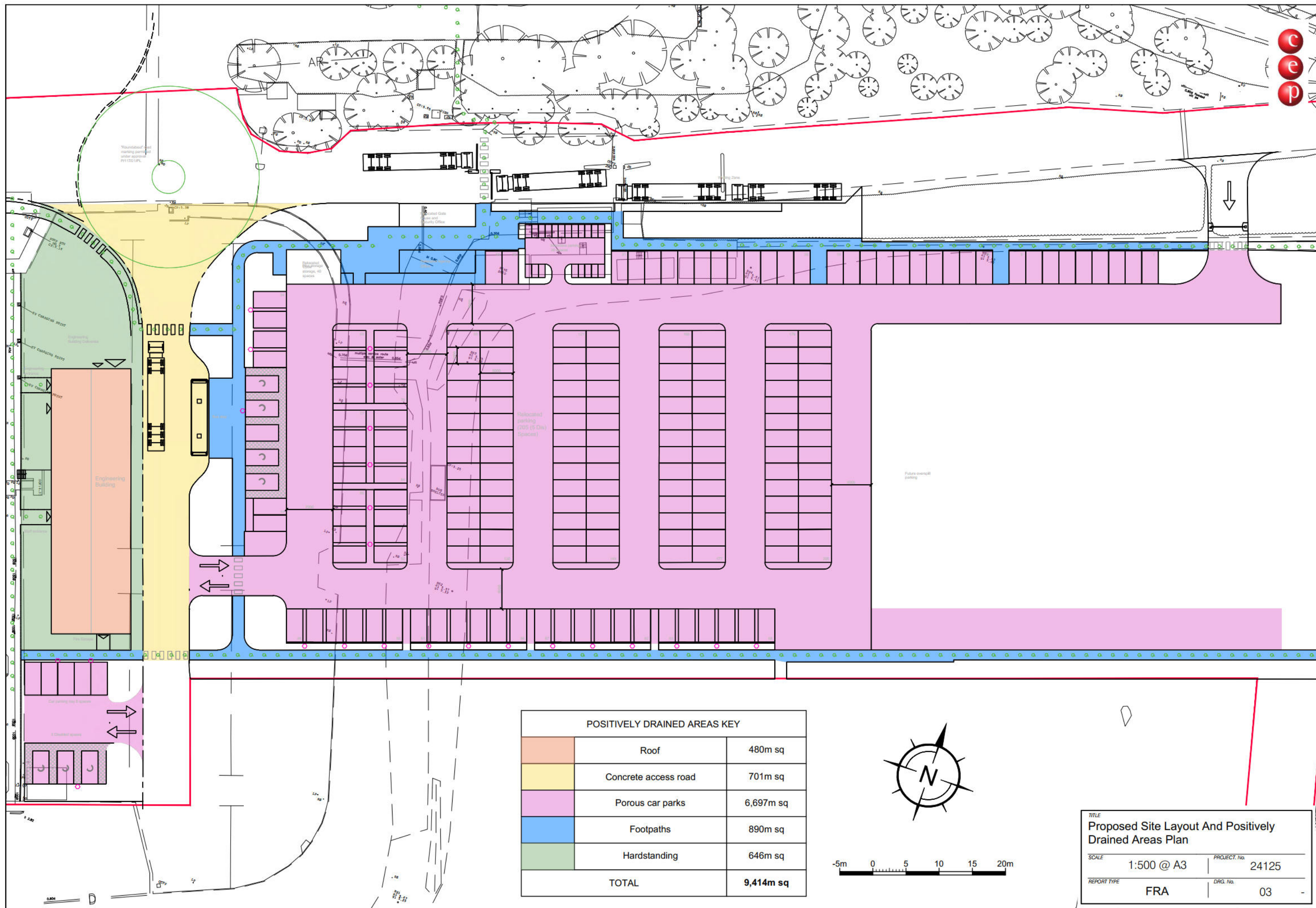


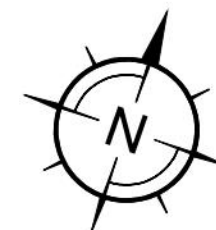
Appendix 5

**Proposed Site Layout
and Positively Drained Areas Plan**



POSITIVELY DRAINED AREAS KEY

	Roof	480m sq
	Concrete access road	701m sq
	Porous car parks	6,697m sq
	Footpaths	890m sq
	Hardstanding	646m sq
	TOTAL	9,414m sq

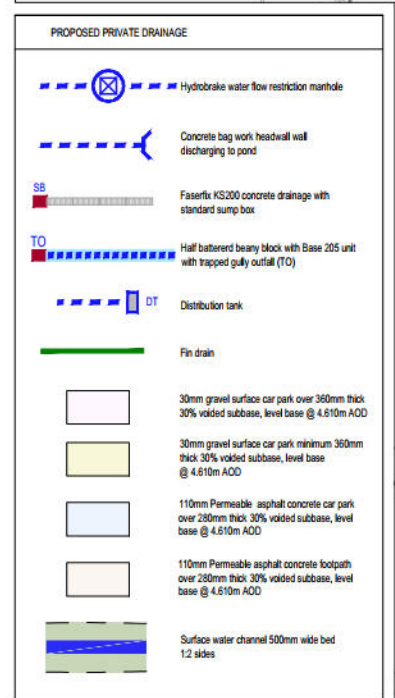


-5m 0 5 10 15 20m

TITLE Proposed Site Layout And Positively Drained Areas Plan	
SCALE 1:500 @ A3	PROJECT No. 24125
REPORT TYPE FRA	DRG. No. 03

Appendix 6

Drainage Strategy Plans and Calculations



GENERAL NOTES:

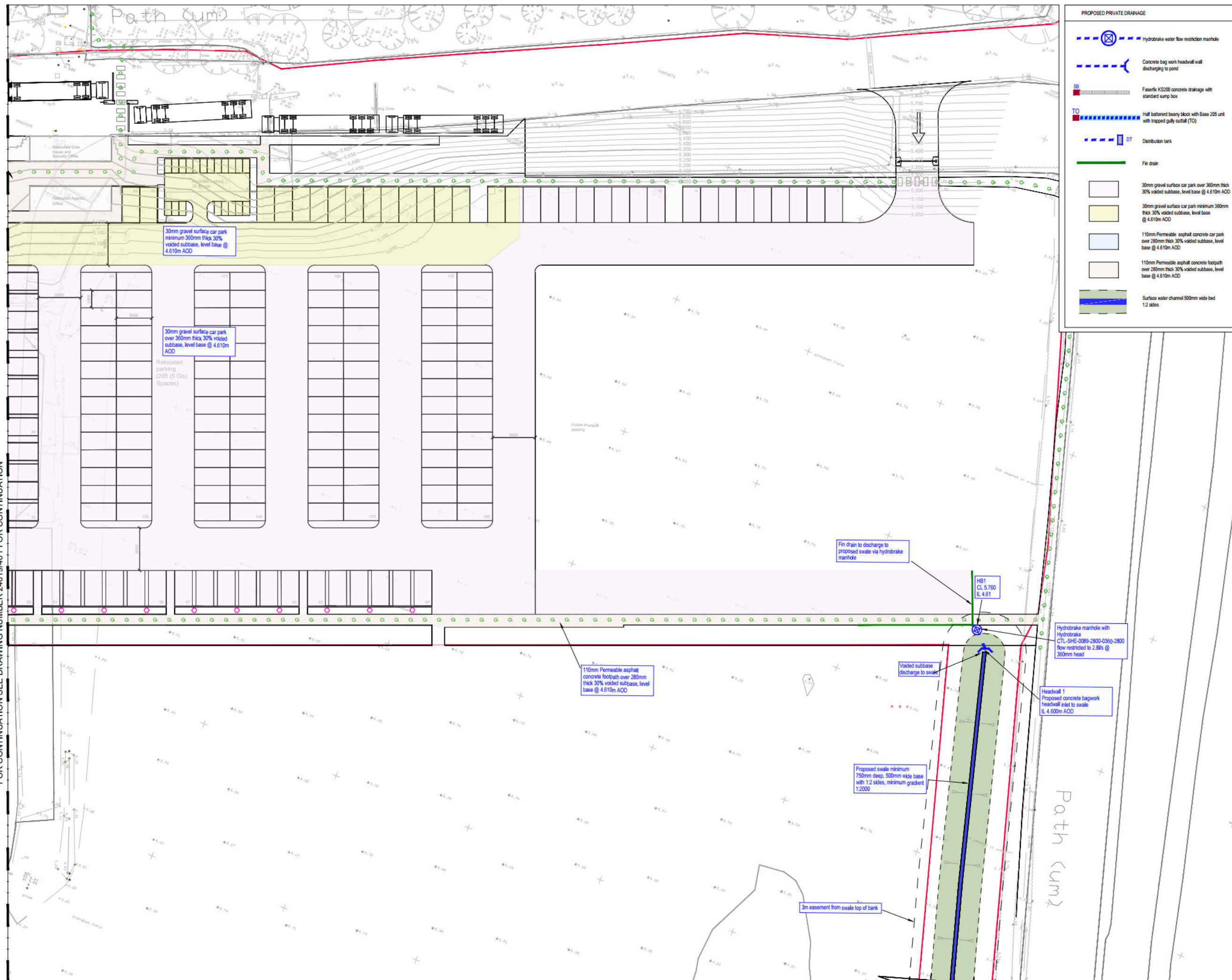
1. All dimensions to be checked on site. All details and dimensions relating to sub-Contractors work must be checked and agreed between the sub-Contractor or supplier and the general Contractor.
2. This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and specification.
3. The main Contractor is responsible for ensuring the stability of the structure whilst the works are in progress.
4. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority. No liability is accepted by the Consultant and the main Contractor is responsible for obtaining and checking all information and taking due care and attention whilst undertaking the works.

DRAINAGE NOTES:

1. All adoptable pipes, bends and junctions shall be vitrified clay in accordance with the current version of BS EN 295-1, with flexible joints and itemmark certified.
2. All Adoptable sewers shall be in strict accordance with the SSG Appendix C- Design and Construction Guidance. Unless otherwise stated adoptable sewers shall be 150mm diameter and shall be laid in a class S drainage. Where less depth to soffit is less than 1.2m under a public highway or 0.9m elsewhere the pipe shall be laid with a class 2 bedding.
3. All private building drainage shall be constructed in strict accordance with the current version of BS EN 752:2007. Unless otherwise specified building drainage shall be 100mm diameter and shall be laid at a minimum gradient of 1 in 40 for foul drains and 1 in 80 for surface water drains. All building drains shall be laid in class B bedding unless otherwise specified.
4. Where a pipe is within 1m of a foundation the trench shall be filled with class G3/3 concrete up to the lowest level of the foundation. Where the foundation is less than 150mm deep, the trench shall be dug out with class G3/3 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class G3/3 concrete.
5. Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class G3/3 concrete encasement (150mm thick). In all other cases the pipes shall be bedded and surrounded with 100mm thick granular material.
6. In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. Compressible boards (fibreglass or polystyrene) shall be provided at a maximum of 8m centres (between pipe joints). The boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. A board thickness of 18mm for pipes up to 450mm nominal diameter and 30mm for pipes over 450mm nominal diameter.
7. All sumps shall have rodding access plates fitted at their bases (ground floor level).
8. Impermeable membranes to be sealed around any incoming pipes
9. Where existing pipes are to be abandoned they shall be dug out together with any abandoned manholes.
10. Any discrepancy between the drawing and site should be reported immediately to the Engineer.
11. All manhole and chamber sizes are given as a minimum to meet the SSG Appendix C-Design and Construction Guidance



FOR CONTINUATION SEE DRAWING NUMBER 24019/401 FOR CONTINUATION



PROPOSED PRIVATE DRAINAGE	
	Hydrobrake water flow restriction manhole
	Concrete bag work headwall wall discharging to pond
	Faserfix KS200 concrete drainage with standard sump box
	Half battered beam block with Base 205 unit with trapped gully outfall (TO)
	Distribution tank
	Fin drain
	30mm gravel surface car park over 300mm thick 30% voided subbase, level base @ 4.610m AOD
	30mm gravel surface car park minimum 300mm thick 30% voided subbase, level base @ 4.610m AOD
	110mm Permeable asphalt concrete car park over 280mm thick 30% voided subbase, level base @ 4.610m AOD
	110mm Permeable asphalt concrete footpath over 280mm thick 30% voided subbase, level base @ 4.610m AOD
	Surface water channel 500mm wide bed 1:2 sides

GENERAL NOTES:

- All dimensions to be checked on site. All details and dimensions relating to sub-Contractors work must be checked and agreed between the sub-Contractor or supplier and the general Contractor.
- This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and specification.
- The main Contractor is responsible for ensuring the stability of the structure whilst the works are in progress.
- Any information given regarding existing underground services is given in good faith after consultation with the relevant authority. No liability is accepted by the Consultant and the main Contractor is responsible for obtaining and checking all information and taking due care and attention whilst undertaking the works.

DRAINAGE NOTES:

- All adoptable pipes, bends and junctions shall be verified clay in accordance with the current version of BS EN 295-1, with flexible joints and kilnmark certified.
- All adoptable sewers shall be in strict accordance with the SSG Appendix C - Design and Construction Guidance. Unless otherwise stated adoptable sewers shall be 150mm diameter and shall be laid in a class S bedding. Where the depth to soffit is less than 1.2m under a public highway or 0.9m elsewhere the pipe shall be laid with a class 2 bedding.
- All private building drainage shall be constructed in strict accordance with the current version of BS EN 752:2017. Unless otherwise specified building drainage shall be 100mm diameter and shall be laid at a minimum gradient of 1 in 40 for foul drains and 1 in 80 for surface water drains. All building drains shall be laid in class B bedding unless otherwise specified.
- Where a pipe is within 1m of a foundation the trench shall be filled with class GEN 3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class GEN 3 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class GEN 3 concrete.
- Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN 3 concrete encasement (150mm thick). In all other cases the pipes shall be bedded and surrounded with 100mm thick granular material.
- In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. Compressible boards (fibreglass or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints). The boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. A board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.
- All sumps shall have rodding access plates fitted at their bases (ground floor level).
- Impermeable membranes to be sealed around any incoming pipes.
- Where existing pipes are to be abandoned they shall be dug out together with any abandoned manholes.
- Any discrepancy between the drawing and site should be reported immediately to the Engineer.
- All manhole and chamber sizes are given as a minimum to meet the SSG Appendix C-Design and Construction Guidance



0 2.5m 5.0m 7.5m 10m

REV	DATE	INT	DESCRIPTION	CHK
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Issue Status FOR APPROVAL

The Civil Engineering Practice
11 Tungsten Building
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BN41 1RA
01273 424424
reception@civil.co.uk
www.civil.co.uk

CLIENT Barfoots Of Botley
PROJECT Setter Engineering Block And Parking

TITLE Site Layout - Drainage - Sheet 2

DRAWN A Davies	DATE May 2026	PROJECT NO. 24125
ENGINEER S Magowan	CHECKED SRM	DWG NO. 202
SCALE 1:250 @ A1, 1:500 @ A3		REV. -

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	0.600
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	150.0		

Nodes

Name	Area (ha)	Cover Level (m)	Diameter (mm)	Depth (m)	Invert Level (m)
Voided Stone	0.942	5.000	1200	0.390	4.610

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
10	0	0	0
10	45	0	0
30	0	0	0
30	45	0	0
100	0	0	0
100	45	0	0

Node Voided Stone Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	4.610	Product Number	CTL-SHE-0089-2800-0360-2800
Design Depth (m)	0.360	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	2.8	Min Node Diameter (mm)	1200

Node Voided Stone Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	4.610
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	6697.0	6697.0	0.360	6697.0	6801.4	0.361	0.0	6801.4

Node Voided Stone Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	4.610
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	890.0	890.0	0.280	890.0	919.6	0.281	0.0	919.6

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
10080 minute summer	Voided Stone	5760	4.691	0.081	3.9	234.7280	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
10080 minute summer	Voided Stone	Hydro-Brake®	2.2	529.6

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
10080 minute summer	Voided Stone	5760	4.702	0.092	4.5	268.0955	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
10080 minute summer	Voided Stone	Hydro-Brake®	2.5	625.6				

Results for 10 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	Voided Stone	915	4.743	0.133	20.7	385.1126	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)				
960 minute winter	Voided Stone	Hydro-Brake®	2.8	295.2				

Results for 10 year +45% CC Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
10080 minute summer	Voided Stone	6360	4.820	0.210	8.7	608.3645	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
10080 minute summer	Voided Stone	Hydro-Brake®	2.8	1222.5

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
960 minute winter	Voided Stone	930	4.779	0.169	25.5	489.0635	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m ³)
960 minute winter	Voided Stone	Hydro-Brake®	2.8	332.9

Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
10080 minute summer	Voided Stone	6540	4.872	0.262	10.2	759.2283	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
10080 minute summer	Voided Stone	Hydro-Brake®	2.8	1337.2

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	Voided Stone	1410	4.827	0.217	22.6	628.9254	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
1440 minute winter	Voided Stone	Hydro-Brake®	2.8	389.3

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.99%

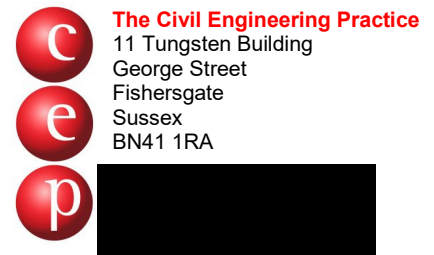
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
2160 minute winter	Voided Stone	2100	4.968	0.358	23.4	969.2819	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
2160 minute winter	Voided Stone	Hydro-Brake®	2.8	470.4

Appendix 7

**Interim Drainage Management
and Maintenance Plan**

Interim Drainage Management and Maintenance Plan



Project	Proposed Engineering Block and Car Park at Sefter Farm, Bognor Regis, West Sussex
Project Number	24125

By Steve Doughty

Date 6 May 2026

1 Introduction

- 1.1 This Interim Drainage Management and Maintenance Plan has been prepared as the initial draft of the document that will become the Drainage Maintenance and Management Manual.
- 1.2 The Drainage Management and Maintenance Manual will be completed as part of the Operation and Maintenance Manual to be provided by the Principal Contractor on completion of construction.
- 1.3 The Drainage Management and Maintenance Manual will be handed over to the Site Operator on project completion.
- 1.4 The Drainage Management and Maintenance Manual will remain a live document and will be used to guide and record the management and maintenance of the surface water and foul drainage systems.

2 During Construction

- 2.1 Once appointed the Contractor will prepare a site specific method statement for the control of silt and other pollutants during construction. CIRIA Report C532, Control of water pollution from construction sites, provides further guidance on this.
- 2.2 The Contractor will maintain the proposed drainage system during construction and until the handing over of the site.



3 Surface Water Drainage System

- 3.1 The surface water drainage system has been designed as a Sustainable Urban Drainage System (SuDS).
- 3.2 The system has been designed to collect surface water from the roof and hardstanding's and discharge via a pump station to the irrigation reservoir to the south of the it for reuse
- 9.1 A high level overflow / bypass pipe will be incorporated in the drainage system such that in the event that this reservoir is full a restricted discharge will be made instead to the tributary of the Pagham Rife to the south of the site at the appropriate greenfield runoff rate.
- 3.3 Carparking areas have been designed as permeable paving.
- 3.4 The system will provide water quality improvement to ensure that at the point of discharge the surface water has received suitable pollution mitigation.

4 Schedule of Maintenance

- 4.1 There are three categories of maintenance activities:

- **Regular maintenance**

Basic tasks undertaken on a frequent and predictable schedule, including vegetation management, litter and debris removal, and inspections.

- **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).

- **Remedial maintenance**

Intermittent tasks that may be required to rectify faults associated with the system. 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.

- 4.2 The following maintenance schedule details the typical tasks to be undertaken at different intervals.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Manage vegetation and remove nuisance plants - aesthetics	As required
	Litter and debris removal - catchpits and swale	Monthly or as required
	Maintain / mow swale to ensure vegetation height remains at between 100mm and 150mm	3 Monthly or as required
	Cleaning of gutters and any filters on downpipes	3 Monthly
Occasional Maintenance	Remove sediment and debris from silt trap chambers, channel drains and inlet chambers	6 monthly

Maintenance Schedule	Required Action	Frequency
	Visual inspection of permeable paving for defects and settlement	Annually
	Sweeping / brushing of permeable paving	Every 2 years
	Surface and foul water pipework - jetting / rodding	Every 2 years or as required
Remedial Maintenance	Remove debris / blockages to silt traps / channel drains / headwalls	As required
	Repairs to access chambers / manhole covers	As required
	Replace any broken permeable blocks / surface, remedial works to any depressions or rutting	As required
	Inspect inlet, outlet from downpipes, channel drains, swale, headwalls and gullies for blockages, standing water and clear	As required
	Reconstruct storage structures if performance deteriorates or failure occurs	As required
	Where there is a build-up of silt in the swale or at inlets of 50mm or more above the design level remove silt and spread on site. Undertake when ground is damp in autumn or early spring and transplant turf / overseed to original design levels	As required
Monitoring	Inspect silt traps and note the rate sediment has accumulated	Monthly in the first year and then annually
	Inspect storage structures to ensure they are fully emptying	Annually

Indicative Schedule of Maintenance for the Proposed Drainage System

Component	Inspection Frequency					
	1 Month	3 Months	6 Months	1 Year	After leaf fall in Autumn	2 Years
Gullies, Channel Drains and Gutters			✓		✓	
Catchpits	✓				✓	
Drainage Pipework						✓
Permeable Paving				✓		
Swale		✓				
Flow Controls			✓			
Storage Facilities				✓		
Existing Watercourse	✓					

Inspection Frequency Summary

5 Maintenance Procedures

5.1 The following procedures provide a guide to the two most common maintenance items, jetting and silt removal, to be undertaken on site:

5.2 Jetting

5.2.1 Equipment Required:

- High-pressure water jetting equipment.
- Personal protective equipment (PPE) for operators.

5.2.2 Typical Procedure:

- Perform a pre-jetting inspection to assess the level of sedimentation.
- Insert the jetting hose into the pipe, starting from the upstream end.
- Gradually move the jetting hose downstream, ensuring the entire pipe or structure length is cleaned.
- Monitor the process to avoid any damage to the drainage infrastructure.
- Collect dislodged silt and debris at the downstream end using a vacuum or manual removal.

5.3 Silt Removal and Disposal

5.3.1 Equipment Required:

- Vacuum truck or manual removal tools.
- Containers for temporary storage of silt and debris.

5.3.2 Typical Procedure:

- Collect the dislodged silt and debris from the downstream end of pipe or structure.
- Transfer the collected material to the containers.
- Dispose of the collected silt and debris following local regulations and environmental guidelines.

6 Health and Safety

6.1 Designers Residual Risks

- 6.1.1 There are no significant residual risks associated with the construction of the proposed surface or foul water drainage network or permeable paving system beyond common site risks that would reasonably be anticipated by a competent Civil Engineering Contractor.

6.2 Construction Phase

- 6.2.1 The Principal Contractor will undertake a construction phase Health and Safety Plan for the site.
- 6.2.2 Prior to handover the Principal Contractor will undertake a review of maintenance activities required and prepare suitable Health and Safety documentation as part of the site hand over documents.

7 Design Life

- 7.1 The design life of the development is likely to exceed the design life of the components within the SuDS network. During the routine drainage inspections it may be determined that some components have reached the end of their functional life cycle.
- 7.2 Where possible repairs should be the first option considered however if repairs are unviable it will be necessary for the Site Operator to arrange for the replacement of the faulty component.

8 Emergency Plan

8.1 Potential flood and maintenance indicators:

- Manholes or inspections chambers overflowing
- Gullies overflowing or ponding
- Channel drains overflowing or ponding
- Other visual indicators of the drainage system not performing as it should

8.2 Should any of the items above occur then immediate action as outlined below should be undertaken:

- Inspect for blockages in the problem area
- Should the problem not be identified via an initial inspection:
 - For unadopted onsite drainage the Management Company should appoint a suitable drainage engineer to inspect and survey the system and jet any blockages
 - Where it is suspected that there is a problem with the downstream drainage network the Owner or relevant statutory undertaker of that system should be alerted

8.3 Spillages

8.3.1 If a serious spillage in volume or toxicity occurs on site then the spillage should be isolated with soil, turf or specialist fabric and all downstream outlets should be bunged / blocked.

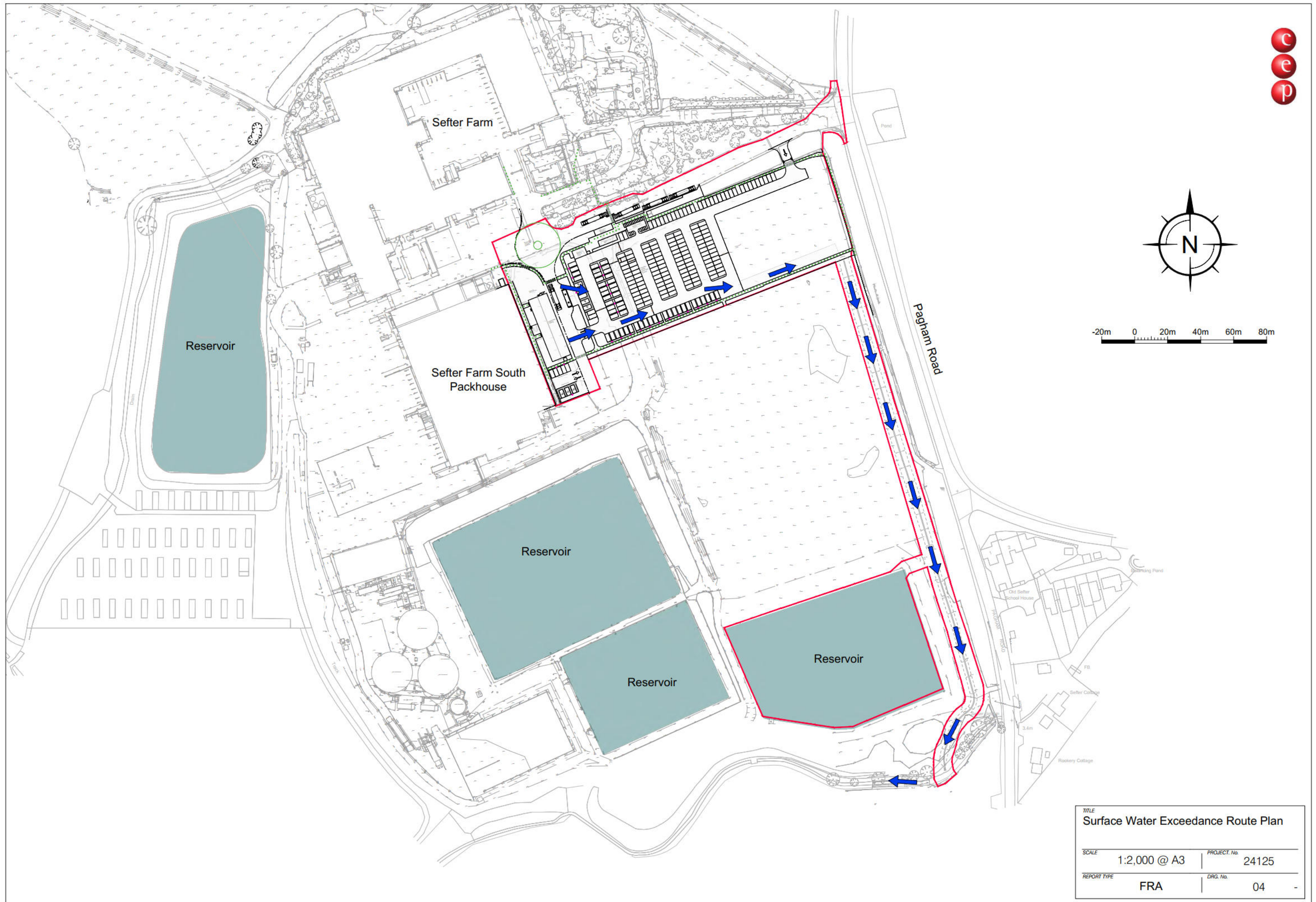
8.3.2 Once the spillage is contained the Environment Agency should be contacted immediately on 0370 850 6506.

8.4 Emergency Contact Details

Maintenance Team	01243 268811
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Appendix 8

Surface Water Exceedance Route Plan



TITLE Surface Water Exceedance Route Plan			
SCALE	1:2,000 @ A3	PROJECT No.	24125
REPORT TYPE	FRA	DRG. No.	04