



Salt Box, Bognor Regis

Phase 2 - Unit 4-8

Operation and Maintenance Drainage

For LandLink Estates

Date: 21 February 2020

Doc ref: SAL-HYD-PH2-ZZ-RP-C-0021

DOCUMENT CONTROL SHEET

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Client	LandLink Estates	
Project name	Salt Box, Bognor Regis	
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Introduction

The key elements of the surface water system will require periodic maintenance to prevent failure of the system and/or a reduction in capacity of the networks as a whole and the following matrix therefore sets out the various drainage items to be maintained, identifies whose is responsible and the frequency of maintenance.

The drainage within the development will be maintained privately by a management company appointed by the owner / occupier as follows:

Unit 4-8

The occupier (ALDI/GREGGS/STARBUCKS) will have direct responsibility for the maintenance and repair of the foul and surface water drainage system within their site boundary including ensuring compliance with any regulatory requirement with regards to the quality of surface water discharge.

Site Wide Drainage (inc Estate Road)

Management of the site wide drainage is the overall responsibility of the Landlords. The overall estate will be owned & managed by a management company who will be funded by the landlord. The management Company will derive income from the service charge obligations placed on the tenants on a due proportion basis.

Maintenance of the Estate Road drainage will be the responsibility of the Landlords as noted above.

Drainage Strategy Summary

0.1 Surface Water

The surface water drainage for the wider development has been split into 3 no. networks. This Operation and Maintenance document relates to Surface Water Network 1 for Units 4 - 8.

Surface Water Network

Unit 4-8 surface water run-off is collected by way of drainage channels, gullies, Rain Water Pipes and Permeable Paving (Car Park). Run-off from the car park is treated by a Full Retention Oil Interceptor OI-401. The roof of the building is collected by rain water pipes.

The car park is drained by way of porous paving located in the bays. Each 'strip' of porous paving has a filter drain along its length which collects run-off which permeates through the sub-base before it is discharged into the below ground drainage system. Some attenuation storage will be provided within the sub-base of the permeable paving areas.

In order to achieve the permitted discharge rates, flows have been restricted by a HydroBrake flow control at FC-401 and attenuation provided in cellular storage tank located beneath the car park.

Unit 4-8 will connect into the phase 1 estate road drainage (refer to phase 1 reports for details of network 1).

Drainage Strategy Performance Criteria (both networks)

The surface water drainage for both Units 4- 8 has been designed to ensure that:

- No flooding will occur during the 1 in 100-year rainfall event in any part of the building, or in any utility plant susceptible to water.
- Surface water for the 100-year rainfall event is contained within each catchment boundary.
- An allowance for **40%** climate change is applied to the 100-year rainfall event and incorporated into the surface water drainage design in accordance with local and national planning policy.

The surface water drainage network has been modelled to take into consideration the effects surge should an extreme storm event occur at the same time as high flood levels from the adjacent water course.

The 100 year plus 45% climate change fluvial flood level of **1.85 mAOD** has specified at the outfall of each network and rainfall simulated for all storm events up to and including the 100 year plus 40% climate change.

Should rainfall exceed the 1 in 100-year storm event or the system failure through lack of maintenance, surface water run-off is to be directed via designated exceedance routes away buildings and/or critical infrastructure.

0.2 Foul Water

Foul water drainage from Units 4-8 will discharge into a new sewer located within the estate roads. Flows will be directed towards the north of the development where they will then be pumped from a new foul pumping station offsite via a rising main into the Southern Water Foul Sewer at Manhole ref 8801 to the north east in Shripney Road.

Ownership & Maintenance Responsibility Matrix

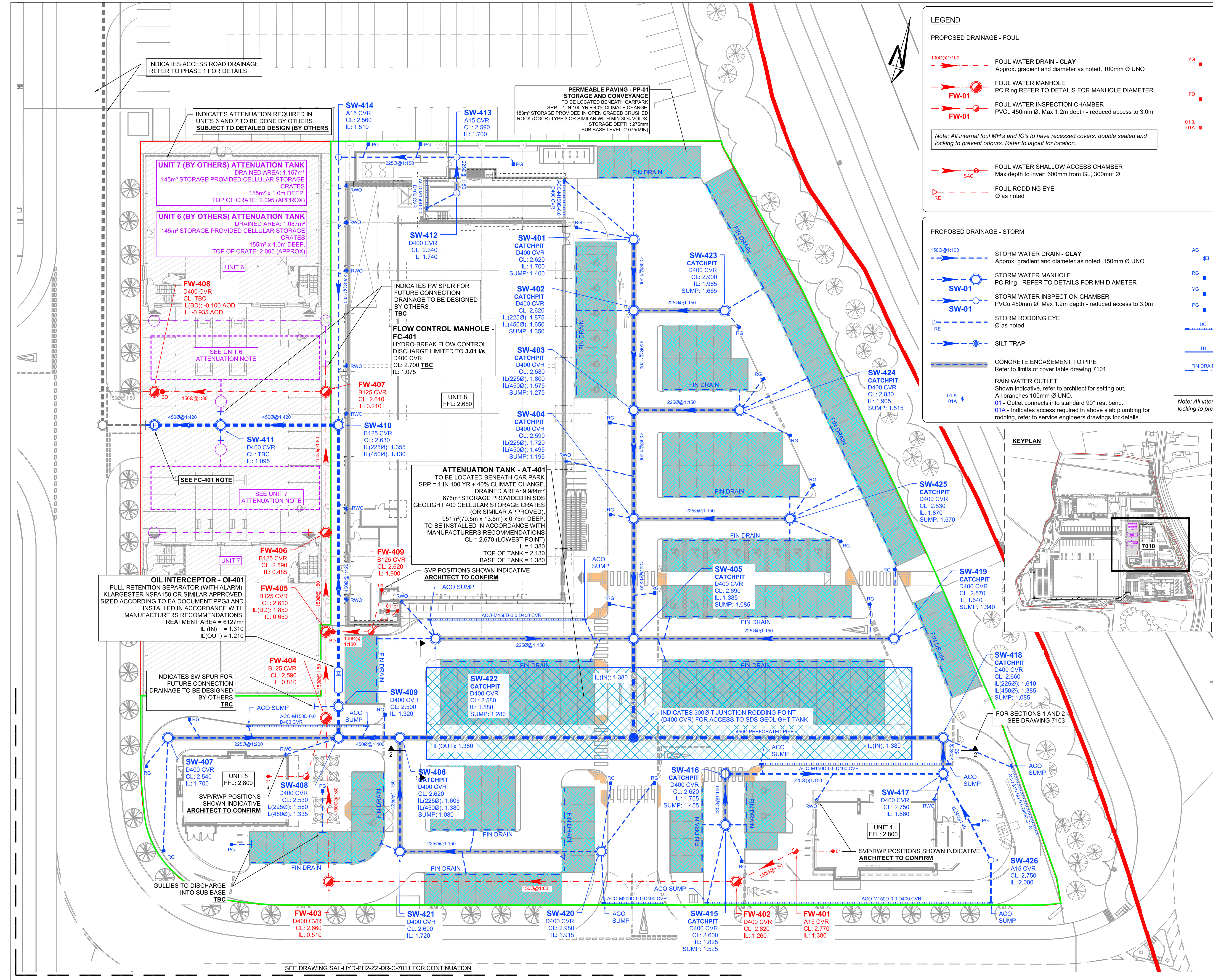
Responsibility	Feature	Maintenance	Frequency
Owner / Occupier Appointed Management Company	Private Drains	Inspection	CCTV survey every 5-10 years.
		Regular Maintenance	Jet clean system fully every 5-10 years. (Recommend prior to CCTV drainage survey is)
		Remedial / Occasional Maintenance	Carry out remedial works as identified in CCTV survey.
	Discharge orifice manholes/flow control devices	Inspection	Monthly
		Regular Maintenance	Remove silt and debris as necessary to prevent build up.
	Gullys / Drainage Channels	Inspection	Quarterly
		Regular Maintenance	Remove silt and debris as necessary to prevent build up.
	Permeable Paving (Refer to specialist)	Inspection	Within 3 months of installation then every 6 months
		Regular Maintenance	Sweep surface to remove debris and contamination 1-2 times a year, and typically after leaf fall in autumn.
		Occasional Maintenance	Removal of weeds. As required.
		Remedial Measures	Remediate areas of rutting and depressions. As required. Replace broken / damaged blocks. As required. Rehabilitate surface with sweeping and reapplication of clean gritstone. As required.
	Attenuation tank	Inspection	Annually
		Occasional Maintenance	Remove silt and debris as necessary to prevent build up.
	Catchpits	Inspection	Every 6 months
		Occasional Maintenance	Remove silt and debris as necessary to prevent build up.
	Oil Interceptor	Inspection	Monthly
		Regular Maintenance	Jet clean system fully every 5-10 years. (Recommend prior to CCTV drainage survey)
		Remedial / Occasional Maintenance	Carry out remedial works as identified in CCTV survey.

	In addition to the above, the following is a list of tasks associated with the maintenance of an Interceptor. This should be read in conjunction with the manufacturers own specific maintenance requirements and only carried out by a fully trained operative. • Inspect the integrity of the separator and all mechanical parts. • Inspect all filters and replace or repair as required. • Assess the amount of collected contaminants (oil and fuel) and silt. • Service any electrical systems including volume alarms and any interceptor management systems. • Conduct safe silt/contaminant removal in accordance with waste transit and disposal regulations. • Maintain industry standard documentation. • Maintain logs of inspections, maintenance, incidents, services and contaminant removal <u>Interceptor Alarms:</u> Each interceptor will have a visual alarm indicator local to the interceptor as well as an alarm (visual or audible) linked either back to the adjacent building if maintenance responsibility resides with the tenant or to a remote supervisory point when maintenance responsibility resides with the estate management team. Alarm sounds to inform to take corrective action ensuring the safe and economic operation of separators preventing oil passing through the separator. When alarm sounds, empty tank as necessary. Factory trained engineers are available for site visits as part of a planned maintenance contract or on a one-off call out basis.
	Reference should be made to the manufacturer recommendations where applicable

Appendix A Drainage Layouts

- SAL-HYD-PH2-ZZ-DR-C-7010 Phase 2 Drainage layout Sheet 1
- SAL-HYD-PH2-ZZ-DR-C-7011 Phase 2 Drainage layout Sheet 2
- SAL-HYD-PH2-ZZ-DR-C-7012 Phase 2 Drainage layout Sheet 3

PLAN SYMBOLOGY CONVENTION: HYDROCK



LEGEND

PROPOSED DRAINAGE - FOUL

- 1000@1:100 FOUL WATER DRAIN - CLAY
Approx. gradient and diameter as noted, 100mm Ø UNO
- FW-01 FOUL WATER MANHOLE
PC Ring REFER TO DETAILS FOR MANHOLE DIAMETER
- FW-01 FOUL WATER INSPECTION CHAMBER
PVCu 450mm Ø. Max 1.2m depth - reduced access to 3.0m
- Note: All internal foul MH's and IC's to have recessed covers, double sealed and locking to prevent odours. Refer to layout for location.
- SAC FOUL WATER SHALLOW ACCESS CHAMBER
Max depth to invert 600mm from GL, 300mm Ø
- RE FOUL RODDING EYE
Ø as noted

PROPOSED DRAINAGE - STORM

- 1500@1:100 STORM WATER DRAIN - CLAY
Approx. gradient and diameter as noted, 150mm Ø UNO
- SW-01 STORM WATER MANHOLE
PC Ring - REFER TO DETAILS FOR MH DIAMETER
- SW-01 STORM WATER INSPECTION CHAMBER
PVCu 450mm Ø. Max 1.2m depth - reduced access to 3.0m
- RE STORM RODDING EYE
Ø as noted
- SILT TRAP
- CONCRETE ENCASUREMENT TO PIPE
Refer to limits of cover table drawing 7101
- RAIN WATER OUTLET
Shown indicative, refer to architect for setting out.
All branches 100mm Ø UNO.
01 - Outlet connects into standard 90° rest bend.
01A - Indicates access required in above slab plumbing for rodding, refer to service engineers drawings for details.
- Note: All internal foul MH's and IC's to have recessed covers, double sealed and locking to prevent odours. Refer to layout for location.

RAIN WATER OUTLET ACCESS GULLY
AG - Outlet connects to gully.

ROAD GULLY (to be trapped)

YARD GULLY (to be trapped)

PAVED AREA GULLY (to be trapped)

DRAINAGE CHANNEL
(Refer to layout for specification)

THRESHOLD DRAINAGE CHANNEL
(Refer to architect for details / specification)

FIN DRAIN
Refer to details for specifications)
all pipes to be 1500 UNO

Note: All internal foul MH's and IC's to have recessed covers, double sealed and locking to prevent odours. Refer to layout for location.

NOTES

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Revised dimensions only are to be taken from this drawing.
- The DWG file is issued for the purpose of coordination only and does not represent formal drawing issue and are not to be repeated in any form. Formal issue of drawings is the DWG. Author: POF. Rev: 01 and/or hard copies and their associated information issue sheets.
- Note that all work has been taken with the report of DWG file and their content, but we recommend that you make due dimensional checks before using any DWG file information. Any errors found are to be reported to Hydrock immediately.
- Levels shown in meters above Ordnance Datum (p.a.O.D.)
- All private drainage to comply with current Building Regulations, BS EN752 Drain and Sewer systems outside Buildings and other relevant British Standards and Codes of Practice.
- All external drainage within trafficked areas with less than 1.2m cover to have type 2 concrete bed and surround. All external drainage within landscaped areas with cover less than 0.6m to have type 2 concrete bed and surround. All drainage with greater cover than the minimum required to have type 3 bed and surround.
- All drainage to be laid with a minimum 1:100 fall to the next manhole or to the street.
- The Contractor is to verify the line, level and diameter of existing sewers before commencing drainage works.
- All foul drainage to be minimum 100mm diameter, all surface water drainage to be minimum 150mm diameter unless otherwise shown.
- Cover levels shown on this drawing refer to appropriate surface levels. It is the contractors responsibility to ensure that access covers and frames are set at the final surface levels.
- Where possible the contractor is to undertake manhole blocks and covers to locate them parallel to kerbs and pavings.
- The Contractor should comply with BS 5811 "Avoiding Danger from Underground Services" when excavating around existing services.
- If the contractors responsibility to determine the location and depth of all existing services, mains and cables prior to construction.
- Contractor to provide temporary screens in each of the down stream manholes during the construction period of the development in accordance with SFA 2.3.10 and the local sewerage undertakers requirements.
- All ready concrete and precast concrete components to be manufactured using Sustainable Building Portland Cement, (SBPC) to BS 4027, if required, subject to soil conditions. Manhole components to be to BS EN 1917:2002.
- All manholes to be laid marked by BS or certified by equal inspection authority.
- All redundant connections to be capped off and grouted from the down stream manhole.
- All new drainage pipes to be installed, CCTV surveyed with DVD recording and any defects highlighted to the supervising officer. Following the rectification of any defects, the drain is to be re-surveyed with CCTV and the recordings made available to the project management team.
- Prior to commencing the works the contractor is to confirm details of the existing drainage system as noted on the drawing.
- Prior to commencing the works the contractor is to undertake the drainage investigation work as noted on the drawing.

KEYPLAN

7010

DRAWING TITLE CHANGED					
P03	R.HUNT	24/02/20	D. GALLIMORE	24/02/20	M. GRIFFIN
TENDER ISSUE					
P02	R.HUNT	21/02/20	D. GALLIMORE	21/02/20	M. GRIFFIN
TENDER ISSUE					
P01	R.HUNT	20/12/19	D. GALLIMORE	20/12/19	M. GRIFFIN
REVISION NOTES/COMMENTS					
REV	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY

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CUSTOMER

LANDLINK ESTATES

PROJECT

SALTBOX
BOGNOR REGIS

TITLE

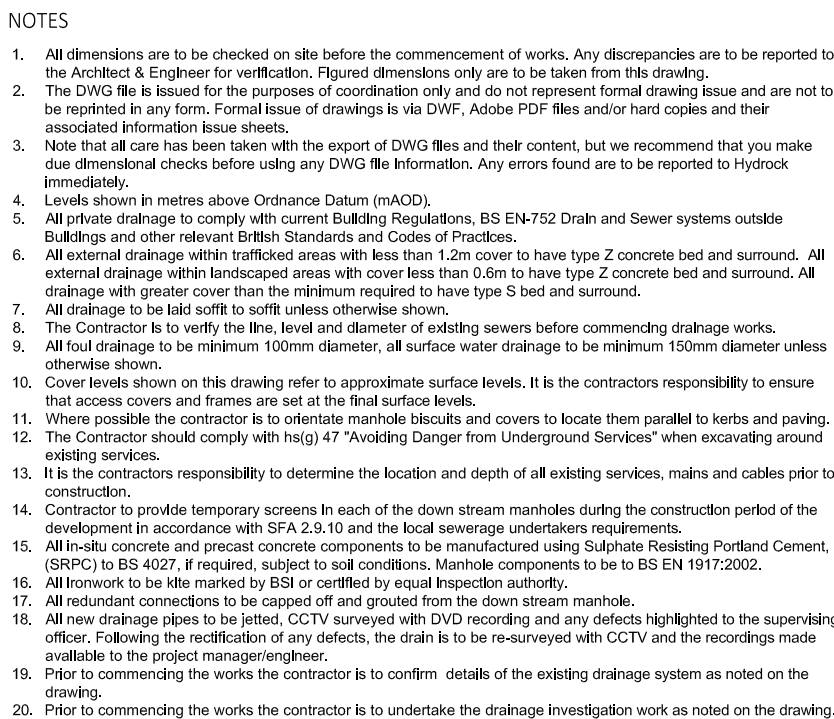
UNITS 4, 5 AND 8
DRAINAGE LAYOUT

HYDROCK PROJECT NO.		SCALE @ A1
C-13319-C		1:250
STATUS DESCRIPTION		STATUS
TENDER		D2
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)		REVISION
SAL-HYD-PH2-ZZ-DR-C-7010		P03

Note: All internal foul MH's and IC's to have recessed covers, double sealed and locking to prevent odours. Refer to layout for location.



SEE DRAWING SAL-HYD-PH2-ZZ-DR-C-7010 FOR CONTINUATION



P03	DRAWING TITLE CHANGED					
	R.HUNT	24/02/20	D. GALLIMORE	24/02/20	M. GRIFFIN	24/02/20
P02	TENDER ISSUE					
	R.HUNT	21/02/20	D. GALLIMORE	21/02/20	M. GRIFFIN	21/02/20
P01	ISSUED FOR TENDER					
	D. GALLIMORE	10/02/20	D. GALLIMORE	10/02/20	M. GRIFFIN	10/02/20
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CLIENT

LANDLINK ESTATES

PROJECT

SALTBOX
BOGNOR REGIS

TITLE

UNITS 1 AND 9

DRAINAGE LINK SHEET 1

HYDROCK PROJECT NO. C-13319-C		SCALE @ A1 1:250	
STATUS DESCRIPTION TENDER			STATUS D2
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) SAL-HYD-PH2-ZZ-DR-C-7011			REVISION P03

PROPOSED DRAINAGE - STORM

1500@1:100

STORM WATER DRAIN - **CLAY**
Approx. gradient and diameter as noted, 150mm Ø UNO

STORM WATER MANHOLE
PC Ring - REFER TO DETAILS FOR MH DIAMETER

SW-01

STORM WATER INSPECTION CHAMBER
PVCu 450mm Ø, Max 1.2m depth - reduced access to 3.0m

SW-01

STORM RODDING EYE
Ø as noted

RE

SILT TRAP

CONCRETE ENCASEMENT TO PIPE
Refer to limits of cover table drawing 7101

RAIN WATER OUTLET
Shown Indicative, refer to architect for setting out.
All branches 100mm Ø UNO.
01 - Outlet connects into standard 90° rest bend.
01A - Indicates access required in above slab plumbing for rodding, refer to service engineers drawings for details.

AG

RG

YG

PG

DC

TH

FIN DRAIN

RAIN WATER OUTLET ACCESS GULLY
AG - Outlet connects to gully.

ROAD GULLY (to be trapped)

YARD GULLY (to be trapped)

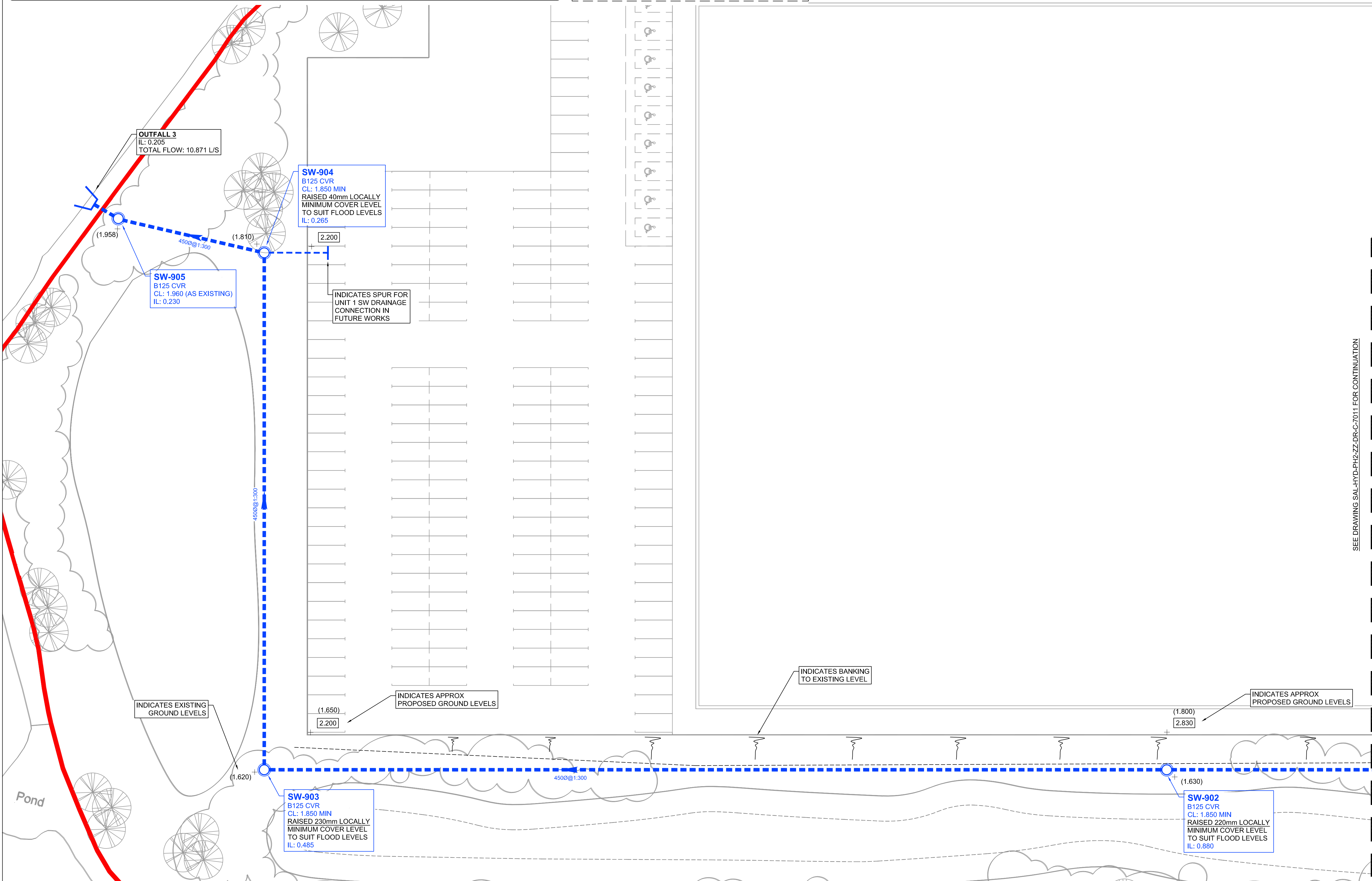
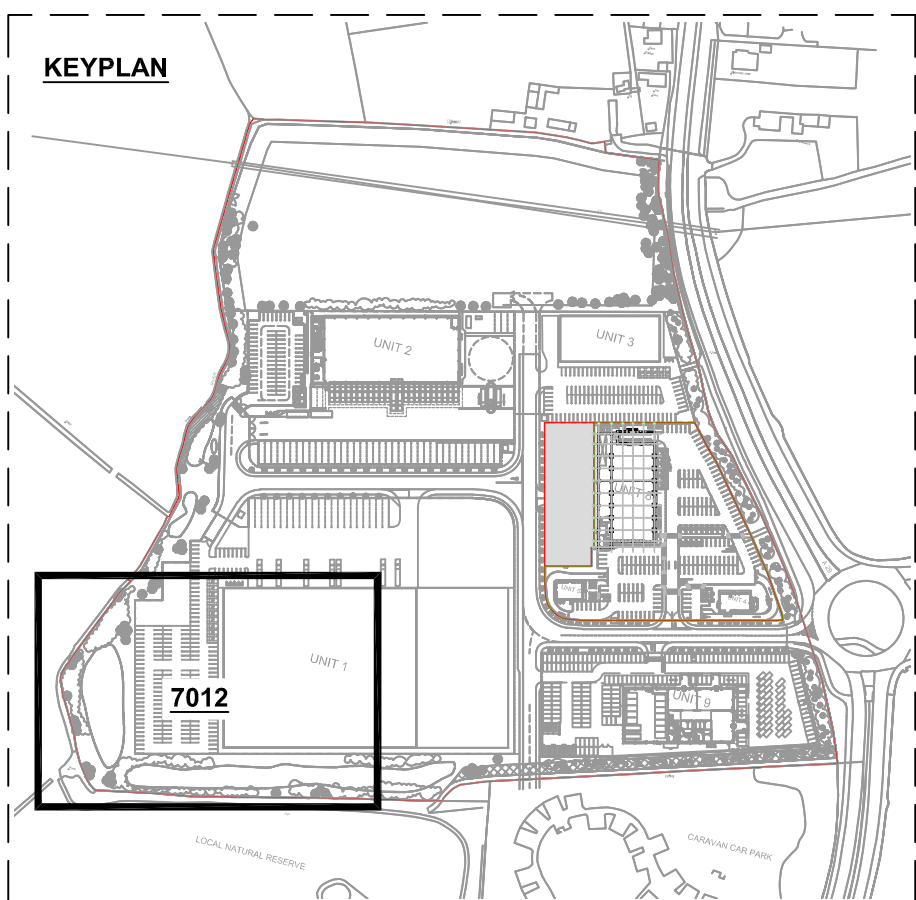
PAVED AREA GULLY (to be trapped)

DRAINAGE CHANNEL
(Refer to layout for specification)

THRESHOLD DRAINAGE CHANNEL
(Refer to architect for details / specification)

FIN DRAIN
Refer to details for specifications)
all pipes to be 150Ø UNO

Note: All internal foul MH's and IC's to have recessed covers, double sealed and locking to prevent odours. Refer to layout for location.



NOTES

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- All private drainage to comply with current Building Regulations, BS EN-752 Drain and Sewer systems outside Buildings and other relevant British Standards and Codes of Practice.
- All external drainage within trafficked areas with less than 1.2m cover to have type Z concrete bed and surround. All external drainage within landscaped areas with cover less than 0.5m to have type Z concrete bed and surround. All drainage with greater cover than the minimum required to have type S bed and surround.
- All drainage to be laid with a 1:100 gradient unless otherwise shown.
- The Contractor is to verify the line, level and diameter of existing sewers before commencing drainage works.
- All foul drainage to be minimum 150mm diameter, all surface water drainage to be minimum 150mm diameter unless otherwise shown.
- Cover levels shown on this drawing refer to appropriate surface levels. It is the contractors responsibility to ensure that access covers and frames are set at the final surface levels.
- Where possible the contractor is to undertake manhole checks and covers to locate them parallel to kerbs and paving.
- The Contractor should comply with HSE 47 "Avoiding Danger from Underground Services" when excavating around existing services.
- It is the contractors responsibility to determine the location and depth of all existing services, mains and cables prior to construction.
- Contractor to provide temporary screens in each of the down stream manholes during the construction period of the development in accordance with SFA 2.9.10 and the local sewerage undertakers requirements.
- All heavy concrete and precast concrete components to be manufactured using Sulphate Resisting Portland Cement (SRPC) to BS 4027, if required, subject to soil conditions. Manhole components to be to BS EN 1917:2002.
- All new drainage to be laid with a 1:100 gradient unless otherwise shown.
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- All new drainage to be laid with a 1:100 gradient unless otherwise shown.
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- Prior to commencing the works the contractor is to undertake the drainage investigation work as noted on the drawing.

SEE DRAWING SAL-HYD-PH2-ZZ-DR-C-7011 FOR CONTINUATION

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P01	ISSUED FOR TENDER	D. GALLIMORE	10/02/20	D. GALLIMORE	10/02/20	M. GRIFFIN	10/02/20
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CLIENT

LANDLINK ESTATES

PROJECT

SALTBOX
BOGNOR REGIS

TITLE

UNITS 1 AND 9
DRAINAGE LINK SHEET 2

HYDROCK PROJECT NO.

C-13319-C

SCALE @ A1

1:250

STATUS DESCRIPTION

TENDER

STATUS

D2

DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)

SAL-HYD-PH2-ZZ-DR-C-7012

REVISION

P03