

Our ref: 7543SMP

SuDS Management Plan
for
Edison Road,
at
Eccles, Manchester

For : **Mangrove Estates Ltd**
3 Oak Meadow
Bramhall
Stockport
SK7 1AR

14 July 2022

SuDS Management Plan at Edison Road, Eccles, Manchester

Document Verification

Project Title	Edison Road, Eccles, Manchester
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Prepared by

Checked and Approved



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A Jones

*Infrastructure Engineer**Senior Infrastructure Engineer*

Prepared by

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Document Revision

Report Reference	Date	Description	Prepared	Checked and Approved
7543SMP	14/07/2022	SuDS Management Plan	J Rattigan	A Jones

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SuDS Management Plan at Edison Road, Eccles, Manchester

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SuDS Management Plan at Edison Road, Eccles, Manchester

1.0 Introduction

Coopers (Chester) Ltd have been appointed by Mangrove Estates to prepare a SuDS Management Plan for the proposed Edison Road residential development in Eccles, Manchester.

The surface water drainage system serving Plots 1-9 and the adoptable highway provides storage for up to a 30-year storm event within oversized on-line pipes. The flow is restricted at the last manhole using a Hydrobrake vortex flow control device. This network will be adopted by United Utilities via a S104 Agreement and therefore will be maintained by United Utilities.

Mangrove Estates will be responsible for the all components until the final certificates have been issued at the end of the maintenance period.

Additional storage for the 100-year + 40% climate change allowance on this network will be accommodated within a buried off-line geo-cellular tank. This will be maintained by a management company for which this report sets out the inspection and maintenance requirements.

A cellular soakaway is being incorporated to discharge run off from the apartment roof and car park. This will be maintained by a management company for which this report sets out the inspection and maintenance requirements.

Permeable paving is also to be incorporated into the car park root protection area. This will be maintained by a management company for which this report sets out the inspection and maintenance requirements.

SuDS Management Plan at Edison Road, Eccles, Manchester

2.0 Operation and Maintenance

As with any drainage system, SuDS require regular inspection and maintenance to ensure that they continue to operate as designed and are fully functional at all times. The Edison Road development SuDS components will consist of a buried geo-cellular tank, silt trap, a cellular soakaway, permeable paving and associated pipes / inspection chambers

The SUDS manual, CIRIA report C753, states that there are three types of maintenance activities associated with SUDS.

1. Regular Maintenance – ‘basic tasks undertaken on a frequent and predictable schedule’ including vegetation management, litter and debris removal, and inspections.’
2. Occasional Maintenance – ‘tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).
3. Remedial Maintenance – ‘intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and as such timings are difficult to predict.

Pipe sizes and gradients have been designed to be self-cleansing albeit regular maintenance and inspections will be required to ensure the long-term efficiency of the systems.

Maintenance for the pipes and manholes includes:

- Inspection, cleaning and removal of sediments and obstructions etc. to restore hydraulic capacity and to prevent blockages; Jetting/vacuum of sewers to be undertaken as often as necessary to remove silts and/or ordinary debris.
- Local repair or replacement of damaged pipes in order to maintain the function of the onsite system and to prevent blockages.
- In the event that any extraordinary issues are encountered during an inspection, further information may be required such as a CCTV survey report to locate the exact cause of the issue.
- Maintenance to be undertaken on an annual schedule.

The SuDS components require regular inspection/clearing to prevent blockages due to accumulation of silt and debris. In general, it is recommended that they are initially inspected and cleared by a suitably trained person every 6 month for at least the first 2 years of operation and then establish a long-term regular inspection/clearing regime appropriate for the site:

Maintenance requirements tables presented in CIRIA C753 The SuDS Manual provides a more detailed maintenance schedule. See Section 3 of this report for more information. Inspection/clearing should also be carried out after every major storm event and to the manufacturer’s recommendations.

If regular excessive accumulation of silts and debris is found in silt-traps/catchpits serving below ground attenuation/soakaway tanks, a CCTV inspection of the tank should be undertaken. The geocellular tanks are provided with a special unit type along the base to enable inspection via manholes/inspection chambers at each end. If required, the inspection channel can also be used for water jetting to clear the tanks of silt/debris. Notwithstanding the above, a CCTV inspection of the tanks should be undertaken at least every five years.

SuDS Management Plan at Edison Road, Eccles, Manchester

Any debris obstructing or in danger of obstructing the surface water flow should be removed within a period not exceeding two weeks from inspection. Any blockage or partial blockages reported to the managing organisation should be removed within a period not exceeding two weeks

This maintenance plan is to be incorporated within the Health and Safety file, which, in addition to the details mentioned here, should include all the installed manufacturer's details and maintenance recommendations. In addition, it should hold the records of any inspections, together with any remedial measures undertaken. The drainage maintenance plan should be made available for inspection by the council if requested.

Monitoring and maintenance of the SuDS components will be the responsibility of Mangrove Estates during the construction period, after completion it will be the responsibility of a management company. Details are as follows:

**ForViva Housing,
52 Regent Street,
Eccles,
Manchester,
M30 0BP**

0300 1235522

SuDS Management Plan at Edison Road, Eccles, Manchester

3.0 Maintenance Schedule

TABLE 13.1 Operation and maintenance requirements for soakaways

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional maintenance	Remove sediment and debris from pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	As required, based on inspections
Remedial actions	Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failure occurs	As required
	Replacement of clogged geotextile (will require reconstruction of soakaway)	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year and then annually
	Check soakaway to ensure emptying is occurring	Annually

TABLE 21.3 Operation and maintenance requirements for attenuation storage tanks

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

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TABLE 20.15 Operation and maintenance requirements for pervious pavements

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Extracts from CIRIA C753 'The SuDS Manual'

SuDS Management Plan at Edison Road, Eccles, Manchester

4.0 Reference Drawings

- 7543-01_E – S104 Proposed Drainage Layout
- 7543-14_D – 100yr Attenuation and Outfall Details

DO NOT SCALE



General Notes

- Contractor to propose a suitable construction sequence for the soakaway construction and develop a detailed method statement.
- Excavation sides to adequately supported.
- Contractor to work in accordance with best practice ensuring all personnel have adequate PPE and confined space training.
- Excavation/plant to be secure from general public at all times
- Safe access and egress to be provided.

Soakway Notes

- Soakaways to located entirely within suitable permeable strata
- All soakaways to be located a minimum of 5m from foundations

Soakaway designed for a 100 yr + 40% CC return period
Infiltration rate 1.57E-05m/s (0.057m/hr) used for design
Refer to layout for sizes and locations

Notes

- Setting out shall be undertaken using only the information given. Distances should not be scaled from this drawing.
- All sewers shall be constructed in accordance with Design and Construction Guidance (DCG) Standards and United Utilities Details & Guidelines.
- The minimum gravity pipe diameter under adoptable highways shall be 150mm
- It is the responsibility of the Contractor to verify all information given with regards to existing services and drainage connections etc. prior to commencing the works. The rates shall include for hand dig around services where necessary. The Contractor shall adhere to the CDM Regulations at all times
- The outsides of all sewers shall be a minimum of 1.0m from kerb lines and the outside of manholes shall be a minimum of 0.5m from kerb lines
- Existing flows in watercourses, sewers and land drains shall be maintained at all times
- Only trained personnel shall be permitted to enter confined spaces
- All materials to bear the relevant B.S. Kitemark and comply fully with the specifications. All concrete & concrete products must use Sulphate resistant cement to withstand Class 3 condition (unless the site investigation report proves that sulphate attack from soils and groundwater will not occur).
- All opening notices etc. as required under Highways Acts etc. are to be obtained prior to commencement of works. All works are to be inspected by L.A., NHBC or the Network Operator as applicable.
- Where "Structured Wall" UPVC pipes (or similar approved) are used in adoptable drainage they shall be handled and laid in accordance with the manufacturers instructions and will be subject to post installation deformation testing prior to adoption. A Class S Bed and Surround must be used for "Structured Wall" pipes
- Trench backfill in highways to within 1m of highway shall, as directed by the Highway Authority be a suitable granular material all in accordance with Design and Construction Guidance (DCG) Standards.
- Slab levels shall not be varied without reference to the Engineer for guidance.
- Pipes have not been designed to accommodate construction traffic loading. The contractor is responsible for providing adequate protection to the pipes during construction.

Legend

Site Boundary

Existing

Existing Combined Sewer

Proposed

Adoptable Surface Water Sewer

Adoptable Combined Sewer

Highway Drain

Flow Control Manhole

Highway Gully

Plot Slab Level

Private Soakaway

Permeable Paving

Private offline Attenuation

Design based on Layout:

Edison Road Tennis Courts, Eccles
Proposed Site Plan, Dwg No. 4470/101

Rev: D

Grid/Level datum based on Topo:
Topographical Survey, Former Tennis Courts, Edison Road, Salford M30 7FL,
Dwg No. SSL:20040:200:1:1
Rev: A

Coopers Drawing List:

7543 / 01	Proposed Drainage Layout
7543 / 02	Proposed Highway Setting Out
7543 / 03	Proposed Kerbing Layout
7543 / 04	Proposed Highway Longsections
7543 / 05	Highway Construction Details
7543 / 06	S38 Agreement Plan
7543 / 07	External Works Layout
7543 / 08	Private Drainage Layout
7543 / 09	Drainage Construction Details
7543 / 10	Manhole Schedules
7543 / 11	Flow Control Manhole Details
7543 / 12	Manhole Details (if required)
7543 / 13	Surface Water Catchment Areas
7543 / 14	100yr Surface Water Attenuation and Outfall Details

APPROVAL

E	07.07.22	Updated to approval	PW	AJ
D	23.06.22	Updated to suit revised layout	PJN	AJ
C	23.05.22	Permeable paving updated to suit comments	PJN	AJ
B	28.04.22	Updated to suit revised drainage design	PW	AJ
A	14.01.22	Updated to suit revised layout	PW	AJ
Rev.	Date	Revision	By	Appd.

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Sandpiper Court
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CH4 9QU

Client

MANGROVE ESTATES LTD.

Project

EDISON ROAD,
ECCLES.

Title

S104 Proposed Drainage Layout

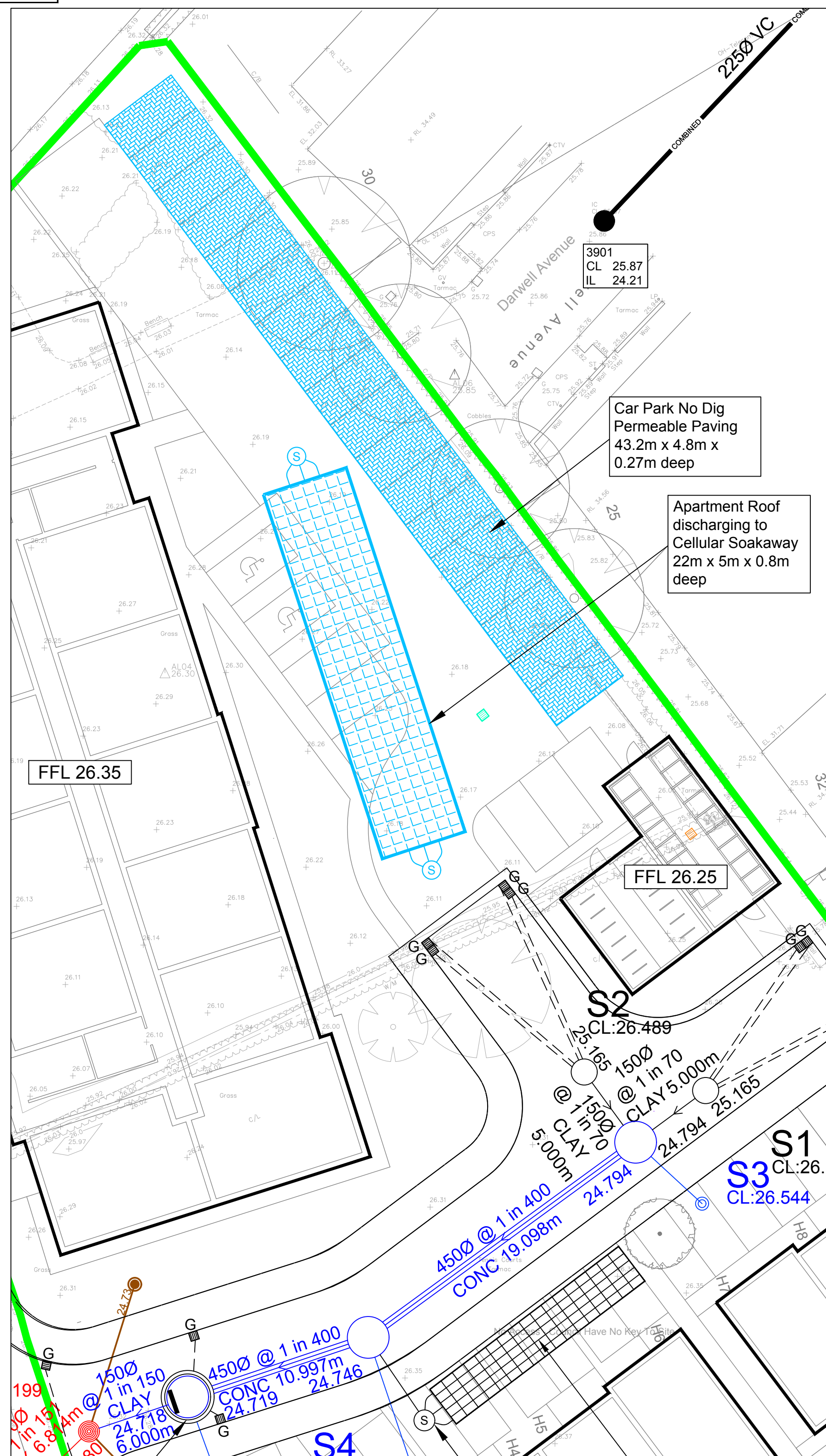
DRAWING NUMBER

7543 / 01

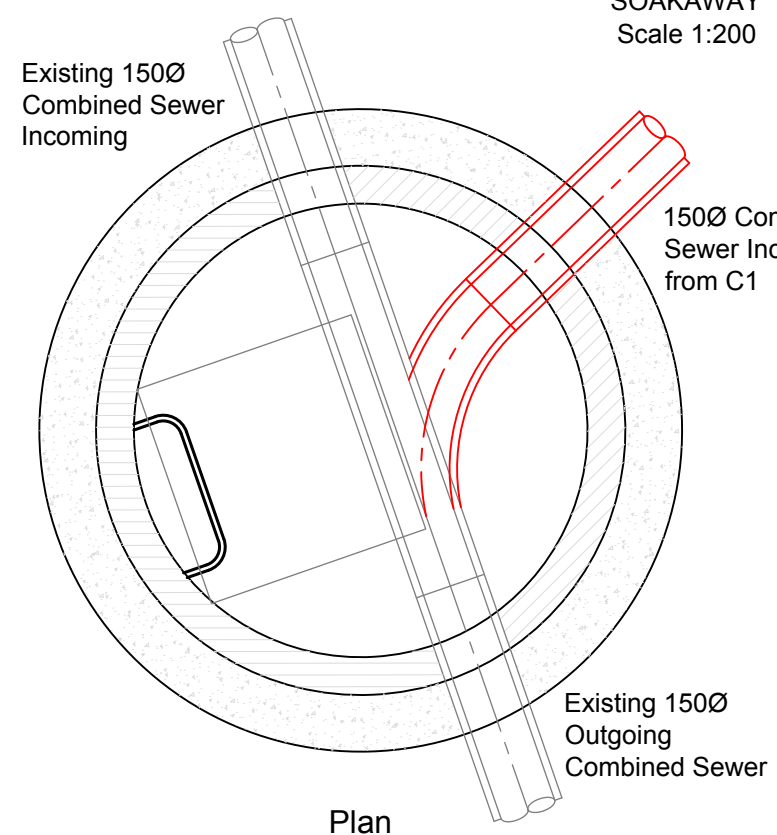
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DATE	11.08.21	REVISION
DRAWN	PJN	
CHECKED	AJ	E

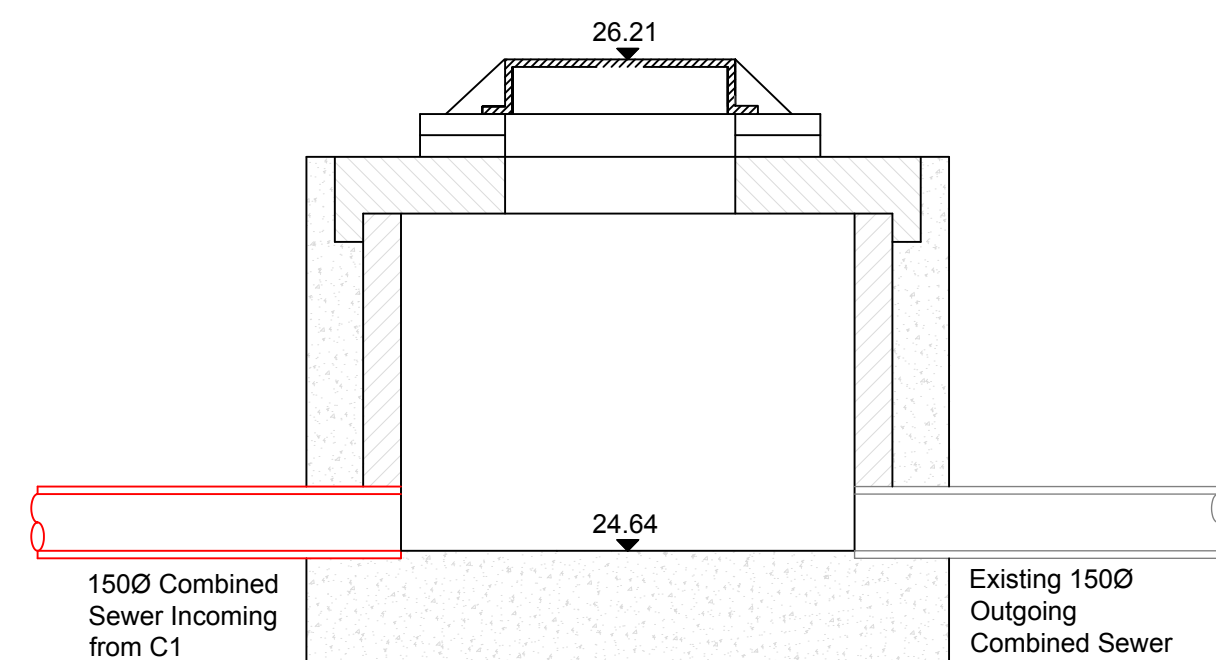
DO NOT SCALE



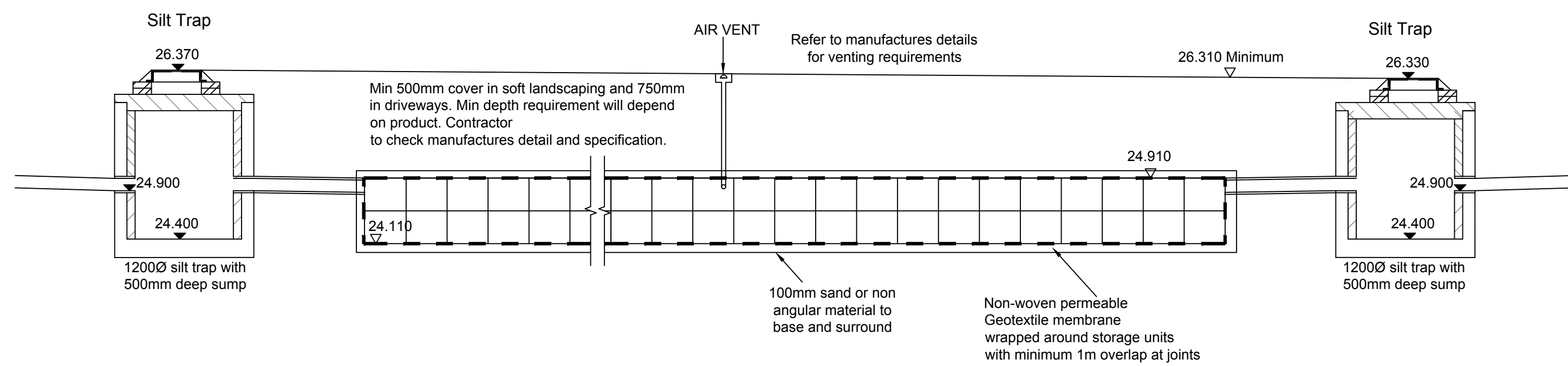
KEY PLAN
SOAKAWAY
Scale 1:200



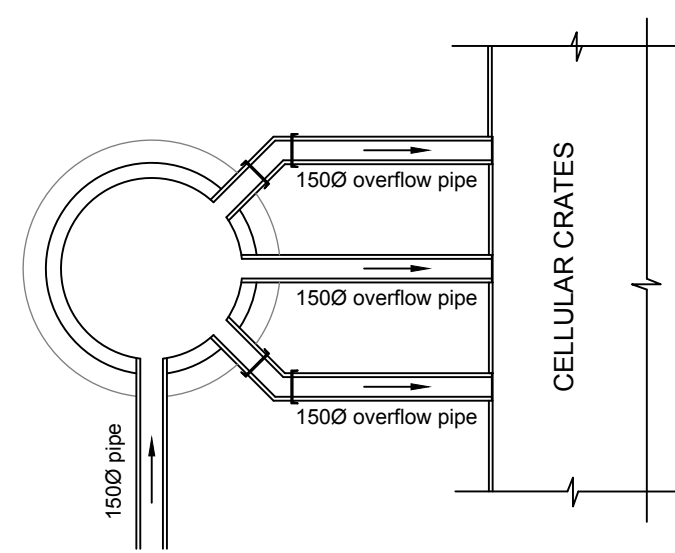
MANHOLE CONNECTION PLAN (C2)
E 376324.130 N 397883.883
Scale 1:20



Section



INDICATIVE SECTION THROUGH - SILT TRAPS / CELLULAR SOAKAWAY (NTS)



PLAN VIEW OF TANK SHOWING
SILT TRAPS (NTS)

General Notes

- Contractor to propose a suitable construction sequence for the soakaway construction and develop a detailed method statement.
- Excavation sides to adequately supported.
- Contractor to work in accordance with best practice ensuring all personnel have adequate PPE and confined space training.
- Excavation/plant to be secure from general public at all times
- Safe access and egress to be provided.

Soakaways designed for a 100yr rainfall event + 40% CC

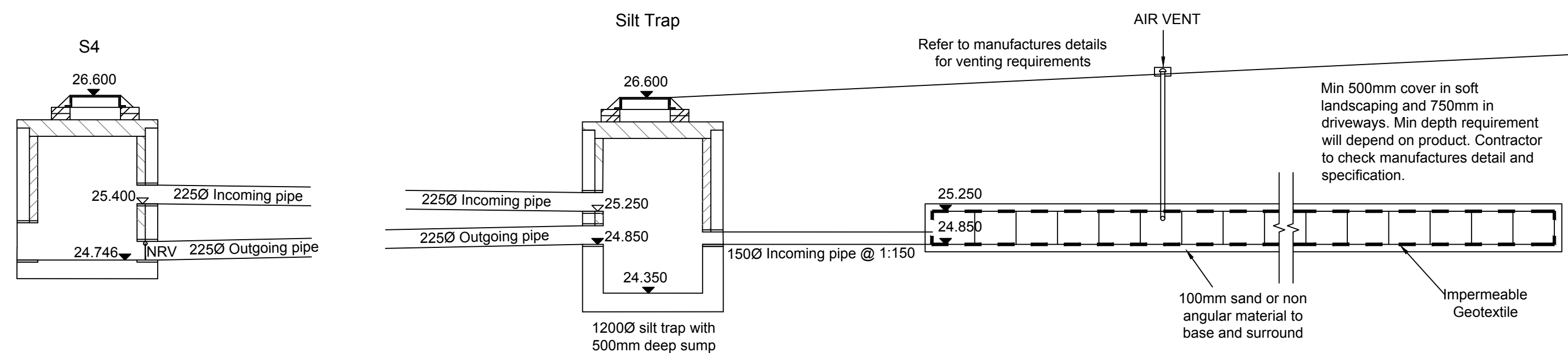
Infiltration rate 1.57E-05m/s (0.057m/hr) used for design

Soakway Notes

- Soakaways to be located entirely within suitable strata
- All soakaways to be located a minimum of 5m from foundations

Coopers Drawing List:

7543 / 01	Proposed Drainage Layout
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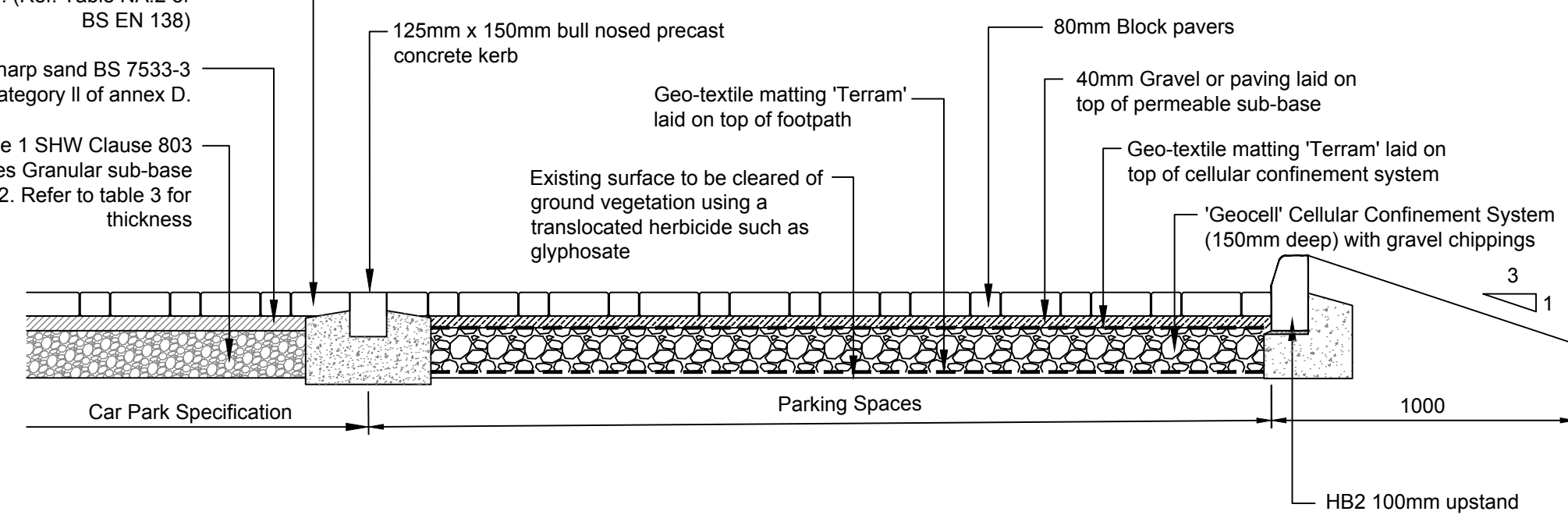


INDICATIVE SECTION THROUGH - S4 / SILT TRAP / CELLULAR CRATES (NTS)

80mm Block pavers to BS EN 1338 of Class 2 weathering resistance and Class 3 abrasion, as well as being of low potential for slip. (Ref: Table NA.2 of BS EN 1381)

BEDDING COURSE - 50mm Sharp sand BS 7533-3
category II of annex D.

SUB-BASE - MCHW Volume 1 SHW Clause 803
Type 1 Unbound mixtures Granular sub-base
material Type 1 to table 8/2. Refer to table 3 for
thickness



No Dig Parking Spaces Construction

SCALE 1:20

Notes

Refer to manufacturers requirements and recommendations for tank construction.

1. Exact arrangement of entry and exit manholes and other manifold elements to be confirmed following confirmation of manufacturers details and requirements.
2. Provide smooth level base to construct the system.
3. Health and Safety - consider working in deep excavations.
4. Prevent heavy works traffic traversing over the tank.
5. Joints between adjacent sheets of manifold should be sealed correctly using proprietary welding techniques.
6. Backfill and cover fill should be compacted to specifications for highway works and should be Type 1 or Type 2 sub-base.
7. All backfill must be carefully compacted to avoid penetration of impermeable membrane.
8. In conditions of high water table / poor ground conditions refer to Engineers / Manufacturers for special requirements.
9. This drawing must be read in conjunction with the site investigation report.
10. Before work commences, the contractor shall liaise with all Statutory Authorities to determine the exact location of all apparatus and take all precautions deemed necessary to locate, protect and where necessary divert such equipment.
11. All manhole and drainage covers shall comply with BS.EN124. Manhole covers within block paved area and buildings shall be recessed. Cover strengths to be:-
 - a) Class E600 in areas of heavy loading.
 - b) Class D400 in heavy trafficked areas (roads, services yards).
 - c) Class C250 Lightly trafficked areas (car parks).
 - d) Class B125 in landscape and non trafficked areas (min. 100mm deep frame).
12. All works to be carried out in accordance with Building Regulations 2002 Part H.
13. In areas of poor ground conditions and to prevent differential settlement, special foundation treatment is required. i.e. Type 1 layer with geogrid.
14. When units are placed below the groundwater table floatation may occur. To prevent this the weight in backfill must be greater than the uplift force, if this cannot be achieved a concrete slab above the units will be required.
15. With a high ground water table, shoring and pumping of inflows required to prevent collapse of excavation

Design based on Layout:

Edison Road Tennis Courts, Eccles
Proposed Site Plan, Dwg No. 4470/101

Rev: D

Grid/Level datum based on Topo:

Topographical Survey, Former Tennis

Courts, Edison Road, Salford M30 7FL,
 B. No. 001 000 10 000 11

Dwg No
Rev: A

APPROVAL

D	07.07.22	Updated to approval	PW	AJ
C	23.06.22	Updated to suit revised layout	JAR	AJ
B	26.04.22	Updated to suit revised drainage design	PW	AJ
A	20.01.22	Updated to suit revised layout	PW	AJ
Rev.	Date	Revision	By	Appd



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Client

MANGROVE ESTATES LTD.

Project

EDISON ROAD,
ECCLES.

Title

100yr Surface Water Attenuation and Outfall Details

DRAWING NUMBER 7543 / 14	SCALE at A1		Varies
	DATE	11.08.21	REVISION D
	DRAWN	PJN	
	CHECKED	AJ	