. 371021

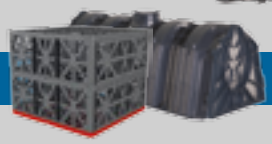




RAINWATER HARVESTING



INFILTRATION



WASTEWATER TREATMENT SOLUTIONS



MULTIPURPOSE CONTAINERS



Your expert specialist dealer:

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Prices:
A price list with our export conditions is available on request.

Warranty clause:
The warranty mentioned in this brochure only refers to the tank in question and not to the accessories. Within the warranty period we grant free replacement of the material. Further benefits are excluded. Pre-condition for warranty benefits are proper handling, assembly and installation according to the mounting guidelines.

N.B. Protect tanks from frost when installed above ground! In case of groundwater installation, please contact us for further information prior to purchase!

For all dimensions and abstracts provided in this brochure, we reserve a tolerance of +/- 3 %. Depending on the connection type, the useful volume of the underground tanks may be up to 10 % below the tank capacity.

Subject to technical modifications and errors. Design details, methods and standards of individual products may change as a result of technical advancements and environmental regulations.

For all our offers and conclusions of contract, only our General Terms and Conditions of Business dated 01/10/2012 shall apply, which we will send to you on request.

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Appendix I – United Utilities Approval

S106 Part 1 'Application to connect to a public sewer' Approval Notice

United Utilities
Water for the North West

United Utilities Reference Number:	**05764496**
Applicant details	
Applicant name	**Ryan Dickinson**
Applicant address *(including postcode)*	**Keysource** **Trinity Offices – Northenden Road - Sale – M33 3HD**
Applicant email	**ryan.dickinson@keysource.co.uk**
Site details: The site / property which is proposed for connection to the public sewer	
Site address *(including postcode)*	**Simon House, Wavell Road Wythenshawe M22 5QZ**

APPROVED

Your application for connection to the public sewer has been approved, to be made via a new connection:

To a private drain	☐	You may appoint your contractor and advise your appointed building control body (who should inspect the work). United Utilities should be advised when this work is complete.
Direct to the public sewer	☒	**Further action required.** You may now appoint an appropriately qualified contractor. Your appointed contractor is responsible for obtaining authorisation to work on a public sewer. (The S106 Part 2 application form **'Request for permission to work on a public sewer'** is available on our website; Sewer connections - United Utilities).

Mode of connection approved	**Connection into existing manhole**					
Sewer connection type	Foul	☒	Surface water	☒	Combined	☐

This approval is valid for 12 months from the date below.
This approval does not grant access to third party land, permission should be sought if required between applicant and land owner.
If the new connection renders access unsafe or is otherwise detrimental to the manhole or sewer, a new/upgraded manhole will be requested.

Comments

As per the email response from my colleague Ashleigh Bellerby under reference 06169491, regarding the information you provided discounting infiltration.

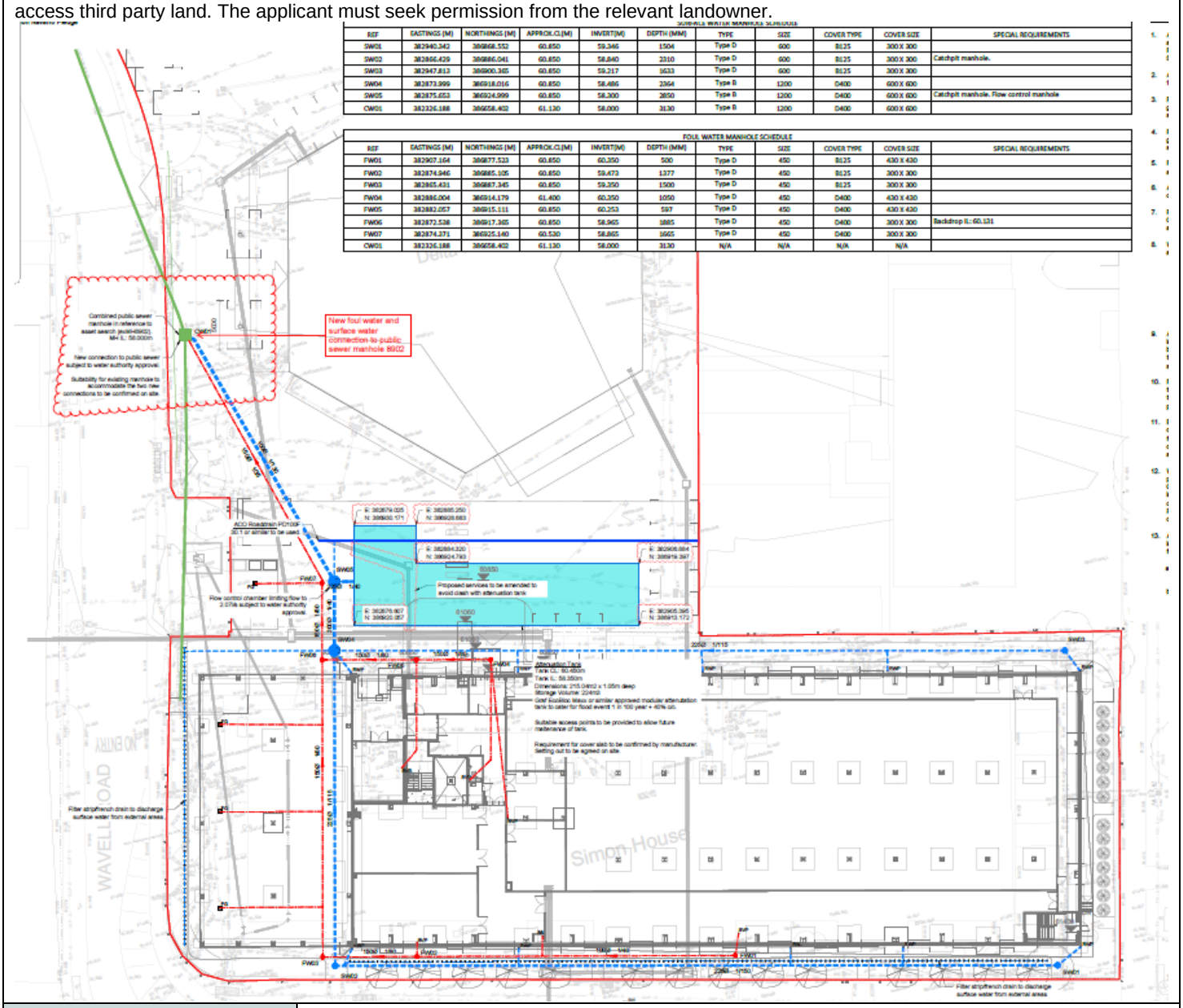
Approval granted for a 150mm foul connection to the existing 225mm combined sewer via an existing UUMH 8902
Approval granted for a 150mm surface water connection to the existing 225mm combined sewer via an existing UUMH 8902
Attenuation
With a flow control restricted to 2.07l/s

Please note, if you have not already done so, we would still expect you to get your drainage conditions discharged from the Local Planning Authority as any decision they make may supersede this approval.

Any connection to an existing manhole should be made soffit to soffit, with a swept bend in the direction of flow. The connection must not be made in the landing area. The exact condition, location and depth of the existing manhole and surrounding services should be established as early as possible to avoid site delays. If the existing manhole is in poor condition but otherwise the connection would be acceptable, the applicant should be aware they may have to rebuild/renew the manhole if it deteriorates as a result of your contractor working on or near it.

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure that the property is not at increased risk of flooding. If these circumstances exist it could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

Please note, if you are proposing to connect to an existing, unchartered drain or sewer then it is the developer's responsibility to confirm that it communicates with the Public Sewer
Connections may be made to private lateral drains or to existing neighbouring drain. A part 1 approval does not give permission to access third party land. The applicant must seek permission from the relevant landowner.



Developer Services Inspector	**Lynne Berry**
Contact number	**07881 034558**
Date	**16/09/2024**