

EAGLE WORKS

CHURCH LANE

BARHAM

KENT, CT4 6QT

DRAINAGE OPERATIONS AND MAINTENANCE MANUAL

FOR

PALACE CONSTRUCTION.

5th December 2019

Report no: 3213 O&M

REV -

Author: Jack Moss MEng (Hons), GMICE

Checkers: Roland Cooper BEng C.Eng MICE IMA PS

Approver: Roland Cooper BEng C.Eng MICE IMA PS

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Considine Ltd

25 Hollingworth Court
Turkey Mill, Ashford Road
Maidstone
Kent ME14 5PP
Tel: +44 (0)1622 919 918
www.considine.co.uk

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1 Introduction

This report has been produced to provide general maintenance guidance procedures for the various components of the foul and surface water drainage systems serving the proposed development at Eagle Works, Church Lane, Barham, CT4 6QT.

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2 Surface Water Drainage

This section of the report will provide general maintenance procedures for the various components comprising the surface water drainage systems, serving the proposed development.

2.1 Permeable Pavements

Permeable surfaces need to be regularly cleared of silt and other debris to ensure their permeability is preserved. Current advice suggests a minimum of three surface sweepings per year. However, manufacturers specific recommendations should always be followed. A brush and suction cleaner, which can be a lorry mounted device or smaller precinct sweeper, should be used and the sweeping regime as follows:

- End of Winter (April) – to collect winter debris
- Mid-summer (July/August) – to collect dust and plant type deposits
- End of Autumn (November) – to collect leaf fall

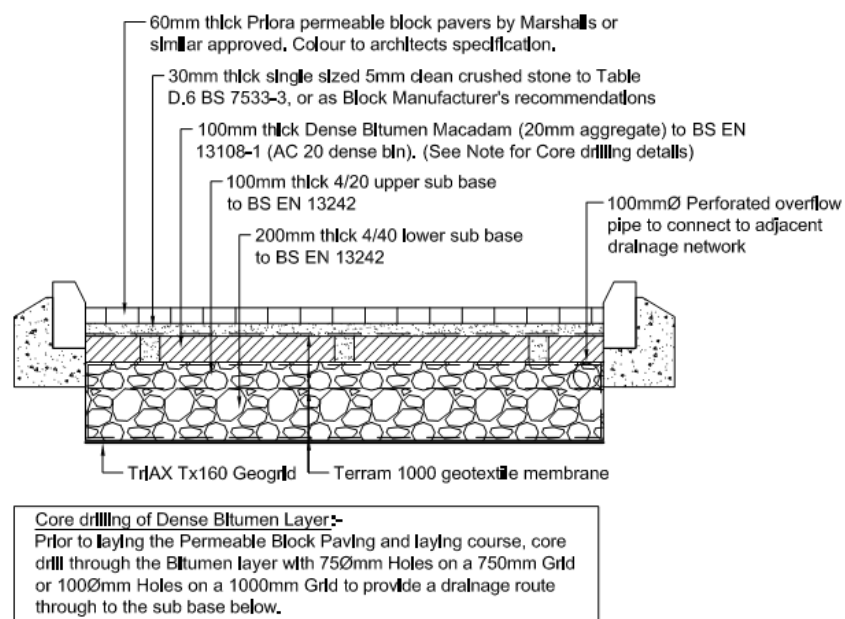
In addition to surface sweeping and vacuuming the following maintenance regime would also be recommended.

Table 2.1 – Recommended Maintenance Requirements

Maintenance Schedule	Required Works / Actions	Frequency
Regular Maintenance	<ul style="list-style-type: none"> • Brushing and Vacuuming 	Three times a year
Occasional Maintenance	<ul style="list-style-type: none"> • Removal of Weed Growth 	3 Monthly
Ongoing Maintenance	<ul style="list-style-type: none"> • Inspection for evidence of poor operation or ponding marks • Inspect debris accumulation on surface and adjust sweeping regime if necessary. • Inspection of silt accumulation in chambers and remove as necessary • Inspect silt accumulation in overflow pipework (if any) and remove as necessary 	Quarterly Annually Annually Annually

Rehabilitation of the surface laying course should be carried out if evidence of poor performance is observed during quarterly inspections. If it is deemed necessary, the following procedures should be followed:

- Lift block pavers and set aside for reuse removing the jointing material.
- Remove the laying course and geotextile membrane.
- Inspect cores and replace granular fill as required.
- Renew geotextile membrane.
- Renew laying course, block pavers and jointing material in accordance with the manufacturers recommendations and the construction detail below.



Typical Permeable Parking Area Construction Design 3% < CBR < 4%

Fig 2.1 – Typical Permeable Parking Area Construction.

Please note that in some circumstances the bitumen binder course may be omitted.

2.2 Soakaways

The useful life and effective operation of a soakaway, including Borehole Soakaways, is related to the frequency of maintenance and the risk of sediment being introduced into the system. If maintenance is not undertaken for long periods of time, deposits can become hard-packed and require considerable effort to remove.

Maintenance will usually be carried out manually, although a suction tanker can be used for sediment/debris removal for larger systems. The following maintenance regime would be recommended as a minimum but actions and frequencies should be adjusted to suit the specific requirements of this development.

Table 2.2 – Recommended Maintenance Requirements

Maintenance Schedule	Required Works / Actions	Frequency
Regular Maintenance	<ul style="list-style-type: none"> Remove sediment and debris from pre-treatment devices and chamber floor 	Annually
	<ul style="list-style-type: none"> Cleaning of gutters and any filters or downpipes 	Annually
	<ul style="list-style-type: none"> Trimming any roots that may be causing blockage 	Annually
Remedial Actions	<ul style="list-style-type: none"> Reconstruct soakaway and/or replaced or clean void fill, if performance deteriorates 	As required
	<ul style="list-style-type: none"> Replacement of clogged geotextile 	As required
Monitoring	<ul style="list-style-type: none"> Inspection of silt traps and note rate of silt accumulation 	Monthly
	<ul style="list-style-type: none"> Check soakaway to ensure emptying is occurring 	Annually

2.3 General Maintenance

Regular inspection and maintenance of drainage systems is essential to ensure effective long term performance. Maintenance needs of the system should be monitored and schedules adjusted to suit the specific requirements of the development.

The following maintenance regime would be recommended as a minimum but actions and frequencies should be adjusted to suit the specific requirements of this development. However, as previously discussed, component specific regimes and any manufacturer's specific recommendations should always be followed.

Table 2.5 – Recommended Maintenance Requirements

Maintenance Schedule	Required Works/Action	Frequency
Routine Maintenance	<ul style="list-style-type: none"> Inspect and identify incorrect operation. Debris removal from catchment area using sweeping and vacuuming. Removal of sediment from pre-treatment components i.e catchpits. 	<p>Monthly</p> <p>3 Monthly</p> <p>Annually</p>

3 Foul Water Drainage

This section of the report will provide general maintenance procedures for the various components comprising the foul water drainage systems, serving the proposed development.

3.1 General Maintenance

Regular inspection and maintenance of drainage systems is essential to ensure effective long term performance. Maintenance needs of the system should be monitored and schedules adjusted to suit the specific requirements of the development.

Table 2.5 – Recommended Maintenance Requirements

Maintenance Schedule	Required Works/Action	Frequency
Routine Maintenance	<ul style="list-style-type: none">Inspect and identify incorrect operation.	Annually

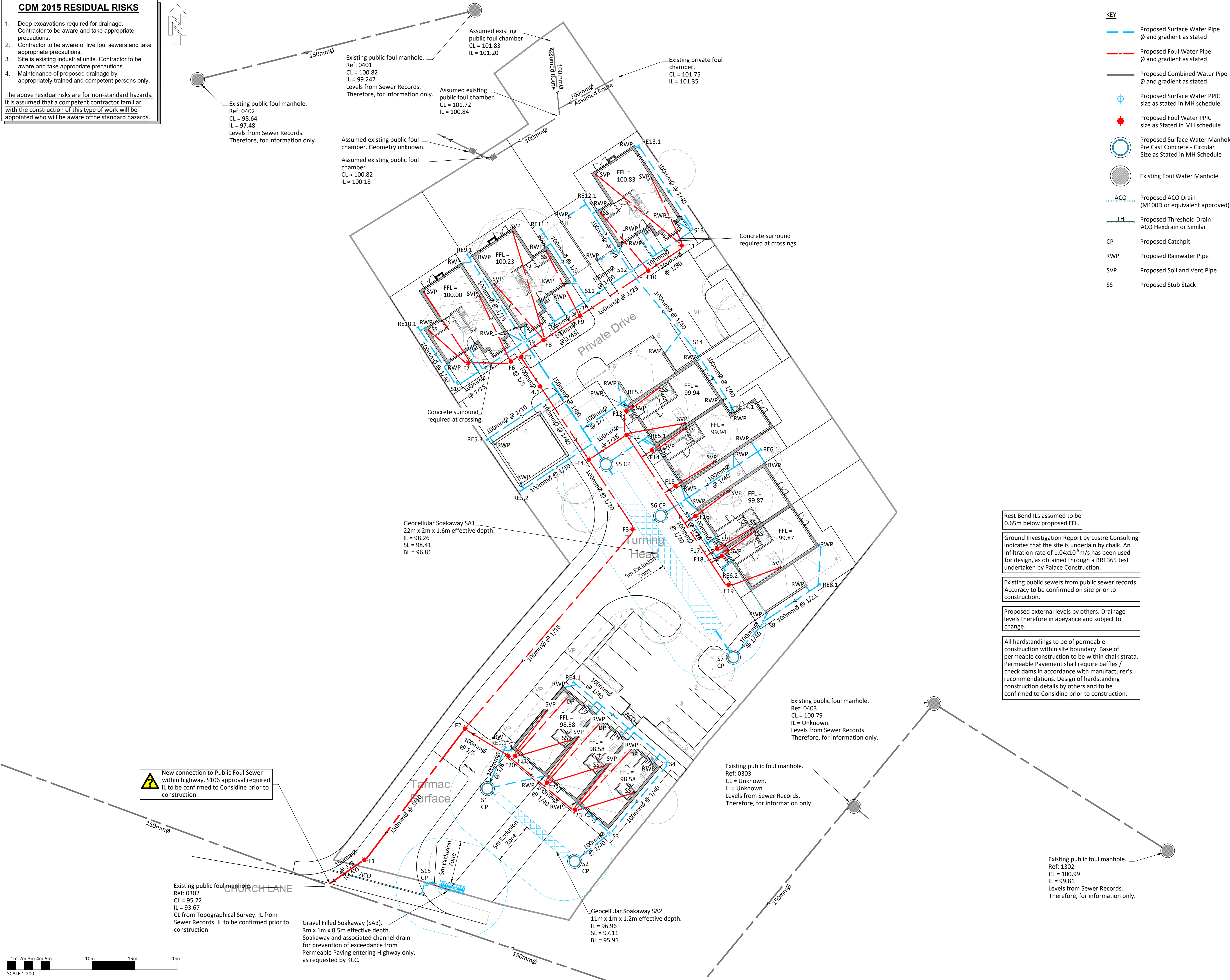
Appendix 1

Proposed Drainage Layout

CDM 2015 RESIDUAL RISKS

1. Deep excavations required for drainage. Contractor to be aware and take appropriate precautions.
2. Contractor to be aware of live foul sewers and take appropriate precautions.
3. Site is existing industrial units. Contractor to be aware and take appropriate precautions.
4. Maintenance of proposed drainage by appropriately trained and competent persons only.

The above residual risks are for non-standard hazards. It is assumed that a competent contractor familiar with the construction of this type of work will be appointed who will be aware of the standard hazards.



- KEY**
- Proposed Surface Water Pipe Ø and gradient as stated
 - Proposed Foul Water Pipe Ø and gradient as stated
 - Proposed Combined Water Pipe Ø and gradient as stated
 - Proposed Surface Water PPIC size as stated in MH schedule
 - Proposed Foul Water PPIC size as stated in MH schedule
 - Proposed Surface Water Manhole Pre Cast Concrete - Circular Size as Stated in MH Schedule
 - Existing Foul Water Manhole
 - Proposed ACO Drain (M100D or equivalent approved).
 - Proposed Threshold Drain ACO Hexdrain or Similar
 - Proposed Catchpit
 - Proposed Rainwater Pipe
 - Proposed Soil and Vent Pipe
 - Proposed Stub Stack

DO NOT SCALE THIS DRAWING. ALL SETTING OUT TO ARCHITECTS DETAILS AND DRAWINGS

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWING ISSUES AND THE SPECIFICATION.

- Notes:**
- G1. All building materials, components and workmanship to comply with the appropriate public health acts, building regulations, british standards and codes of practice and the appropriate manufacturers recommendations.
 - G2. For all specialist work see relevant drawings.
 - G3. Any discrepancies, errors or omissions to be reported to the project co-ordinator for further instructions before commencement of works.
 - G4. The Engineer is not responsible for dimensions, except where shown on his drawings. All setting out information, dimensions, etc, shall be calculated from the Architects drawings.
 - G5. All private drainage shall comply with the requirements of the Building Regulations approved Document H.
 - G6. All drainage forming part of, &/or final connection to a public sewer shall comply with the requirements of Sewers for Adoption 7th Edition.
 - G7. Cover levels are shown indicative only and are subject to final adjustment on site.
 - G8. All FW pipes to be 100mm diameter unless noted otherwise.
 - G9. All SW pipes to be 100mm diameter unless noted otherwise.
 - G10. Minimum depth to invert of foul branch pipes to SVP/SS below finished floor level to be:
450mm 0 - 3 storey's
750mm 4 - 5 storey's
 - G11. Gradient of under floor branch pipes to be 1:40 and no flatter than 1:80 (minimum of 1 WC connected).
 - G12. All RWP, SVP and SS positions are subject to confirmation from the architect.

Rest Bend ILS assumed to be 0.65m below proposed FFL.

Ground Investigation Report by Lustre Consulting indicates that the site is underlain by chalk. An infiltration rate of 1.04x10⁻²m/s has been used for design, as obtained through a BRE365 test undertaken by Palace Construction.

Existing public sewers from public sewer records. Accuracy to be confirmed on site prior to construction.

Proposed external levels by others. Drainage levels therefore in abeyance and subject to change.

All hardstandings to be of permeable construction within site boundary. Base of permeable construction to be within chalk strata. Permeable Pavement shall require baffles / check dams in accordance with manufacturer's recommendations. Design of hardstanding construction details by others and to be confirmed to Considine prior to construction.

PO1	Preliminary Issue.	JEM	RSC	08.10.19
Rev	Amendment	Drn	Chk	Date

considine
civil + structural engineers

25 Hollingworth Court, Turkey Mill
Ashford Road, Maidstone, Kent ME14 5PP
t: 01622 919918 e: info@considine.co.uk
www.considine.co.uk

Client:
PALACE CONSTRUCTION

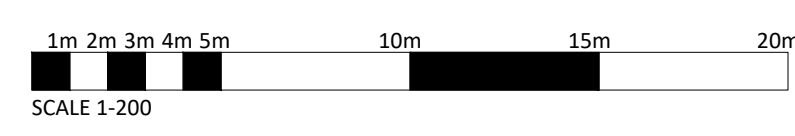
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DRAINAGE LAYOUT

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