



Salt Box, Bognor Regis

Phase 2 - Unit 4-8

Operation and Maintenance
Drainage

For LandLink Estates

Date: 28 June 2021

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

DOCUMENT CONTROL SHEET

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Client	LandLink Estates	
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Title	Phase 2 - Unit 4-8 Operation and Maintenance Drainage	
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02	S2	20/05/2020	Updated to suit Arun LLFA comments
03	S2	28/06/2021	Issued for planning

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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 surcharge 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.

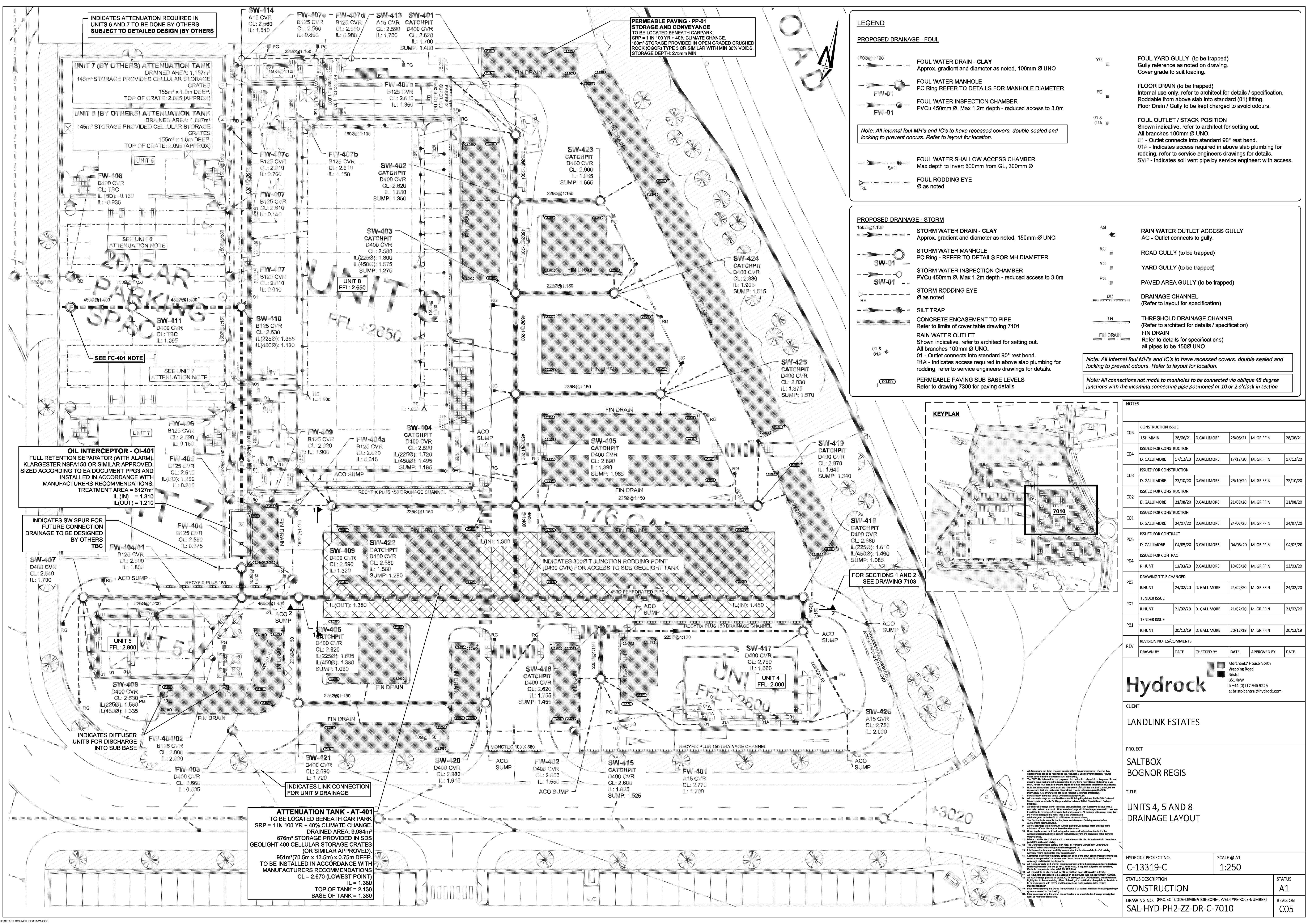
Ownership & Maintenance Responsibility Matrix

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.
	Outfall pipes, non-return pipe flaps, and anti-scour mat flow channel	Inspection	Quarterly
		Regular Maintenance	Remove silt and debris as necessary to prevent build up.
		Remedial / Occasional Maintenance	Damage to pipes and headwall to be repaired as necessary
	Discharge orifice manholes/flow control devices	Inspection	Monthly
		Regular Maintenance	Remove silt and debris as necessary to prevent build up.
		Remedial / Occasional Maintenance	Damage to orifice manholes/flow control devices to be repaired as necessary
	Gullys / Drainage Channels	Inspection	Quarterly
		Regular Maintenance	Remove silt and debris as necessary to prevent build up.
		Remedial / Occasional Maintenance	Damage to Gullys / Drainage Channels to be repaired as necessary
	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.
		Remedial Measures	Damage to Attenuation tank to be repaired as necessary.
	Catchpits	Inspection	Every 6 months
		Occasional Maintenance	Remove silt and debris as necessary to prevent build up.
		Remedial Measures	Damage to catchpits to be repaired as necessary.

	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.
		<p>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.</p> <ul style="list-style-type: none"> • 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. <p>Maintain logs of inspections, maintenance, incidents, services and contaminant removal.</p> <p>Interceptor Alarms: 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.</p>	
		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



LEGEND

PROPOSED DRAINAGE - FOUL

1000@1:150

FW-01

FW-01

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

RE

FOUL WATER SHALLOW ACCESS CHAMBER
Max depth to invert 600mm from GL, 300mm Ø

FOUL RODDING EYE
Ø as noted

PROPOSED DRAINAGE - STORM

1500@1:100

SW-01

SW-01

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.

PERMEABLE PAVING SUB BASE LEVELS
Refer to drawing 7300 for paving details

FOUL YARD GULLY (to be trapped)
Gully reference as noted on drawing.
Cover grade to suit loading.

FLOOR DRAIN (to be trapped)
Internal use only, refer to architect for details / specification.
Roddable from above slab into standard (01) fitting.
Floor Drain / Gully to be kept charged to avoid odours.

FOUL OUTLET / STACK POSITION
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.
SYP - Indicates soil vent pipe by service engineer, with access.

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)

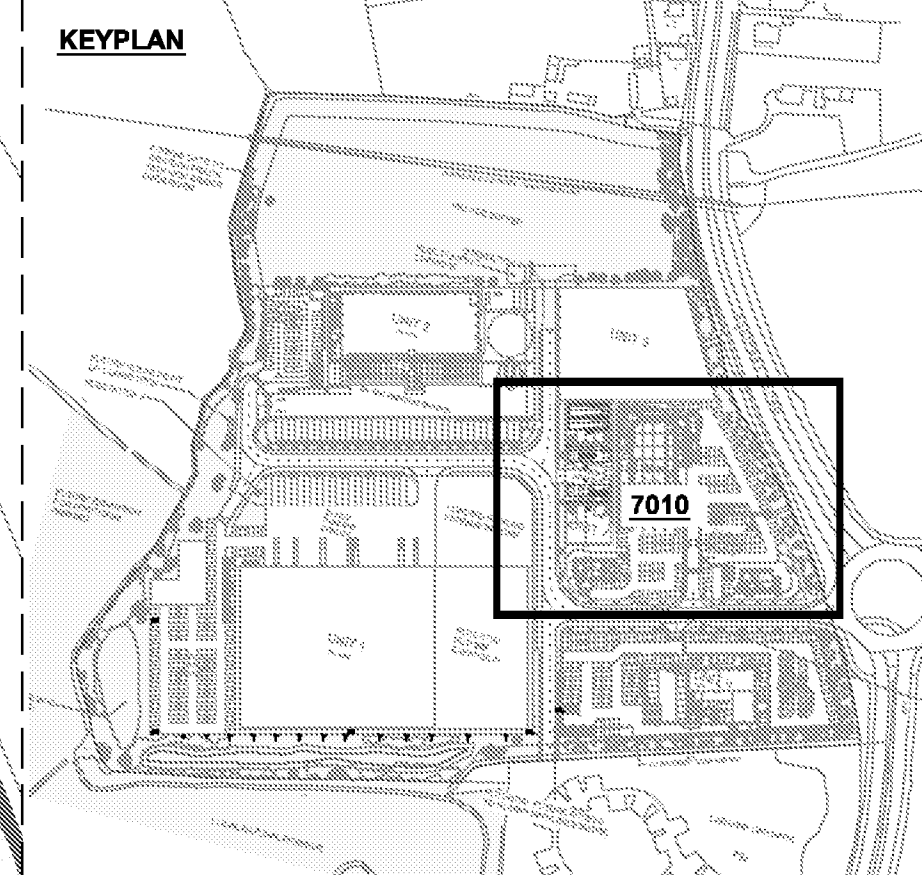
DRAINAGE CHANNEL
(Refer to layout for specification)

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

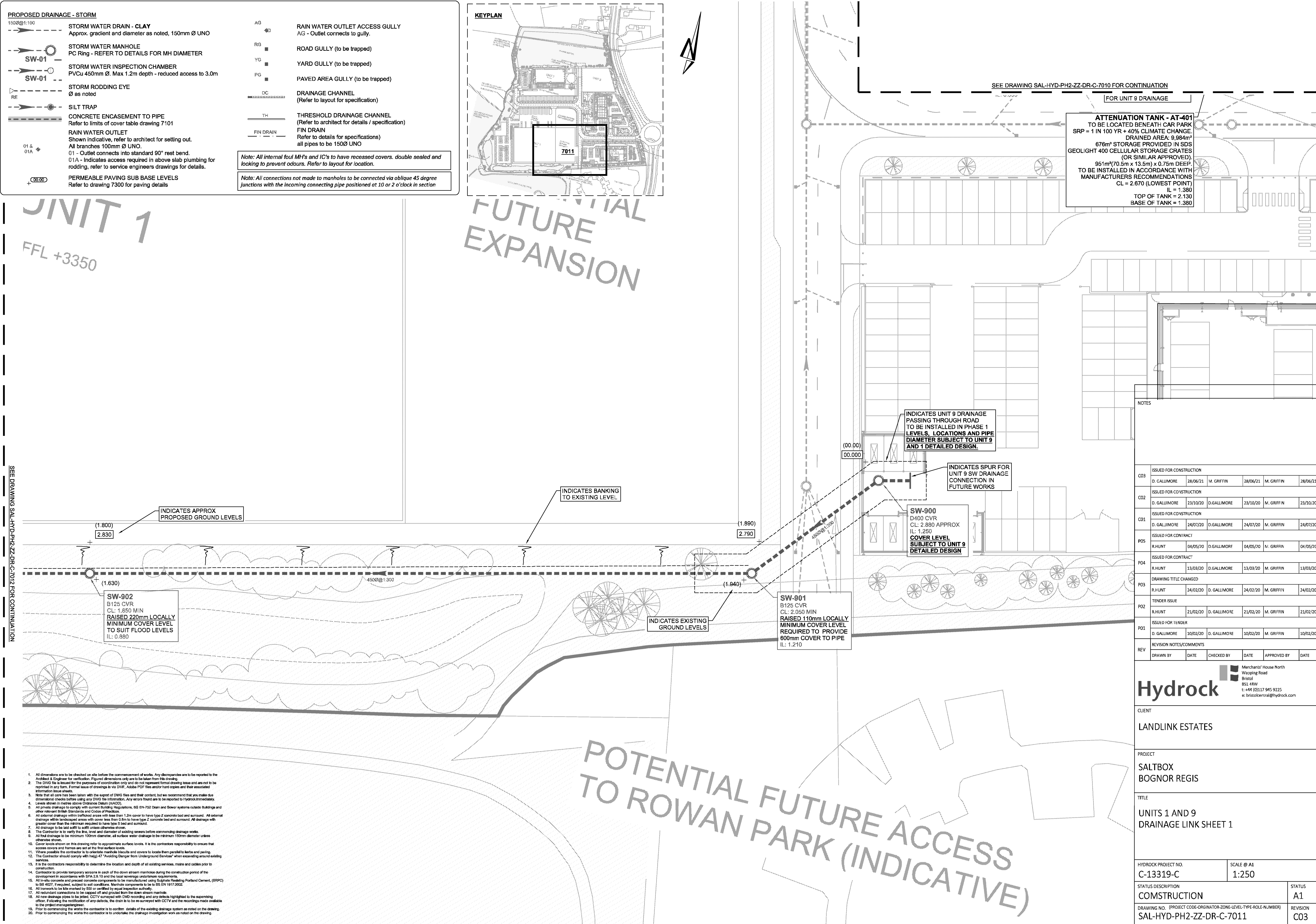
FIN DRAIN
Refer to details for specifications
all pipes to be 150Ø UNO

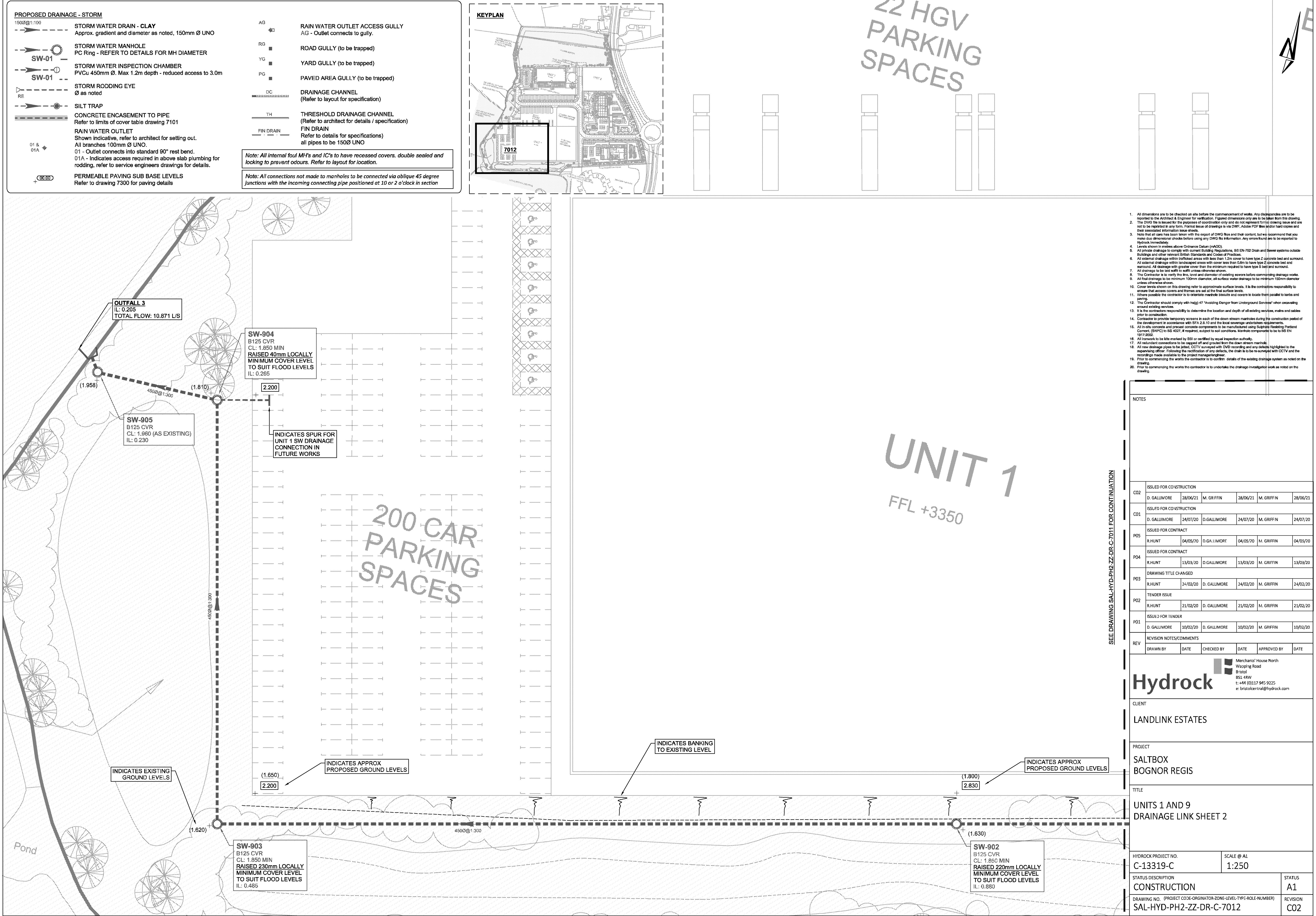
Note: All internal foul MH's and IC's to have recessed covers, double sealed and locking to prevent odours. Refer to layout for location.

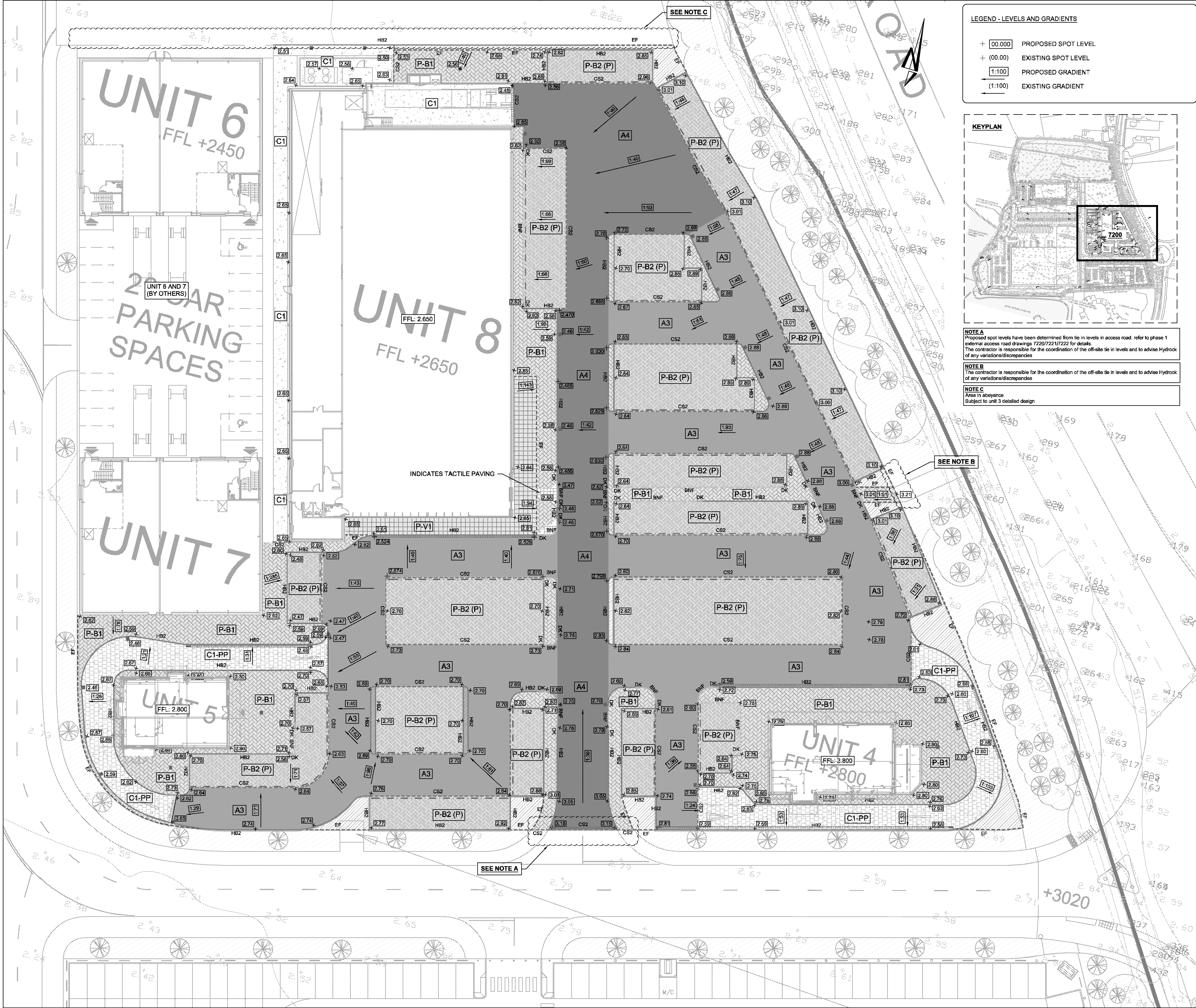
Note: All connections not made to manholes to be connected via oblique 45 degree junctions with the incoming connecting pipe positioned at 10 or 2 o'clock in section



NOTES					
C05	CONSTRUCTION ISSUE				
	J.SHIMMIN	28/06/21	D.GALLIMORE	28/06/21	M. GRIFFIN
C04	ISSUED FOR CONSTRUCTION				
	D. GALLIMORE	17/12/20	D.GALLIMORE	17/12/20	M. GRIFFIN
C03	ISSUED FOR CONSTRUCTION				
	D. GALLIMORE	23/10/20	D.GALLIMORE	23/10/20	M. GRIFFIN
C02	ISSUED FOR CONSTRUCTION				
	D. GALLIMORE	23/08/20	D.GALLIMORE	21/08/20	M. GRIFFIN
C01	ISSUED FOR CONSTRUCTION				
	D. GALLIMORE	24/07/20	D.GALLIMORE	24/07/20	M. GRIFFIN
P05	ISSUED FOR CONTRACT				
	D. GALLIMORE	04/05/20	D.GALLIMORE	04/05/20	M. GRIFFIN
P04	ISSUED FOR CONTRACT				
	R.HUNT	13/03/20	D.GALLIMORE	13/03/20	M. GRIFFIN
P03	DRAWING TITLE CHANGED				
	R.HUNT	24/02/20	D. GALLIMORE	24/02/20	M. GRIFFIN
P02	TENDER ISSUE				
	R.HUNT	21/02/20	D. GALLIMORE	21/02/20	M. GRIFFIN
P01	TENDER ISSUE				
	R.HUNT	20/12/19	D. GALLIMORE	20/12/19	M. GRIFFIN
REV	REVISION NOTES/COMMENTS				
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY
<div><div><div><div><div></div><div></div></div><div>Hydrock</div><div><div>Merchants' House North Wapping Road Bristol BS1 4RW t: +44 (0)117 945 9225 e: bristolcentral@hydrock.com</div></div></div></div></div>					
CLIENT					
LANDLINK ESTATES					
PROJECT					
SALTBOX BOGNOR REGIS					
TITLE					
UNITS 4, 5 AND 8 DRAINAGE LAYOUT					
HYDROCK PROJECT NO. C-13319-C			SCALE @ A1 1:250		
STATUS DESCRIPTION CONSTRUCTION					STATUS A1
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) SAL-HYD-PH2-ZZ-DR-C-7010					REVISION C05

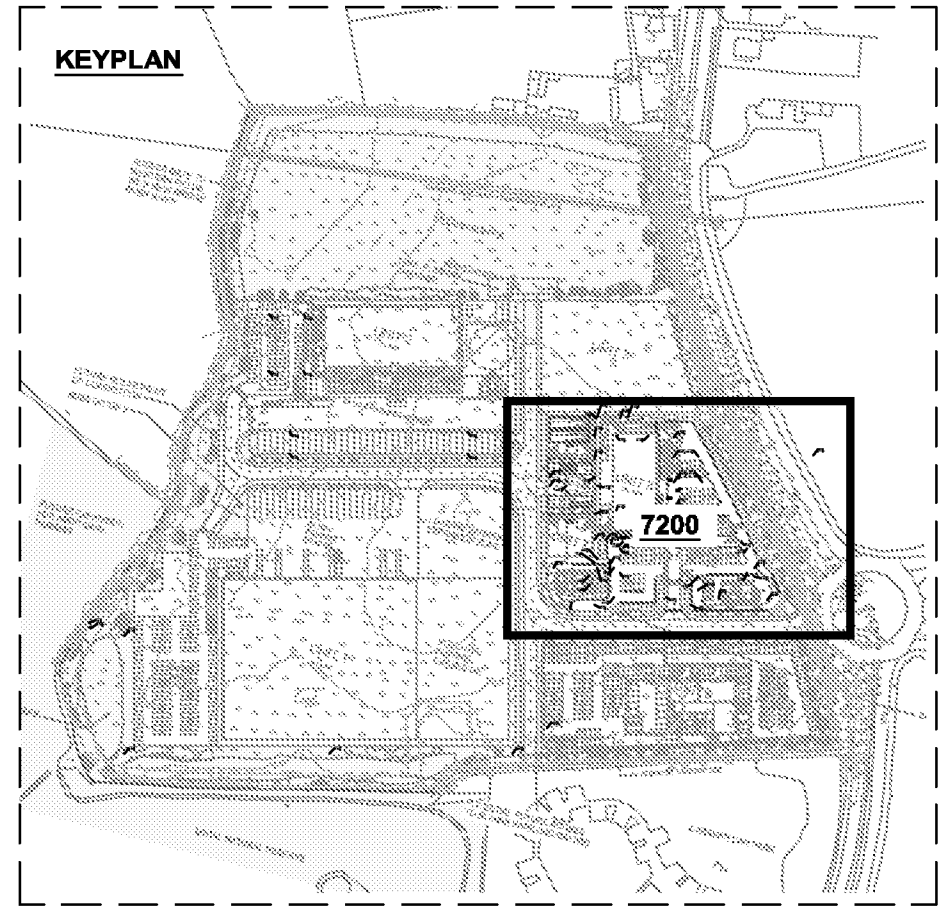






LEGEND - LEVELS AND GRADIENTS

+ [00.00] PROPOSED SPOT LEVEL
+ (00.00) EXISTING SPOT LEVEL
[1:100] PROPOSED GRADIENT
(1:100) EXISTING GRADIENT



NOTE A
Proposed spot levels have been determined from tie in levels in access road. refer to phase 1 external access road drawings T220/T221/T222 for details.
The contractor is responsible for the coordination of the off-site tie in levels and to advise Hydrock of any variations/discrepancies

NOTE B
The contractor is responsible for the coordination of the off-site tie in levels and to advise Hydrock of any variations/discrepancies

NOTE C
Area in abeyance
Subject to unit 3 detailed design

LEGEND - SURFACE TYPES

TARMAC:

- TYPE A3:** ASPHALT PAVING CONSTRUCTION - CARS, LIGHT VEHICLES & OCCASIONAL HGV'S
- TYPE A4:** ASPHALT PAVING CONSTRUCTION - FREQUENT HGV AND COMMERCIAL VEHICLES

CONCRETE:

- TYPE C1:** CONCRETE
- TYPE C1-PP:** PATTERN IMPRINTED CONCRETE (BY PICSPAVE) - GREGGS AND STARBUCKS DRIVE THRO

POROUS BLOCK:

- TYPE P-B2 (P):** POROUS BLOCK PAVING CONSTRUCTION - CARS, LIGHT VEHICLES, NO COMMERCIAL VEHICLES

BLOCK:

- TYPE P-B1:** BLOCK PAVING CONSTRUCTION - PEDESTRIAN LOADING ONLY

TILES:

- TYPE P-V1:** VITRIFIED TILES - PEDESTRIAN LOADING ONLY

LEGEND - KERB TYPES

- HB2** HALF BATTERED KERB (TYPE HB2: 125mm UPSTAND)
- SP** SPLAY KERB (TYPE SP: 125mm UPSTAND)
- BNF** BULLNOSED KERB (TYPE BN: LAID FLUSH)
- BN 6mm** BULLNOSED KERB (TYPE BN: 6mm UPSTAND)
- BN 25mm** BULLNOSED KERB (TYPE BN: 25mm UPSTAND)
- CS2** CHANNEL SQUARE KERB (TYPE CS2: LAID FLUSH)
- EF** FLAT TOP EDGING KERB (TYPE EF: LAID FLUSH)
- TK** TRANSITION KERB (TYPE TK: UPSTAND KERB TO DROPPED KERB)
- DK** DROPPER KERB (TYPE DK: UPSTAND KERB TO DROPPED KERB)

- 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. Figured dimensions only are to be taken from this drawing.
 - The DWG file is issued for the purposes of coordination only and do not represent formal drawing issue and are not to be reprinted in any form. Formal issue of drawings is via DWG, Adobe PDF files and/or hard copies and their associated information issue sheets.
 - Note that all care has been taken with the export of DWG files 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.
 - All levels are shown in metres above Ordnance Datum (m AOD).
 - In the event of any contradiction between this drawing and the specification, then the contractor shall seek clarification from the engineer before proceeding.
 - Refer to landscape architects drawings for extent of external surfaces and kerbing.
 - The works on site affect statutory undertakers apparatus, where the contractor is required to verify the location and depth of all such apparatus prior to commencement of work and to take any precautions necessary when working in the vicinity of apparatus.

CONSTRUCTION ISSUE					
C05	D. GALLIMORE	28/05/21	J. MAGEE	28/05/21	M. GRIFFIN
LEVELS REVISED FOLLOWING SITE LEVEL SURVEY					
C04	D. GALLIMORE	17/05/21	M. GRIFFIN	17/05/21	M. GRIFFIN
DRIVE THRO CONCRETE SLAB UPDATED					
C03	D. GALLIMORE	13/01/21	M. GRIFFIN	13/01/21	M. GRIFFIN
ISSUED FOR CONSTRUCTION					
C02	D. GALLIMORE	21/08/20	D. GALLIMORE	21/08/20	M. GRIFFIN
ISSUED FOR CONSTRUCTION					
C01	D. GALLIMORE	24/07/20	D. GALLIMORE	24/07/20	M. GRIFFIN

NOTE: PRE CONSTRUCTION REVISION BOXES REMOVED

REVISION NOTES/COMMENTS					
REV	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY

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CLIENT
LANDLINK ESTATES

PROJECT
SALTBOX
BOGNOR REGIS

TITLE
UNITS 4,5 AND 8
EXTERNAL WORKS

HYDROCK PROJECT NO. C-13319-C		SCALE @ A1 1:250	
STATUS DESCRIPTION CONSTRUCTION			STATUS A1
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