



Consulting Civil Engineers

Foul and Surface Water Drainage Report

Prince Albert, Copthorne

For

Westcoast Developments Ltd

Rev - P

Reference **C3261**

Date **15th October 2024**

Revision	Date of Issue	Comments	Prepared By	Checked By
P	15/10/2024	Initial Issue	TZ	CS

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1 Introduction

- 1.1.1 CGS Civils Ltd has been appointed to undertake a drainage strategy report for a proposed development at Prince Albert, Copthorne.
- 1.1.2 The purpose of this drainage strategy is to demonstrate how the development area can be satisfactorily drained without increasing flood risk onsite and elsewhere
- 1.1.3 The existing site consists of a public house with associated car park and pub garden to the side and rear. The proposed development will consist of the erection of convenience store and 2 no. residential dwellings with associated vehicular crossing and car parking area. The proposed development is located as OS Grid Reference TQ 31302 39398 and has the post code RH10 3RE.



Fig 1. Site Location

- 1.1.4 The Proposed Site Plan can be found at Appendix A.

2 Executive Summary:

- 2.1.1 Surface water runoff will be discharged into the ground via shallow infiltration. Surface water runoff from the roof areas will be collected and discharged into the onsite geocellular soakaways, while all hard paved areas will be designed to freely drain into the ground using porous construction.
- 2.1.2 If infiltration is confirmed to be unfeasible for traditional soakaways, surface water runoff from the proposed roof areas will be attenuated and discharged into the onsite combined sewer. The proposed discharge rate is to be restricted to 1 l/s for the residential dwellings and 1 l/s for the new commercial building (2l/s in total).
- 2.1.3 The foul water will discharge to the existing onsite combined drainage prior to being discharged into public sewers. This connection is subject to Thames Water approval under a Section 106 agreement.

3 Site Geology

3.1 British Geological Survey information

- 3.1.1 The British Geological Survey confirms the bedrock geology to be made up with Upper Tunbridge Wells Sand – Sandstone and Siltstone, Interbedded soils. At the time of writing the British Geological Survey website does not have any recorded information of the Superficial deposits on site.
- 3.1.2 The British Geological survey also holds records of historical boreholes near the site which give some insight into the ground geology.
- Borehole TQ33NW49 (Located approx. 1000m East of the site) – Ground geology (Sand layer underlain by Silt, Clay and Silty Sand)
 - Borehole TQ33NW44 (Located approx. 600m South of the site) – Ground geology (grey mottled shaley silty Clay)
 - Borehole TQ33NW110 (Located approx. 1000m West of the site) – Ground geology (Sand, Gravel, Siltstone)

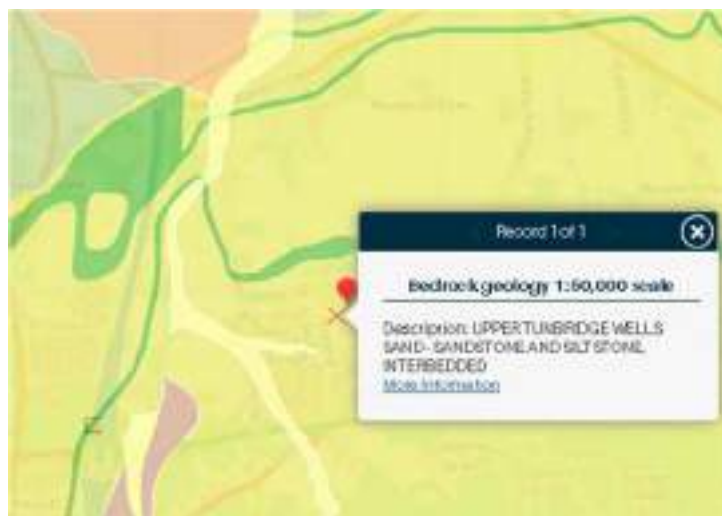


Fig 2. British Geological Survey

Snippet from BGS Website showing Bedrock geology/superficial deposits <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>

3.2 Geological Assessment

- 3.2.1 No intrusive ground investigation has been carried out. However, it is noted that surface water runoff from the existing site currently discharges partially into the ground and partially into the public foul sewers. Based on this, it is presumed that infiltration may be possible. Nevertheless, considering the site's geology and underlying clay soils, low to moderate infiltration rates should be expected.
- 3.2.2 The underground soil infiltration rate has been assumed based on the CIRIA report C753, table 25.1, which indicates a typical infiltration rate of 1×10^{-5} – 5×10^{-5} m/s for slightly silty, slightly clayey sand soils.
- 3.2.3 An assumed infiltration rate of 4.5×10^{-5} m/s has been used for soakaway and permeable paving calculations. An onsite infiltration test, following the BRE365 method, will be required to confirm the actual infiltration rates.
- 3.2.4 If infiltration is confirmed to be unfeasible, surface water runoff will be attenuated and discharged into the existing onsite combined sewers.
- 3.2.5 The BGS Historical Borehole Logs can be found at Appendix B.

4 Existing Drainage

- 4.1.1 Based on the CCTV Survey information it is confirmed that surface water runoff from the existing site is partially discharged into the ground via infiltration and partially into the onsite combined sewers.
- 4.1.2 The existing drainage CCTV Survey can be found at Appendix C.

5 Proposed Drainage Strategy

5.1 SuDS Hierarchy

- 5.1.1 All options for the destination of run-off generated on site have been assessed in line with the SuDS hierarchy as set out in Building Regulations Part H document and DEFRA's Draft National Standards for SuDS.

Table 1. SuDS Hierarchy

Discharge Destination	
Rainwater Harvesting	Water butts proposed for residential dwellings
Discharge to Ground	Based on assumed infiltration rate of 4.5×10^{-5} m/s
Discharge to Watercourse	N/A – no existing watercourses located in close proximity to the proposed development.
Discharge to Surface Water Sewer	N/A – no surface water sewers available
Discharge to Other Sewer	If infiltration is confirmed to be unviable for surface water discharge, surface water runoff will be attenuated and discharged into the existing onsite combined sewers at a restricted rate of 2 l/s, 1l/s for residential buildings and 1l/s for commercial building. This connection is subject to an agreement with Thames Water.

5.2 Proposed Hydraulic Calculation Specifications:

Table 2. SuDS Hierarchy

Hydraulic Calculations Settings:	
Rainfall Methodology	FEH-22
Volumetric Run-off Coefficient Cv	1.0
CV Winter and Summer	1.0 / 1.0
Additional Storage (m ³ / ha)	0.0
Flow Control	n.a
Attenuation Tank Design	Base Coefficient (m/hr): 0.162
	Side Coefficient (m/hr): 0.162
	Factor of Safety: 2
	Porosity: 95%
	Time to Half Empty (mins): 125

- 5.2.1 It should be noted that the proposed soakaways are designed to serve only the surface water runoff from the roof areas. No discharge from the hard paved areas will be connected to the proposed soakaways. This, along with the proposed catchpit manholes and access chambers for maintenance located on both sides of the geocellular soakaway, will result in a low risk of siltation. Therefore, the same infiltration rate has been applied to both the base and sides of the soakaway.

5.3 Surface Water Drainage

- 5.3.1 Based on information gathered from the British Geological Survey (BGS) website and the CCTV survey, which confirms that surface water runoff from the existing site is partially discharged into the ground via infiltration and partially into the existing onsite combined sewers, it is presumed that infiltration may be a feasible method for surface water runoff management.
- 5.3.2 Due to the presence of soils with good infiltration potential at shallow depths, it is proposed that all surface water runoff be discharged into the ground via infiltration at an assumed rate of **4.5 x 10⁻⁵ m/s**. The underground soil infiltration rate has been assumed based on CIRIA report C753, table 25.1, which indicates a typical infiltration rate of **1 x 10⁻⁵ – 5 x 10⁻⁵ m/s** for slightly silty, slightly clayey sand soils. All infiltration units are to be located within the top soil layers and will not be deeper than **1.4m** below ground level (BGL).
- 5.3.3 All roof areas are to be collected into a positive drainage network before being discharged into the ground through a geocellular soakaway. Hard paved areas are to be freely drained into the ground using porous construction. All infiltration features on site are designed to accommodate a 1-in-100-year storm event plus 45% for climate change. An onsite infiltration test following the BRE365 method will be required to confirm the actual infiltration rate of the soil.
- 5.3.4 If infiltration is confirmed to be unfeasible for traditional soakaways, surface water runoff from the proposed roof areas will be attenuated and discharged into the onsite combined sewer. The proposed discharge rate is to be restricted to **1 l/s** for the residential dwellings and **1 l/s** for the new commercial building.
- 5.3.5 Based on the drainage calculations, the proposed attenuation tank (AT1) serving the proposed residential dwelling will need to provide 8.5 m³ of storage, while the second attenuation tank (AT2) serving the proposed commercial building will need to provide 26.5 m³ of storage. Both tanks are designed to discharge at a rate of **1 l/s** to effectively manage the surface water runoff from the proposed development.
- 5.3.6 If shallow infiltration test results indicate low potential for infiltration, all hard paved areas will be lined and discharged into the onsite drainage network before being discharged into the public sewers. The overall surface water runoff discharge from the proposed development will be restricted to **2 l/s**.
- 5.3.7 Proposed Drainage Strategy Plans and Hydraulic calculations for both infiltration and attenuation can be found at Appendix D. The proposed Maintenance Schedule can be found in Appendix F.
- 5.3.8 EA Magic maps can be found in Appendix E.

5.4 Water Quality

- 5.4.1 A key requirement of any SuDS system is that it protects the receiving water body from the risk of pollution.
- 5.4.2 Frequent and short duration rainfall events are those that are most loaded with potential contaminants (silts, fines, heavy metals, and various organic and inorganic contaminants) Therefore the first 5-10mm of rainfall should be adequately treated with SuDS.
- 5.4.3 The new SuDS Manual (Ciria C753, November 2015) introduces slightly different approach compared to the previous version for the water quality management of surface water. The Manual describes risks posed by the surface water runoff to the receiving environment as a function of:
- The pollution hazard at a particular site (i.e., the pollution source)
 - The effectiveness of SuDS treatment components in reducing levels of pollutants to environmentally acceptable levels
 - The sensitivity of the receiving environment
- 5.4.4 The EA website indicates that the site does not lie within a Source Protection Zone.
- 5.4.5 The recommended approaches for water quality risk management are given in the SuDS Manual Table 26.1.

Table 26.1 from SuDS manual. Approaches to Water Quality Risk Management

Table 26.1 Approaches to Water Quality Risk Management			
Design method	Hazard Characterisation	Risk Reduction	
		For Surface Water	For Groundwater
Simple Index Approach	Simple pollution hazard indices based on land use (Table 26.2)	Simple SuDS hazard mitigation indices (Table 26.3)	Simple SuDS hazard mitigation indices (Table 26.4)
Risk Screening	Factors characterising traffic density and extent of infiltration likely to occur (Table 26.5)	N/A	Factors characterising unsaturated soil depth and type, and predominant flow type through the soils (Table 26.5)
Detailed Risk Assessment	Site specific information used to define likely pollutants and their significance	More detailed, component specific performance information used to demonstrate that the proposed SuDS components reduce the hazard to acceptable levels	
Process-based treatment modelling	Time series rainfall used with generic pollution characteristics to determine statistical distributions of likely concentrations and loadings in the runoff	Models that represent the treatment processes in the proposed SuDS components give estimates of reductions in even mean discharge concentrations and total annual load reductions delivered by the system	

- 5.4.6 As per Table 26.1 Simple Index approach will be used as a design method for this site.
- 5.4.7 Table 26.2 will provide hazard classification of different land uses. The land uses for the surface water drainage for this site are.
- Residential Roofs
 - Commercial Roof
 - Car Parks
 - Low Traffic Roads
- 5.4.8 To deliver adequate treatment, the selected SuDS components should have a total pollution mitigation index for each contaminant type that equals or exceeds the pollution hazard index for each contaminant type. Therefore, the following must be achieved for the surface running off the site.

Total SuDS mitigation index $\geq$ pollution hazard index

5.4.9 Pollution Hazard Indices are given for different land uses in Table 26.2 of the SuDS manual;

Table 26.2 from SuDS manual. Pollution Hazard Indices for Different Land Use Classifications

Table 26.2 Pollution hazard indices for different land use classifications				
Land Use	Pollution Hazard Level	Total Suspended solids (TSS)	Metals	Hydro-Carbons
Residential roofs	Very Low	0.2	0.2	0.05
Other roofs (Typically commercial/industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (e.g., cul-de-sacs, homezones and general access roads) and non-residential car parking with infrequent change (e.g., schools, offices) i.e., < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g., hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g., haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways	High	0.8	0.8	0.9

5.4.10 From Table 26.2 the following information is tabulated in Table 1

Table 3: Pollution hazard index and destination of runoff for the proposed site

Table 3: Pollution Hazard Index and Destination of runoff for the proposed Site					
Land Use	Destination of Runoff	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Residential/Commercial Roof	Ground Water	Very Low	0.2	0.3	0.05
Car park and Low Traffic roads	Ground water	Low	0.5	0.4	0.4
Commercial yard	Ground water	Medium	0.7	0.6	0.7

5.4.11 The SuDS mitigation index will be obtained from Table 26.4 (for groundwater) of the SuDS manual.

Table 26.4 from SuDS manual. Indicative SuDS Mitigation Indices for discharges to ground waters.

5.4.12 SuDS mitigation index are tabulated in Table 5 as followed.

Table 26.4 Indicative SuDS mitigation indices for discharges to groundwater			
Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates	TSS	Metals	Hydrocarbons
A layer of dense vegetation underlain by a soil with good containment attenuation potential of at least 300mm in depth	0.6	0.5	0.6
A soil with good contaminant attenuation potential of at least 300mm in depth	0.4	0.3	0.3
Infiltration trench (where a suitable depth of filtration material is included that provides treatment, i.e., graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20mm gravel) underlain by a soil with good contaminant attenuation potential of at least 300mm in depth.	0.4	0.4	0.4
Constructed permeable pavement (where a suitable filtration later is included that provides treatment, and including a geotextile at the base separating the foundation from the subgrade) underlain by a soil with good contaminant attenuation potential of at least 300mm in depth	0.7	0.6	0.7
Bioretention underlain by a soil with good contaminant attenuation potential of at least 300mm in depth	0.8	0.8	0.8
Proprietary treatment systems	These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area		

Table 4: SuDS mitigation index

Table 4 Mitigation Indices						
Runoff Source	Destination of Runoff	Mitigation Index Source	Type of SuDS Component	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential/Commercial Roof	Ground Water	Table 26.4 (for ground waters)	Soakaway with min. 300mm deep soil beneath	0.4	0.3	0.3
Car park and Low Traffic roads	Ground water	Table 26.4 (for ground waters)	Permeable Pavement	0.7	0.6	0.7
Commercial yard	Ground water	Table 26.4 (for ground waters)	Permeable Pavement	0.7	0.6	0.7

5.4.13 The above analysis demonstrates that the SuDS devices within the design will mitigate any pollution present within the surface water system.

5.5 Foul water drainage

- 5.5.1 The foul water will discharge into the local foul water sewer, re-using the existing onsite drainage system. The existing onsite network will need to be diverted to avoid clashes with the proposed residential dwellings. The foul water discharge will be connected into the existing drains via gravity.
- 5.5.2 Based on the total of 2 residential dwellings and a commercial building, the flow rate has been calculated as follows:
- **Dry Weather Flow (DWF) Rate:** $2 \times 4000 / 86,400 = 0.092$ l/s
 - **Peak flow rate** (assuming a peak factor of 6): $0.092 \times 6 = 0.55$ l/s for the residential units.
 - **Commercial building peak flow rate:** Based on the number of DU units or the actual m² proposed, calculated at 0.12 l/s peak flow rate.
 - **Total discharge:** 0.77 l/s peak flow.
- 5.5.3 The existing on-site combined drainage is classified as a private sewer, so no Section 185 application is required. Diversion works can be undertaken under Building Regulations requirements.

5.6 Construction Phase Drainage

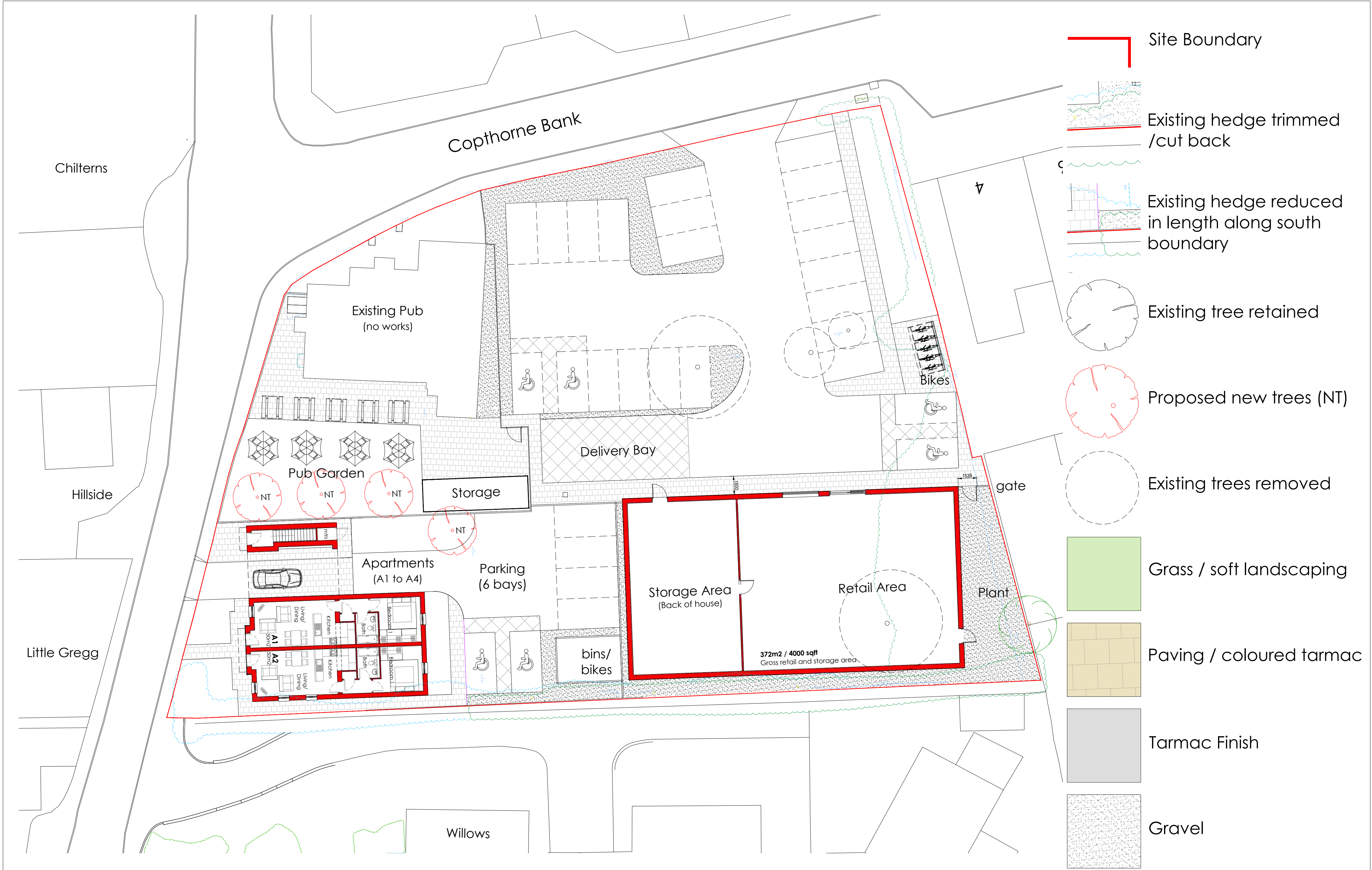
- 5.6.1 It is an offence to cause or knowingly permit the entry of any polluting, poisonous or noxious material in the water environment. If the pollution is serious enough to lower the ecological status of the water body as set out in terms by the Water Framework Directive (2000/60/EC) than prosecution may occur.
- 5.6.2 Remediation of any damage caused will not require the polluter to be prosecuted first. If the water pollution is serious enough to be classed an environmental damage, the damage will require to be remediated such that the area is returned to the condition it would have been in if the damage had not occurred.
- 5.6.3 If any pollution has not been reported or the polluter has not taken actions to prevent any further damage; they would then be causing an offence. Third parties (e.g., Private water supply users, landowners, recreation users and the public) who may be affected by possible damage may also report the risk of any environmental damage to the enforcing authority.
- 5.6.4 The principles of SuDS (Sustainable Drainage Systems) shall be applied to all components of design and construction regarding surface water management. Any design or site works that may impact on the site drainage or the water quality shall:
- Soakaway where soils allow
 - Consider and manage erosion
 - Remove pollutants in surface water
 - Retain any silts on site and prevent silts from discharging to watercourses or drains
 - Keep runoff rates at existing greenfield runoff
 - Prevent accidental spillages reaching watercourse
- 5.6.5 As infiltration on site is viable, the temporary drainage for the development will be in the form of land drains which will discharge into the ground.
- 5.6.6 Pollution will be controlled via the use of catchpit manholes and geotextiles.
- 5.6.7 Any potential hazardous substances will be within a controlled compound with a separate drainage system that will contain a penstock valve / containment kit in the event of a spillage.

6 Summary and Conclusions

- 6.1.1 CGS Civils has been instructed by to produce a Drainage statement under National Planning Policy Framework (NPPF) to support the Planning Application for erection of convenience store and 2no. residential dwellings with associated access and car park.
- 6.1.2 The Surface Water will discharge to the ground based on an assumed infiltration rate of 4.5×10^{-5} m/s. An onsite infiltration test following the BRE365 method will be undertaken to confirm the actual infiltration rates. If infiltration is confirmed to be unfeasible and the use of traditional soakaways is not possible, surface water runoff will be attenuated and discharged into the existing onsite combined sewers at a restricted discharge rate of **2 l/s** in total. A new connection will need to be agreed upon with Thames Water.
- 6.1.3 The Foul water will discharge into the existing onsite private sewers. The existing sewer will be diverted and upgraded to adequately serve the proposed development.
- 6.1.4 The report has demonstrated that the proposed drainage measures ensure that suitable means of surface water and foul drainage can be achieved for the proposed development.

7 Appendices

7.1 Appendix A – Proposed Site Plan



 U A N NOTES All dimensions to be verified on site. Any discrepancies are to be reported to the relevant parties. The content of the drawing remain the copyright of UAN and can not be used without consent	 North				client	drawn	scale	size		
					Westcoast Convenience Limited	JJ/MG	1:200	A2		
		E	South boundary hedge retained and cut back	MG	14.05.2025	address	checked	Proposed Site Plan		
		D	Pub garden furniture added / bike shelter shown	LH	15.04.2025	The Prince Albert, Copthorne Bank, Copthorne, Crawley, RH10 3QX				MG
		C	Retail building position adjusted	LH	26.03.2025	Mixed Use Development				date
		B	parking notes removed	MG	27.11.2024			21.08.2024		
		A	design adjustments	JJ	28.08.2024	proj no.		status	dwg no.	revision
		revision	description	drawn	date	23-144		Planning	23-144-02	E

7.2 **Appendix B – The BGS Historical Borehole Logs**

TQ 33NW/43

BOREHOLE NO 12

SITE 1M23/R264 COPTMORNE LINK
CLIENT - WEST SUSSEX COUNTY COUNCIL

SAMPLES				DEPTH m	LEGEND	REDUCED LEVEL m	CO-ORDINATES 531169 E 138807 N GROUND LEVEL 70.3 m	DESCRIPTION OF STRATA
TESTS	DEPTH m	TYPE	NO.					
	0.2	D O	2720	0.2		70.1		Dark brown silty till soil and some very stiff light grey / light brown mottled silty clay
A.C.B.C	0.5	D O	2721					
	0.6	B O	2722					
T.A	1.0	D O	2723	1.0		69.3		Very stiff grey/brown silty CLAY.
				1.3		69.0		
T.A	1.7	D O	2724					Hard grey/brown, becoming less brown with depth shale silty CLAY.
	2.0	D O	2725					
S (1/2)	3.0	D O	2726	3.0		67.3		
REMARKS 1 HOUR CHISELLING PENETRATION TOOL BROKE IN HALF UNABLE TO RECOVER.								
PLANT METHOD OF BORING PILEON WAYFARER DIAMETER OF BORING 150mm. START 1/6/78 FINISH 1/6/78								
WATER STRUCK 1.71 STANDING WATER LEVEL 1.9m								
GROUND EXPLORATIONS Ltd. Report No. 7306								

6302/89/4/RGT

10 January 1989

Site drainage at Borers Arms Road, Copthorne

The UTWS typically comprises mainly fine-grained (silty) and typically clay-bound sediments which vary rapidly both laterally and vertically in lithology, so that it is difficult to differentiate and trace distinct rock types in the field. The published geological map and, indeed, the geologists' 1:10 560 standard maps of your area of concern provide very little guidance on the details of the stratigraphy; there are no local borehole data relevant to your query, though records from motorway and well investigations farther afield confirm that the strata are fine-grained and clayey with only occasional developments of thin beds of fine friable sandstone or loose sand. Motorway boreholes associated with the works near Junction 10 record "very stiff hard brown/grey mottled shaley silty clay becoming hard grey shale with some brown mottling below 3.5 m; seen to 6 m depth".

The materials at the surface, as confirmed by the logs of the shallow auger holes enclosed with your letter, are orange-brown and pale grey silts and clayey silts interbedded with thin silty colour-mottled clays with very occasional thin beds of sand rock, and these lithologies occupy a tract of country running from Pound Hill, through Wakeham Green to Copthorne Common and eastward. The proportions of silt to clay to sand might be of the order of 4:2:1, and this is the mix that might be expected for up to 10 metres or so beneath your site. There is only incorrect evidence for this thickness estimate.

Southward of this belt of county is an extensive dip-slope, inclined at 1-2° northward which, in all probability, coincides with a more sandy part of the UTWS succession. There is no evidence for the thickness of this more sandy group of beds, but their topographic expression in the ground west of Crawley Down in the vicinity of Old Rowfant and Coomers Wood is clear. They underlie the silt⁵/clays with subordinate sand that occupy your site, and they are likely to be water-bearing because they are in continuity with the exposed sands that conduct groundwater to the stream south of the golf clubhouse.

- 9 JAN 1989



TQ 33NW 49-53

SOILS LIMITED
NEWTON HOUSE
CROSS ROAD TADWORTH
SURREY KT20 5SR
ENGLAND

TELEPHONE 073 781 4221/2 FAX 073 781 2557

Institute of Geological Sciences,
Keyworth,
Nottingham N12 2GG.

Our ref: J2002.let/GE/D20
5th December 1989

FAO Dr R. Thurrel.

Brookly location
TQ 3220 3945

Dear Sir,

We are undertaking a feasibility study on the soakage potential of both deep borehole soakaways and conventional soakaways at a site off Bokers Arms Road, Copthorne, O.S. grid reference TQ 324 393, see attached location plans.

The 1:63360 sheet of the area indicates the site to be located on the Upper Tunbridge Wells Sand. To date we have excavated five shallow hand auger holes on the site, the logs of which are enclosed.

We have been unable to find time to obtain further information from well records or smaller scale geological maps.

Could you indicate the likely depth to any strata with a good soakage potential so as I can advise my client further.

Should you require any further information please do not hesitate to contact me.

Yours faithfully,

G. Evans.
enc

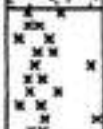
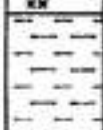
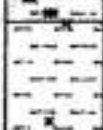
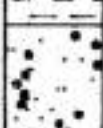
Records in letter
K&A
11.1.89

SITE INVESTIGATION & GEOTECHNICAL CONSULTANCY

REGISTRATION NUMBER 1612073 ENGLAND REGISTERED OFFICE AS ABOVE
DIRECTORS NICOLAS J LAMBERT AND ROBERT B HIGGINSON

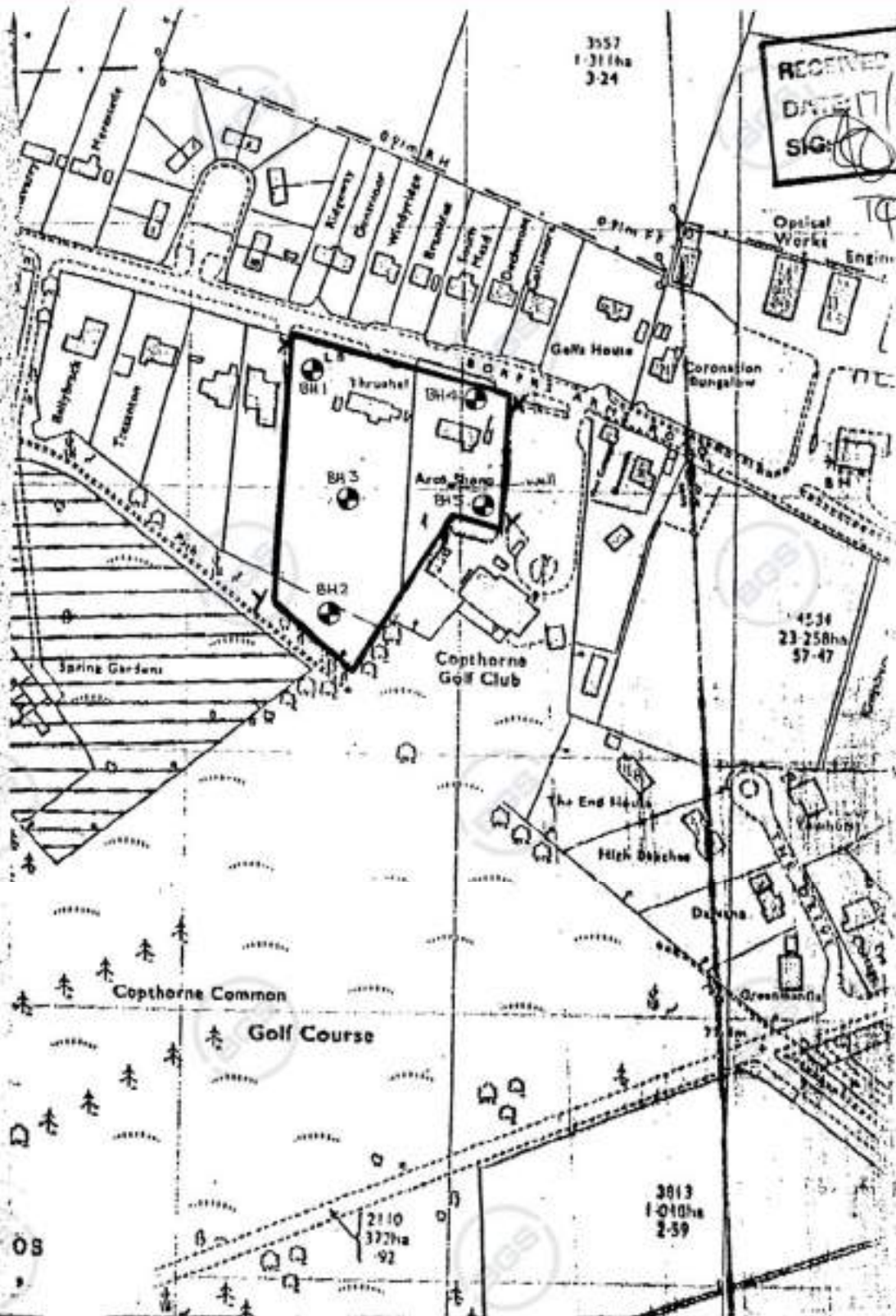
TQ 33NW49-53

LEGEND

MADE GROUND	
SAND	
SILT	
CLAY	
SILTY SAND	
SILTY CLAY	
SLIGHTLY SILTY CLAY	
SAND and GRAVEL	

RECEIVED N.C.D.C.
 DATE 11/01/89
 SFG

TQ 33 NW
 49-53



RECEIVED N.C.D.C. Site Plan Showing Approximate Borehole Locations

DATE: 11/01/89 J1987SA Borer's Arms Road Copthorne Fig 1

SFG TQ 3220 3945

TQ 33 NW





TQ 33NW/44

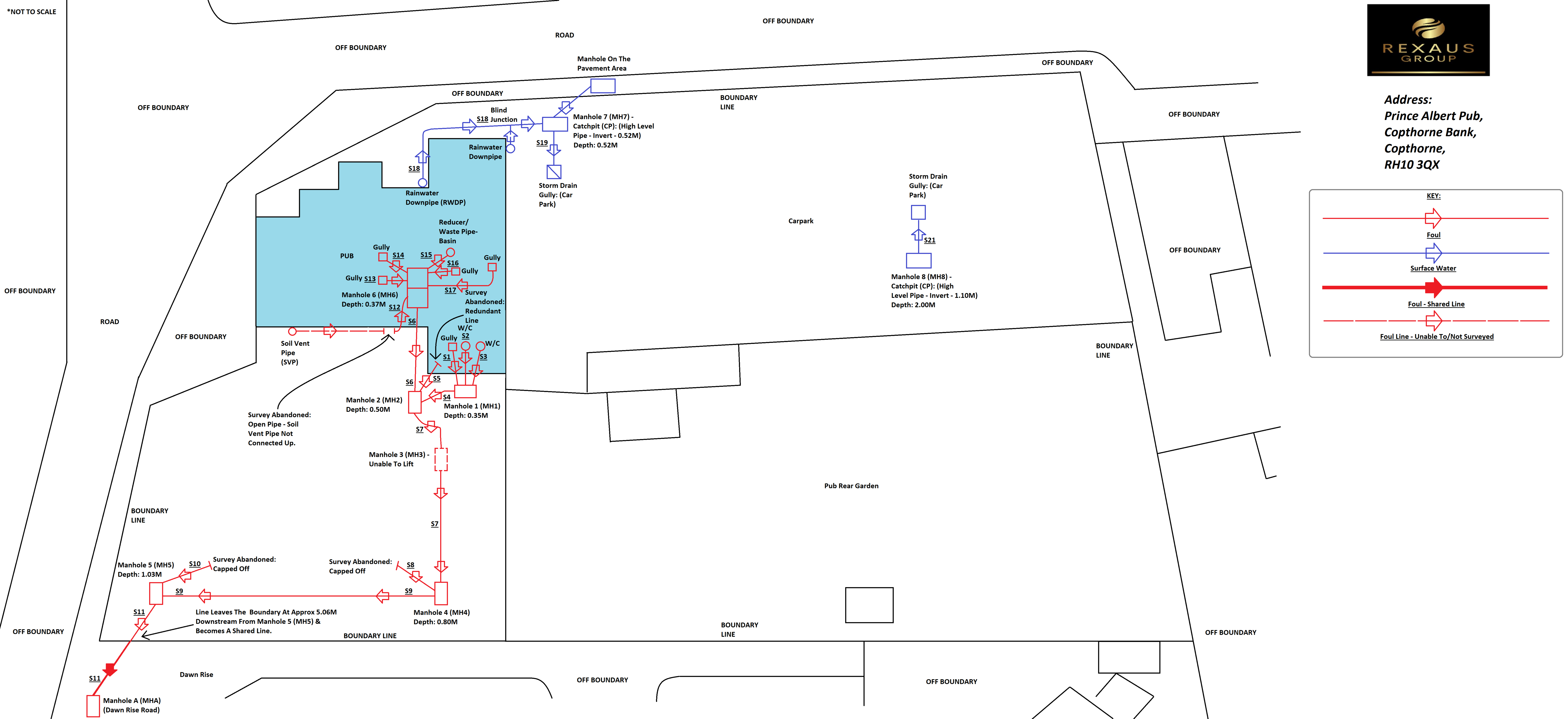
CLIENT West Sussex County Council				BOREHOLE NO 13				
TESTS	SAMPLES			DEPTH m	LEGEND	REDUCED LEVEL m	CO-ORDINATES 531248.1 138809.1 GROUND LEVEL 72.0 m	
	DEPTH m	TYPE	NO.					
A.C.B.C.	0.3 0.3	D	2708 2709	0.4		71.6	Brown topsoil and roots. Very stiff hard brown / grey mottled shaley silty clay, becoming hard grey with some brown mottling SHALE below about 3.5m.	
T.A	1.0	U ₁₀₂	2710					
T	1.7 2.0	D U ₁₀₂	2711 2712					
S ($\frac{23}{15}$)	2.7 3.0	D D	2713 2714					
	3.5	D	2715					
S ($\frac{24}{16}$)	4.0	D	2716					
	4.5	D	2717					
S ($\frac{25}{17}$)	5.0	D	2718	5.0		67.0		
REMARKS 4 HOURS CHISELLING							PLANT PILEON METHOD OF BORING WAYFARER DIAMETER OF BORING PERCUSSION START 150mm. FINISH 31/5/78 31/5/78	
WATER STRUCK Nil STANDING WATER LEVEL 2.3m								
GROUND EXPLORATIONS Ltd.							Report No. 7306	

7.3 **Appendix C – The Existing Drainage CCTV Survey**

*NOT TO SCALE



Address:
Prince Albert Pub,
Cophorne Bank,
Cophorne,
RH10 3QX





Project

Project Name: Prince Albert Pub RH10 3QX
Project Description: General CCTV - Condition Check
Project Number: JSD7518
Project Status: Complete
Project Date: 25/07/2024
Inspection Standard: MSCC4 Sewers & Drainage GB (SRM4 Scoring)



Scoring Summary

Project Name
Prince Albert Pub RH10 3QX

Project Number
JSD7518

Project Date
25/07/2024

Structural Defects

Grade 3: Best practice suggests consideration should be given to repairs in the medium term.

Grade 4: Best practice suggests consideration should be given to repairs to avoid a potential collapse.

Grade 5: Best practice suggests that this pipe is at risk of collapse at any time. Urgent consideration should be given to repairs to avoid total failure.

Section	PLR	Grade	Description
5	REDUNDANTX	4	Broken pipe from 10 o'clock to 3 o'clock
6	MH6X	4	Fracture, multiple at joint from 12 o'clock to 12 o'clock
11	MH5X	4	Multiple defects
17	GULLYX	3	Fracture, circumferential from 10 o'clock to 3 o'clock

Service / Operational Condition

Grade 3: Best practice suggests consideration should be given to maintenance activities in the medium term.

Grade 4: Best practice suggests consideration should be given to maintenance activity to avoid potential blockages.

Grade 5: Best practice suggests that this pipe is at a high risk of backing up or causing flooding.

Section	PLR	Grade	Description
5	REDUNDANTX	5	Settled deposits, hard or compacted, 100% cross-sectional area loss
12	SVPX	3	Settled deposits, hard or compacted, 15% cross-sectional area loss
20	MANHOLEX	3	Multiple defects

Abandoned Surveys

Section	PLR	Description
5	REDUNDANTX	Survey abandoned
8	CAPPED OFFX	Survey abandoned
10	CAPPED OFFX	Survey abandoned
12	SVPX	Survey abandoned

Information

These scoring summaries are based on the SRM grading from the WRC.



Project Pictures

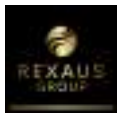
Project Name	Project Number	Project Date
Prince Albert Pub RH10 3QX	JSD7518	25/07/2024



**Defect Grade Description (Section)**

Project Name	Project Number	Project Date
Prince Albert Pub RH10 3QX	JSD7518	25/07/2024

- 1:** Brick: Minor structural defects.
Other: Minor structural defects, i.e. open or displaced joints without additional characteristics.
Acceptable structural condition.
- 2:** Brick: Circumferential cracking. Single longitudinal crack. Surface mortar loss (depth missing < 15 mm). Surface damage - spalling slight (breaking away of small fragments from the surface). Surface damage - wear slight (increased roughness).
Other: Circumferential cracking. Surface damage - spalling slight (breaking away of small fragments from the surface). Surface damage - wear slight (increased roughness).
Minimal collapse likelihood in the short term but potential for further deterioration.
- 3:** Brick: Total mortar loss (depth missing > 50 mm) without other defects. More than one longitudinal crack (at a single location). Multiple cracking. Single bricks displaced. Deformation < 5%, no fracture and only moderate mortar loss. Surface damage - spalling medium (large areas of chipped brick). Surface damage - wear medium (entire surface of brick is missing).
Other: Fracture with no deformation or deformation < 5%. Longitudinal cracking or multiple cracking. Minor loss of level. Severe joint defects i.e. Surface damage - spalling medium. Surface damage - wear medium.
Collapse unlikely in the near future but further deterioration likely
- 4:** Brick: Total mortar loss (depth missing > 50mm) with deformation > 10%; deformation up to 10% and fractured; displaced or hanging brickwork; small number of missing bricks; dropped invert (drop > 20mm); moderate loss of level; surface damage - large spalling (entire surface of brick is missing); surface damage - large wear (entire surface of brick is missing).
Other: Broken; deformation up to 10% and broken; fracture with deformation 5-10%; multiple fractures; serious loss of level; serious joint defects with voids or soil visible (open joint with > 50mm soil or void visible or joint displacement > 25% of diameter); surface damage - entire area of pipe surface is missing or severely worn.
Collapse likely in the foreseeable future
- 5:** Brick: Already collapsed; missing Invert; deformation > 10% and fractured; displaced or hanging brickwork and deformation < 10%; extensive areas of missing brickwork.
Other: Already collapsed; deformation > 10% and broken; extensive areas of pipe fabric missing; fractures with deformation > 10%
Collapsed or collapse imminent



Section Inspection - 14/07/2024 - GULLYX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
1	1	14/07/24	10:34	JSD7518	No Rain Or Snow	No	GULLYX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	GULLY
Road:	Copthorne Bank	Inspected Length:	1.98 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	1.98 m	Downstream Node:	MH1
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.350 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition		Lining Material:	No Lining	

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.35 m MH1 0.00 0.00 0.81 0.81 0.81 1.98 Depth: 0.00 m GULLY							
MH	Start node, manhole, reference: MANHOLE 1 (MH1)	00:00:34	GULLYX_73fdf716-c185-4359-1c9e483a-3e61-4e7c				
WL	Water level, 0% of the vertical dimension	00:00:34	GULLYX_1c9e483a-3e61-4e7c				
CCJ	Crack, circumferential at joint from 6 o'clock to 9 o'clock	00:01:01	GULLYX_b10122b8-1f1f-4b61-53ee-44b1	2			
RFJ	Roots, fine at joint	00:01:01	GULLYX_497c7feb-53ee-44b1	2			
JDM	Joint displaced, medium	00:01:01	GULLYX_be408751-b267-4dcb	1			
GYF	Finish node, gully, reference: GULLY	00:01:10	GULLYX_ea8e3b67-ae80-4672				

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
2	11.0	5.6	11.0	2.0	1	1.0	0.5	1.0	2.0



Section Pictures - 14/07/2024 - GULLYX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
1	Upstream	GULLYX	JSD7518	JSD7518



GULLYX_73fdf716-c185-4359-baea-e2cfaeeb6cce_20240725_090127_925.jpg, 00:00:34, 0.00 m
Start node, manhole, reference: MANHOLE 1 (MH1)



GULLYX_1c9e483a-3e61-4e7c-9347-20a48706a5b3_20240725_090134_214.jpg, 00:00:34, 0.00 m
Water level, 0% of the vertical dimension



GULLYX_b10122b8-1f1f-4b61-85ad-1d1dd839dd63_20240725_090208_797.jpg, 00:01:01, 0.81 m
Crack, circumferential at joint from 6 o'clock to 9 o'clock



GULLYX_497c7feb-53ee-44b1-89dc-872bd2b7a9cf_20240725_090218_006.jpg, 00:01:01, 0.81 m
Roots, fine at joint



Section Pictures - 14/07/2024 - GULLYX

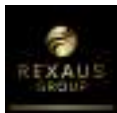
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
1	Upstream	GULLYX	JSD7518	JSD7518



GULLYX_be408751-b267-4dcb-87b2-47920da53df0_20240725_090226_317.jpg, 00:01:01, 0.81 m
Joint displaced, medium



GULLYX_ea8e3b67-ae80-4672-8aa1-6d7696ac026d_20240725_090241_494.jpg, 00:01:10, 1.98 m
Finish node, gully, reference: GULLY



Section Inspection - 14/07/2024 - W/CX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
2	1	14/07/24	10:35	JSD7518	No Rain Or Snow	No	W/CX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	W/C
Road:	Copthorne Bank	Inspected Length:	2.40 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	2.40 m	Downstream Node:	MH1
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.350 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.35 m MH1							
		0.00	MH	Start node, manhole, reference: MANHOLE 1 (MH1)	00:00:20	W_CX_19 5b9a80-04 44-4a50-9	
		0.00	WL	Water level, 0% of the vertical dimension	00:00:20	W_CX_47 1e1211-22 0d-4303-9	
		0.99	CC	Crack, circumferential from 9 o'clock to 3 o'clock	00:00:37	W_CX_b0 b5a396-c8 7b-44df-b5	2
		2.04	LU	Line deviates up: REST BEND	00:00:47	W_CX_96 eda4f4-1b bb-49c3-b	
		2.40	BRF	Finish node, major connection without manhole, reference: W/C	00:01:00	W_CX_d0 6b05e4-68 b7-4fc7-9a	
							W/C Depth: 0.00 m

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	10.0	4.2	10.0	2.0	0	0.0	0.0	0.0	1.0



Section Pictures - 14/07/2024 - W/CX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
2	Upstream	W/CX	JSD7518	JSD7518



W_CX_195b9a80-0444-4a50-909c-826c72029cfe_20240725_090339_479.jpg, 00:00:20, 0.00 m
Start node, manhole, reference: MANHOLE 1 (MH1)



W_CX_471e1211-220d-4303-95f7-17451f9caf6b_20240725_090348_835.jpg, 00:00:20, 0.00 m
Water level, 0% of the vertical dimension



W_CX_b0b5a396-c87b-44df-b524-f6ae86763abc_20240725_090413_863.jpg, 00:00:37, 0.99 m
Crack, circumferential from 9 o'clock to 3 o'clock



W_CX_96eda4f4-1bbb-49c3-bdf5-b6f3418d49e6_20240725_090429_528.jpg, 00:00:47, 2.04 m
Line deviates up, REST BEND

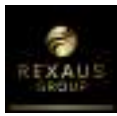


Section Pictures - 14/07/2024 - W/CX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
2	Upstream	W/CX	JSD7518	JSD7518



W_CX_d06b05e4-68b7-4fc7-9a0a-57830fa10748_20240725_090446_718.jpg, 00:01:00, 2.40 m
Finish node, major connection without manhole, reference:
W/C



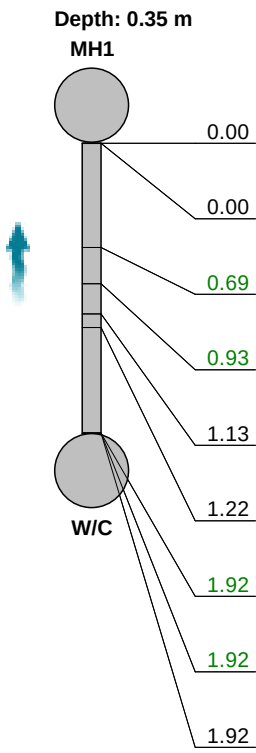
Section Inspection - 14/07/2024 - W/CX

Item No. 3	Insp. No. 1	Date 14/07/24	Time 10:35	Client's Job Ref JSD7518	Weather No Rain Or Snow	Pre Cleaned No	PLR W/CX
Operator Darren		Vehicle LX16 YYL		Camera Push Rod	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	W/C
Road:	Copthorne Bank	Inspected Length:	1.92 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	1.92 m	Downstream Node:	MH1
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.350 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	MH	Start node, manhole, reference: MANHOLE 1 (MH1)	00:00:17	W_CX_aa 28def7-6b 17-4c5f-98	
		0.00	WL	Water level, 0% of the vertical dimension	00:00:17	W_CX_4b cc81ab-b4 30-4f24-b0	
		0.69	CC	Crack, circumferential from 3 o'clock to 8 o'clock	00:00:31	W_CX_6d e99cdf-b4 13-404c-b	2
		0.93	CC	Crack, circumferential from 9 o'clock to 3 o'clock	00:00:34	W_CX_9fa 16cc0-059 8-4ab2-b0	2
		1.13	JDM	Joint displaced, medium	00:00:39	W_CX_18 65770f-a7 a0-438a-9	1
		1.22	LU	Line deviates up: REST BEND	00:00:43	W_CX_e6 7dc308-cd ad-4b4f-8f	
		1.92	CCJ	Crack, circumferential at joint from 12 o'clock to 12 o'clock	00:01:01	W_CX_14 0950e0-f4 b9-4fa9-b1	2
		1.92	SR	Sealing ring intruding, intruding but not hanging from 4 o'clock to 8 o'clock: (ON PAN CONNECTOR)	00:01:01	W_CX_dc 0dc9d8-5d 35-437e-8	2
		1.92	BRF	Finish node, major connection without manhole, reference: W/C	00:01:01	W_CX_cb 032ee2-9a 36-444a-9	

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
4	10.0	16.1	31.0	2.0	1	1.0	0.5	1.0	2.0



Section Pictures - 14/07/2024 - W/CX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
3	Upstream	W/CX	JSD7518	JSD7518



W_CX_aa28def7-6b17-4c5f-98d5-70f28f303849_20240725_090538_420.jpg, 00:00:17, 0.00 m
Start node, manhole, reference: MANHOLE 1 (MH1)



W_CX_4bcc81ab-b430-4f24-b070-c936aa0db768_20240725_090543_965.jpg, 00:00:17, 0.00 m
Water level, 0% of the vertical dimension



W_CX_6de99cdf-b413-404c-b955-bd55d3022d42_20240725_090601_206.jpg, 00:00:31, 0.69 m
Crack, circumferential from 3 o'clock to 8 o'clock



W_CX_9fa16cc0-0598-4ab2-b04a-1bd0e0447c7d_20240725_090647_708.jpg, 00:00:34, 0.93 m
Crack, circumferential from 9 o'clock to 3 o'clock



Section Pictures - 14/07/2024 - W/CX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
3	Upstream	W/CX	JSD7518	JSD7518



W_CX_1865770f-a7a0-438a-95c3-9da68d53db4d_20240725_090701_492.jpg, 00:00:39, 1.13 m
Joint displaced, medium



W_CX_e67dc308-cdad-4b4f-8f22-12bae3fd920a_20240725_090718_061.jpg, 00:00:43, 1.22 m
Line deviates up, REST BEND



W_CX_140950e0-f4b9-4fa9-b1b6-8f3dc2314eb6_20240725_090748_590.jpg, 00:01:01, 1.92 m
Crack, circumferential at joint from 12 o'clock to 12 o'clock



W_CX_dc0dc9d8-5d35-437e-89b2-f803bfeb8fe8_20240725_090809_548.jpg, 00:01:01, 1.92 m
Sealing ring intruding, intruding but not hanging from 4 o'clock to 8 o'clock, (ON PAN CONNECTOR)

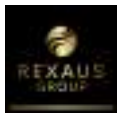


Section Pictures - 14/07/2024 - W/CX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
3	Upstream	W/CX	JSD7518	JSD7518



W_CX_cb032ee2-9a36-444a-92ae-abb9e1a5b721_20240725_090817_052.jpg, 00:01:01, 1.92 m
Finish node, major connection without manhole, reference:
W/C



Section Inspection - 14/07/2024 - MH1X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
4	1	14/07/24	10:35	JSD7518	No Rain Or Snow	No	MH1X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Downstream	Upstream Node:	MH1
Road:	Copthorne Bank	Inspected Length:	1.78 m	Upstream Pipe Depth:	0.350 m
Location:	Property with buildings	Total Length:	1.78 m	Downstream Node:	MH2
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.500 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition		Lining Material:	No Lining	

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
		0.00	MH	Start node, manhole, reference: MANHOLE 1 (MH1)	00:00:20	MH1X_85 29fe95-59 6a-4229-a	
		0.00	WL	Water level, 0% of the vertical dimension	00:00:20	MH1X_e1 9867f0-c5 b3-4e72-b	
		0.18	CC	Crack, circumferential from 6 o'clock to 12 o'clock	00:00:28	MH1X_97 e7b7b8-20 ed-4a65-9	2
		1.78	MHF	Finish node, manhole, reference: MANHOLE 2 (MH2)	00:00:48	MH1X_d3 684f66-d3 3d-414b-8	

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	10.0	5.6	10.0	2.0	0	0.0	0.0	0.0	1.0



Section Pictures - 14/07/2024 - MH1X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
4	Downstream	MH1X	JSD7518	JSD7518



MH1X_8529fe95-596a-4229-ab69-a117d3ef1bdf_20240725_090923_983.jpg, 00:00:20, 0.00 m
Start node, manhole, reference: MANHOLE 1 (MH1)



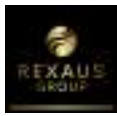
MH1X_e19867f0-c5b3-4e72-bae8-ed380d85fbba_20240725_090929_878.jpg, 00:00:20, 0.00 m
Water level, 0% of the vertical dimension



MH1X_97e7b7b8-20ed-4a65-9726-8e0e94167fbc_20240725_090948_059.jpg, 00:00:28, 0.18 m
Crack, circumferential from 6 o'clock to 12 o'clock



MH1X_d3684f66-d33d-414b-8bac-5e46a45db65e_20240725_091013_389.jpg, 00:00:48, 1.78 m
Finish node, manhole, reference: MANHOLE 2 (MH2)



Section Inspection - 14/07/2024 - REDUNDANTX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
5	1	14/07/24	10:35	JSD7518	No Rain Or Snow	No	REDUNDANTX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	REDUNDANT
Road:	Copthorne Bank	Inspected Length:	1.78 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	1.78 m	Downstream Node:	MH2
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.500 m
Use:	Other	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade																														
Depth: 0.50 m MH2 <table><tr><td>MH</td><td>Start node, manhole, reference: MANHOLE 2 (MH2)</td><td>00:00:25</td><td>REDUNDANTX_b488a6b2-122</td><td></td></tr><tr><td>WL</td><td>Water level, 0% of the vertical dimension</td><td>00:00:25</td><td>REDUNDANTX_e8cb558e-daf</td><td></td></tr><tr><td>JDL</td><td>Joint displaced, large</td><td>00:00:34</td><td>REDUNDANTX_0df9520d-4cc</td><td>1</td></tr><tr><td>B</td><td>Broken pipe from 10 o'clock to 3 o'clock</td><td>00:00:47</td><td>REDUNDANTX_29814b43-2bf</td><td>4</td></tr><tr><td>DEC</td><td>Settled deposits, hard or compacted, 100% cross-sectional area loss</td><td>00:00:56</td><td>REDUNDANTX_716789ca-25e</td><td>5</td></tr><tr><td>SA</td><td>Survey abandoned: S/A - REDUNDANT LINE</td><td>00:00:56</td><td>REDUNDANTX_8ff2f762-c2e0-</td><td></td></tr></table>								MH	Start node, manhole, reference: MANHOLE 2 (MH2)	00:00:25	REDUNDANTX_b488a6b2-122		WL	Water level, 0% of the vertical dimension	00:00:25	REDUNDANTX_e8cb558e-daf		JDL	Joint displaced, large	00:00:34	REDUNDANTX_0df9520d-4cc	1	B	Broken pipe from 10 o'clock to 3 o'clock	00:00:47	REDUNDANTX_29814b43-2bf	4	DEC	Settled deposits, hard or compacted, 100% cross-sectional area loss	00:00:56	REDUNDANTX_716789ca-25e	5	SA	Survey abandoned: S/A - REDUNDANT LINE	00:00:56	REDUNDANTX_8ff2f762-c2e0-	
MH	Start node, manhole, reference: MANHOLE 2 (MH2)	00:00:25	REDUNDANTX_b488a6b2-122																																		
WL	Water level, 0% of the vertical dimension	00:00:25	REDUNDANTX_e8cb558e-daf																																		
JDL	Joint displaced, large	00:00:34	REDUNDANTX_0df9520d-4cc	1																																	
B	Broken pipe from 10 o'clock to 3 o'clock	00:00:47	REDUNDANTX_29814b43-2bf	4																																	
DEC	Settled deposits, hard or compacted, 100% cross-sectional area loss	00:00:56	REDUNDANTX_716789ca-25e	5																																	
SA	Survey abandoned: S/A - REDUNDANT LINE	00:00:56	REDUNDANTX_8ff2f762-c2e0-																																		
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade																												
2	80.0	46.1	82.0	4.0	1	10.0	5.6	10.0	5.0																												



Section Pictures - 14/07/2024 - REDUNDANTX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
5	Upstream	REDUNDANTX	JSD7518	JSD7518



REDUNDANTX_b488a6b2-122d-414b-9b60-81161af3a98e_2
0240725_091111_708.jpg, 00:00:25, 0.00 m
Start node, manhole, reference: MANHOLE 2 (MH2)



REDUNDANTX_e8cb558e-dafc-4f69-9ea3-26872ca7b2b2_20
240725_091117_148.jpg, 00:00:25, 0.00 m
Water level, 0% of the vertical dimension



REDUNDANTX_0df9520d-4cc8-45ca-b8b9-6ea8c8cc1138_20
240725_091130_965.jpg, 00:00:34, 0.49 m
Joint displaced, large



REDUNDANTX_29814b43-2bf2-411c-83a3-7448b2e32080_2
0240725_091151_156.jpg, 00:00:47, 1.66 m
Broken pipe from 10 o'clock to 3 o'clock



Section Pictures - 14/07/2024 - REDUNDANTX

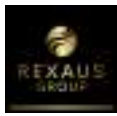
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
5	Upstream	REDUNDANTX	JSD7518	JSD7518



REDUNDANTX_716789ca-25ee-4cc2-8135-a7bc7aff19d4_20
240725_091212_524.jpg, 00:00:56, 1.78 m
Settled deposits, hard or compacted, 100% cross-sectional
area loss



REDUNDANTX_8ff2f762-c2e0-455c-bf22-40405fb29865_202
40725_091223_724.jpg, 00:00:56, 1.78 m
Survey abandoned, S/A - REDUNDANT LINE



Section Inspection - 14/07/2024 - MH6X

Item No. 6	Insp. No. 1	Date 14/07/24	Time 10:35	Client's Job Ref JSD7518	Weather No Rain Or Snow	Pre Cleaned No	PLR MH6X
Operator Darren		Vehicle LX16 YYL		Camera Push Rod	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	MH6
Road:	Copthorne Bank	Inspected Length:	4.19 m	Upstream Pipe Depth:	0.370 m
Location:	Property with buildings	Total Length:	4.19 m	Downstream Node:	MH2
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.500 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition		Lining Material:	No Lining	

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.50 m MH2 </							



Section Pictures - 14/07/2024 - MH6X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
6	Upstream	MH6X	JSD7518	JSD7518



MH6X_83d29d4f-b593-490d-9743-99f8d8e575c1_20240725_091534_732.jpg, 00:00:16, 0.00 m
Start node, manhole, reference: MANHOLE 2 (MH2)



MH6X_0400c42f-8fcd-4804-ab0a-3690c460f887_20240725_091541_154.jpg, 00:00:16, 0.00 m
Water level, 0% of the vertical dimension



MH6X_d2fe370d-baf2-4429-b37e-bc117d0a8e8e_20240725_091559_829.jpg, 00:00:23, 0.10 m
Fracture, circumferential from 11 o'clock to 5 o'clock



MH6X_5b7b7237-2ba3-4cba-86aa-fcb1f22d1ecc_20240725_092232_813.jpg, 00:00:41, 2.51 m
Fracture, multiple at joint from 12 o'clock to 12 o'clock



Section Pictures - 14/07/2024 - MH6X

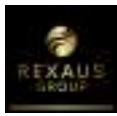
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
6	Upstream	MH6X	JSD7518	JSD7518



MH6X_522ba9e2-59fb-4d77-8b4f-20a3a199147f_20240725_092301_286.jpg, 00:00:56, 2.75 m
Junction at 9 o'clock, diameter: 100mm, UNKNOWN



MH6X_27aff4e3-af3d-432c-bcaa-89feb1b6036e_20240725_092322_445.jpg, 00:01:15, 4.19 m
Finish node, manhole, reference: MANHOLE 6 (MH6)



Section Inspection - 14/07/2024 - MH2X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
7	1	14/07/24	10:35	JSD7518	No Rain Or Snow	No	MH2X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Downstream	Upstream Node:	MH2
Road:	Copthorne Bank	Inspected Length:	17.91 m	Upstream Pipe Depth:	0.500 m
Location:	Property with buildings	Total Length:	17.91 m	Downstream Node:	MH4
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.800 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition		Lining Material:	No Lining	

Comments:

Recommendations:

Scale:	1:156	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.50 m							
	MH2	0.00	MH	Start node, manhole, reference: MANHOLE 2 (MH2)	00:00:28	MH2X_c0a f95fe-3efa- 4666-b634	
		0.00	WL	Water level, 10% of the vertical dimension	00:00:28	MH2X_71 184cee-82 74-417a-b	
		0.02	CC	Crack, circumferential from 10 o'clock to 2 o'clock	00:00:35	MH2X_71 538d31-16 45-4ac7-b	2
		0.30	JDM	Joint displaced, medium	00:00:56	MH2X_9e 3848a9-2a ef-4403-9d	1
		0.30	MCPVC	Material changes to polyvinyl chloride	00:00:56	MH2X_b9 1b3937-c3 7a-452d-9	
		0.30	SC	Size changes, new size(s), 110mm high	00:00:56	MH2X_2cc dcd70-8b8 8-4cef-882	
		0.32	LL	Line deviates left	00:00:58	MH2X_e0 93e4d7-d5 68-40a8-a	
		1.35	WL	Water level, 10% of the vertical dimension	00:01:07	MH2X_f65 f7b8b-e9e b-42e2-bd	
		1.78	WL	Water level, 5% of the vertical dimension	00:01:11	MH2X_63 ec8ede-21 57-460a-b	
		2.14	WL	Water level, 0% of the vertical dimension	00:01:12	MH2X_d8 971b82-46 f9-414d-a3	
		5.68	REM	General remark: **ENTERS MANHOLE 3 (MH3) - UNABLE TO LIFT	00:01:29	MH2X_b5 5e55f8-9e 05-4db8-b	
		5.93	WL	Water level, 5% of the vertical dimension	00:01:46	MH2X_2c7 dd602-37a 2-429a-a2	
		6.96	WL	Water level, 0% of the vertical dimension	00:01:50	MH2X_88 b39d42-4c 30-4654-8	
		17.44	LR	Line deviates right	00:02:20	MH2X_ecb c01d4-540 1-430c-a4	
	MH4	17.91	MHF	Finish node, manhole, reference: MANHOLE 4 (MH4)	00:02:27	MH2X_acd d8251-032 e-4fda-a1d	
	Depth: 0.80 m						

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
2	10.0	0.6	11.0	2.0	0	0.0	0.0	0.0	1.0



Section Pictures - 14/07/2024 - MH2X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
7	Downstream	MH2X	JSD7518	JSD7518



MH2X_c0af95fe-3efa-4666-b634-8d5993f92b03_20240725_092442_596.jpg, 00:00:28, 0.00 m
Start node, manhole, reference: MANHOLE 2 (MH2)



MH2X_71184cee-8274-417a-b5b5-87d394df23a5_20240725_092449_717.jpg, 00:00:28, 0.00 m
Water level, 10% of the vertical dimension



MH2X_71538d31-1645-4ac7-b3ba-3a632e838191_20240725_092525_584.jpg, 00:00:35, 0.02 m
Crack, circumferential from 10 o'clock to 2 o'clock



MH2X_9e3848a9-2aef-4403-9dc0-06a55e9cccf0_20240725_092609_653.jpg, 00:00:56, 0.30 m
Joint displaced, medium



Section Pictures - 14/07/2024 - MH2X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
7	Downstream	MH2X	JSD7518	JSD7518



MH2X_b91b3937-c37a-452d-9c54-7c35945f681d_20240725_092617_600.jpg, 00:00:56, 0.30 m
Material changes to polyvinyl chloride



MH2X_2ccdc70-8b88-4cef-8827-dddf496b7eb6_20240725_092644_239.jpg, 00:00:56, 0.30 m
Size changes, new size(s), 110mm high



MH2X_e093e4d7-d568-40a8-a048-f18372491e2a_20240725_092700_602.jpg, 00:00:58, 0.32 m
Line deviates left



MH2X_f65f7b8b-e9eb-42e2-bd0d-13d5b91a7f09_20240725_093042_603.jpg, 00:01:07, 1.35 m
Water level, 10% of the vertical dimension



Section Pictures - 14/07/2024 - MH2X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
7	Downstream	MH2X	JSD7518	JSD7518



MH2X_63ec8ede-2157-460a-bba6-3a2739af30ac_20240725_093101_292.jpg, 00:01:11, 1.78 m
Water level, 5% of the vertical dimension



MH2X_d8971b82-46f9-414d-a365-ee734a64b108_20240725_093111_187.jpg, 00:01:12, 2.14 m
Water level, 0% of the vertical dimension



MH2X_b55e55f8-9e05-4db8-b212-fbb573044cff_20240725_093147_156.jpg, 00:01:29, 5.68 m
General remark, **ENTERS MANHOLE 3 (MH3) - UNABLE TO LIFT



MH2X_2c7dd602-37a2-429a-a2ab-0279f14f5071_20240725_093210_012.jpg, 00:01:46, 5.93 m
Water level, 5% of the vertical dimension



Section Pictures - 14/07/2024 - MH2X

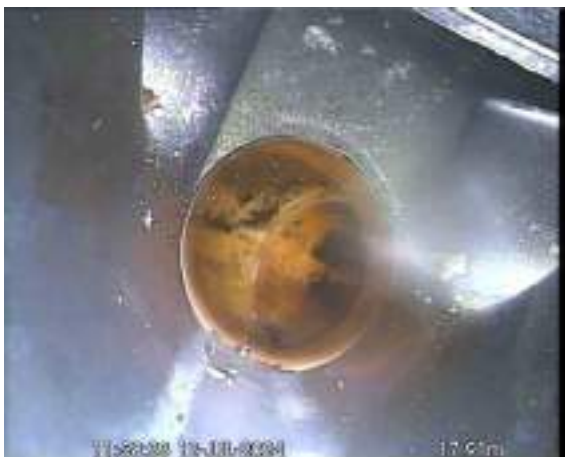
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
7	Downstream	MH2X	JSD7518	JSD7518



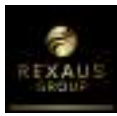
MH2X_88b39d42-4c30-4654-8841-754422e4dc7a_20240725_093224_970.jpg, 00:01:50, 6.96 m
Water level, 0% of the vertical dimension



MH2X_ecbc01d4-5401-430c-a4cc-4e8128ef4209_20240725_093238_853.jpg, 00:02:20, 17.44 m
Line deviates right



MH2X_acdd8251-032e-4fda-a1d3-9a0cfadee0a2_20240725_093304_170.jpg, 00:02:27, 17.91 m
Finish node, manhole, reference: MANHOLE 4 (MH4)



Section Inspection - 14/07/2024 - CAPPED OFFX

Item No. 8	Insp. No. 1	Date 14/07/24	Time 10:36	Client's Job Ref JSD7518	Weather No Rain Or Snow	Pre Cleaned No	PLR CAPPED OFFX
Operator Darren		Vehicle LX16 YYL		Camera Push Rod	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	CAPPED OFF
Road:	Copthorne Bank	Inspected Length:	2.99 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	2.99 m	Downstream Node:	MH4
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.800 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	110 mm		
Flow Control:	No flow control	Pipe Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition		Lining Material:	No Lining	

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.80 m MH4							
		0.00	MH	Start node, manhole, reference: MANHOLE 4 (MH4)	00:00:39	CAPPED OFFX_df637ed9-d0c	
		0.00	WL	Water level, 5% of the vertical dimension	00:00:39	CAPPED OFFX_93c2d75d-b2f	
		0.02	LL	Line deviates left	00:00:43	CAPPED OFFX_2c61c11e-4c0	
		1.09	WL	Water level, 5% of the vertical dimension	00:00:52	CAPPED OFFX_67eeaf64-043	
		2.10	WL	Water level, 0% of the vertical dimension	00:00:57	CAPPED OFFX_68f25f6f-dbc4	
		2.99	SA	Survey abandoned: S/A - CAPPED OFF	00:01:03	CAPPED OFFX_dc97001a-207	

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



Section Pictures - 14/07/2024 - CAPPED OFFX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
8	Upstream	CAPPED OFFX	JSD7518	JSD7518



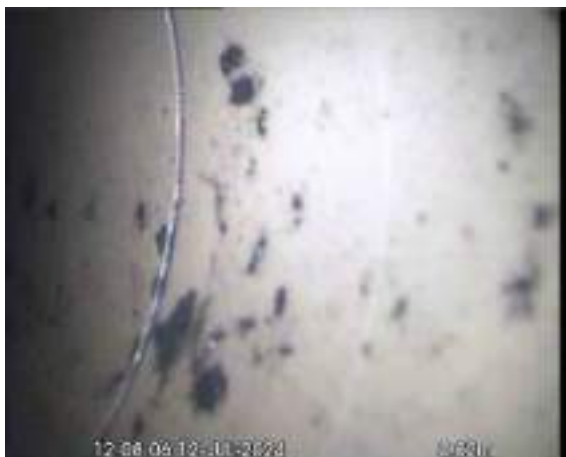
CAPPED

OFFX_df637ed9-d0c0-475d-a9b9-2d9c6523196d_20240725_093402_548.jpg, 00:00:39, 0.00 m
Start node, manhole, reference: MANHOLE 4 (MH4)



CAPPED

OFFX_93c2d75d-b2fd-43d0-9440-17bfa1c0c76e_20240725_093409_690.jpg, 00:00:39, 0.00 m
Water level, 5% of the vertical dimension



CAPPED

OFFX_2c61c11e-4c06-4ebc-870a-c78b293b4c99_20240725_093434_293.jpg, 00:00:43, 0.02 m
Line deviates left



CAPPED

OFFX_67eeaf64-0435-43b5-8da3-b5a094747b11_20240725_093450_860.jpg, 00:00:52, 1.09 m
Water level, 5% of the vertical dimension



Section Pictures - 14/07/2024 - CAPPED OFFX

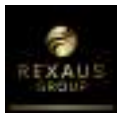
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
8	Upstream	CAPPED OFFX	JSD7518	JSD7518



CAPPED
OFFX_68f25f6f-dbc4-4bd4-8f1f-8c3b8a9531e7_20240725_09
3504_475.jpg, 00:00:57, 2.10 m
Water level, 0% of the vertical dimension



CAPPED
OFFX_dc97001a-2078-4b93-b9a2-163b14f502db_20240725_
093522_395.jpg, 00:01:03, 2.99 m
Survey abandoned, S/A - CAPPED OFF



Section Inspection - 14/07/2024 - MH4X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
9	1	14/07/24	10:36	JSD7518	No Rain Or Snow	No	MH4X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Downstream	Upstream Node:	MH4
Road:	Copthorne Bank	Inspected Length:	16.17 m	Upstream Pipe Depth:	0.800 m
Location:	Property with buildings	Total Length:	16.17 m	Downstream Node:	MH5
Surface Type:		Joint Length:		Downstream Pipe Depth:	1.030 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	110 mm		
Flow Control:	No flow control	Pipe Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition		Lining Material:	No Lining	

Comments:

Recommendations:

Scale:	1:140	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.80 m MH4 0.00 MH Start node, manhole, reference: MANHOLE 4 (MH4) 00:00:26 MH4X_55 d14c4d-fd be-480a-a 0.00 WL Water level, 0% of the vertical dimension 00:00:26 MH4X_b1 5f3203-8b ce-4b3c-a 0.06 LR Line deviates right 00:00:42 MH4X_04 7d0d34-fc 87-401f-a4 </							



Section Pictures - 14/07/2024 - MH4X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
9	Downstream	MH4X	JSD7518	JSD7518



MH4X_55d14c4d-fdbe-480a-a8d1-3ec7317d0af8_20240725_093843_347.jpg, 00:00:26, 0.00 m
Start node, manhole, reference: MANHOLE 4 (MH4)



MH4X_b15f3203-8bce-4b3c-aea4-e017105a17a3_20240725_093849_179.jpg, 00:00:26, 0.00 m
Water level, 0% of the vertical dimension



MH4X_047d0d34-fc87-401f-a4c3-3433783703f4_20240725_093918_923.jpg, 00:00:42, 0.06 m
Line deviates right



MH4X_9d8f4504-f323-432b-9698-14d451cd618f_20240725_094016_482.jpg, 00:01:29, 15.81 m
Line deviates left

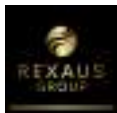


Section Pictures - 14/07/2024 - MH4X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
9	Downstream	MH4X	JSD7518	JSD7518



MH4X_344678f6-6b66-4520-95ce-16ba1b185cdf_20240725_094041_771.jpg, 00:01:39, 16.17 m
Finish node, manhole, reference: MANHOLE 5 (MH5)



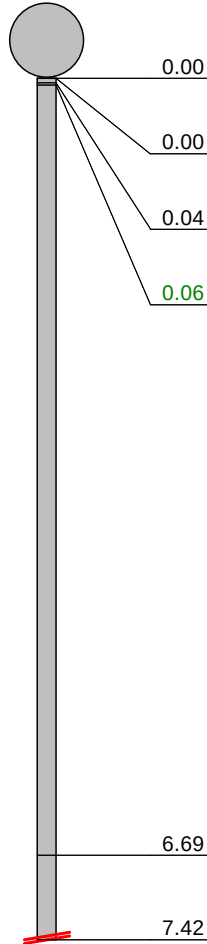
Section Inspection - 14/07/2024 - CAPPED OFFX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
10	1	14/07/24	10:36	JSD7518	No Rain Or Snow	No	CAPPED OFFX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	CAPPED OFF
Road:	Copthorne Bank	Inspected Length:	7.42 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	7.42 m	Downstream Node:	MH5
Surface Type:		Joint Length:		Downstream Pipe Depth:	1.030 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	110 mm		
Flow Control:	No flow control	Pipe Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition		Lining Material:	No Lining	

Comments:

Recommendations:

Scale:	1:65	Position [m]	Code	Observation	MPEG	Photo	Grade		
Depth: 1.03 m MH5 									
	0.00	MH	Start node, manhole, reference: MANHOLE 5 (MH5)		00:00:37	CAPPED OFFX_6c3 871bb-4fd			
	0.00	WL	Water level, 0% of the vertical dimension		00:00:37	CAPPED OFFX_0b2 1e724-26b			
	0.04	LR	Line deviates right		00:00:41	CAPPED OFFX_808 32dd5-8ef			
	0.06	DES	Settled deposits, fine, 5% cross-sectional area loss		00:00:42	CAPPED OFFX_962 b07f7-60c	2		
	6.69	LU	Line deviates up: REST BEND		00:02:08	CAPPED OFFX_7b6 014f4-cab			
	7.42	SA	Survey abandoned: S/A - CAPPED OFF		00:02:19	CAPPED OFFX_b9c 4dbb3-d9c			
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	1	1.0	0.1	1.0	2.0



Section Pictures - 14/07/2024 - CAPPED OFFX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
10	Upstream	CAPPED OFFX	JSD7518	JSD7518



CAPPED
OFFX_6c3871bb-4fd5-4855-bbb0-61d06810d0d7_20240725_094152_058.jpg, 00:00:37, 0.00 m
Start node, manhole, reference: MANHOLE 5 (MH5)



CAPPED
OFFX_0b21e724-26bb-4d91-bb97-1640846d3795_20240725_094202_515.jpg, 00:00:37, 0.00 m
Water level, 0% of the vertical dimension



CAPPED
OFFX_80832dd5-8ef6-4f5d-89c0-115ac1b2d810_20240725_094214_228.jpg, 00:00:41, 0.04 m
Line deviates right



CAPPED
OFFX_962b07f7-60c1-43c4-ba8a-1193030da8e6_20240725_094225_233.jpg, 00:00:42, 0.06 m
Settled deposits, fine, 5% cross-sectional area loss



Section Pictures - 14/07/2024 - CAPPED OFFX

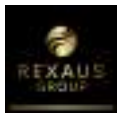
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
10	Upstream	CAPPED OFFX	JSD7518	JSD7518



CAPPED
OFFX_7b6014f4-cab8-4f12-9a9c-6eb32ef0d8f9_20240725_09
4246_571.jpg, 00:02:08, 6.69 m
Line deviates up, REST BEND



CAPPED
OFFX_b9c4dbb3-d9c6-4d09-9f4f-e40713d124b7_20240725_0
94300_939.jpg, 00:02:19, 7.42 m
Survey abandoned, S/A - CAPPED OFF



Section Inspection - 14/07/2024 - MH5X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
11	1	14/07/24	10:36	JSD7518	No Rain Or Snow	No	MH5X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Downstream	Upstream Node:	MH5
Road:	Copthorne Bank	Inspected Length:	17.63 m	Upstream Pipe Depth:	1.030 m
Location:	Property with buildings	Total Length:	17.63 m	Downstream Node:	MHA
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.000 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	110 mm		
Flow Control:	No flow control	Pipe Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition		Lining Material:	No Lining	

Comments:

Recommendations:

Scale:	1:153	Position [m]	Code	Observation	MPEG	Photo	Grade
		0.00	MH	Start node, manhole, reference: MANHOLE 5 (MH5)	00:00:29	MH5X_bd 5530c6-c8 9a-41b5-b	
		0.00	WL	Water level, 0% of the vertical dimension	00:00:29	MH5X_04 a04489-41 46-4ad3-b	
		0.15	JDL	Joint displaced, large	00:00:41	MH5X_a6 7b5490-9c 73-459b-9	1
		0.17	MCVC	Material changes to vitrified clay	00:00:44	MH5X_f29 43572-dae a-4cc0-b6	
		0.17	SC	Size changes, new size(s), 100mm high	00:00:46	MH5X_e1 86920a-c7 2e-48a4-9	
		4.11	JDM	Joint displaced, medium	00:01:24	MH5X_05 9f6707-27 78-4d9f-99	1
		5.06	REM	General remark: **BOUNDARY POINT**	00:01:36	MH5X_7a 719423-7b 10-4cb5-9	
		5.12	RFJ	Roots, fine at joint	00:01:44	MH5X_10 9efa46-16 4d-464f-96	2
		7.59	DEG	Attached deposits, grease from 12 o'clock to 5 o'clock, 5% cross-sectional area loss	00:01:51	MH5X_a2 5c901e-43 1c-4751-af	2
		14.54	H	Hole in drain or sewer at 4 o'clock	00:02:15	MH5X_b9 529b71-08 d6-4df3-a0	4
		17.33	FM	Fracture, multiple from 12 o'clock to 12 o'clock	00:02:23	MH5X_24 5e56e0-af 60-4cc5-9	4
		17.63	MHF	Finish node, manhole, reference: MANHOLE A (MHA): (DAWN RISE ROAD)	00:02:35	MH5X_14 be63c4-18 44-4b3b-8	

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
4	80.0	9.2	163.0	4.0	2	1.0	0.1	2.0	2.0



Section Pictures - 14/07/2024 - MH5X

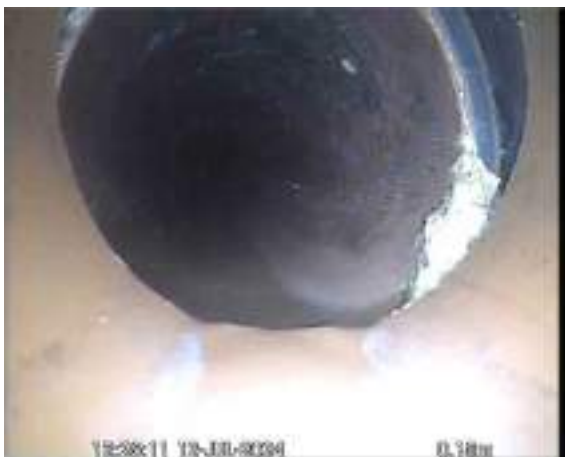
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
11	Downstream	MH5X	JSD7518	JSD7518



MH5X_bd5530c6-c89a-41b5-b33d-6c50f69b0280_20240725_094513_170.jpg, 00:00:29, 0.00 m
Start node, manhole, reference: MANHOLE 5 (MH5)



MH5X_04a04489-4146-4ad3-b2c5-d7ff96abe544_20240725_094519_970.jpg, 00:00:29, 0.00 m
Water level, 0% of the vertical dimension



MH5X_a67b5490-9c73-459b-9229-8a05c12ea946_20240725_094558_658.jpg, 00:00:41, 0.15 m
Joint displaced, large



MH5X_f2943572-daea-4cc0-b643-02d9ae5cd5ee_20240725_094641_129.jpg, 00:00:44, 0.17 m
Material changes to vitrified clay



Section Pictures - 14/07/2024 - MH5X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
11	Downstream	MH5X	JSD7518	JSD7518



MH5X_e186920a-c72e-48a4-9a6e-cd2a8489a0ab_20240725_094708_970.jpg, 00:00:46, 0.17 m
Size changes, new size(s), 100mm high



MH5X_059f6707-2778-4d9f-998a-3e91e87c5d40_20240725_094727_709.jpg, 00:01:24, 4.11 m
Joint displaced, medium



MH5X_7a719423-7b10-4cb5-9e10-35a6d7d11f95_20240725_094749_245.jpg, 00:01:36, 5.06 m
General remark, **BOUNDARY POINT**



MH5X_109efa46-164d-464f-96dd-18bcad47188e_20240725_094816_811.jpg, 00:01:44, 5.12 m
Roots, fine at joint



Section Pictures - 14/07/2024 - MH5X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
11	Downstream	MH5X	JSD7518	JSD7518



MH5X_a25c901e-431c-4751-af44-e6286baac714_20240725_094843_842.jpg, 00:01:51, 7.59 m
Attached deposits, grease from 12 o'clock to 5 o'clock, 5% cross-sectional area loss



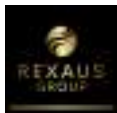
MH5X_b9529b71-08d6-4df3-a0ef-83327201d51f_20240725_094926_931.jpg, 00:02:15, 14.54 m
Hole in drain or sewer at 4 o'clock



MH5X_245e56e0-af60-4cc5-9251-72fe8d11e2b2_20240725_094946_179.jpg, 00:02:23, 17.33 m
Fracture, multiple from 12 o'clock to 12 o'clock



MH5X_14be63c4-1844-4b3b-8d9d-02ec269f888d_20240725_095012_235.jpg, 00:02:35, 17.63 m
Finish node, manhole, reference: MANHOLE A (MHA), (DAWN RISE ROAD)



Section Inspection - 14/07/2024 - SVPX

Item No. 12	Insp. No. 1	Date 14/07/24	Time 10:37	Client's Job Ref JSD7518	Weather No Rain Or Snow	Pre Cleaned No	PLR SVPX
Operator Darren		Vehicle LX16 YYL		Camera Push Rod	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	SVP
Road:	Copthorne Bank	Inspected Length:	1.60 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	1.60 m	Downstream Node:	MH6
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.370 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
		0.00	MH	Start node, manhole, reference: MANHOLE 6 (MH6)	00:00:28	SVPX_103 2148c-1af a-44ba-b9	
		0.00	WL	Water level, 0% of the vertical dimension	00:00:28	SVPX_74d 44b96-72d a-442c-86	
		0.81	JDM	Joint displaced, medium	00:00:43	SVPX_612 6ff3a-8feb- 42cf-b4a8-	1
		0.81	MCPVC	Material changes to polyvinyl chloride	00:00:43	SVPX_6dc 84003-04b a-4f4b-a2b	
		0.81	SC	Size changes, new size(s), 110mm high	00:00:43	SVPX_376 43050-054 d-409b-a0	
		0.91	LL	Line deviates left	00:00:49	SVPX_1a7 c91c5-781 1-4395-aa	
		1.36	DEC	Settled deposits, hard or compacted, 15% cross-sectional area loss	00:01:07	SVPX_b8b 7fa38-33f3 -45aa-a30	3
		1.36	LR	Line deviates right	00:01:07	SVPX_7b6 e8666-8fb 9-44b5-8e	
		1.44	CUZ	Loss of vision, other: DEBRIS	00:01:10	SVPX_4b4 4048b-62f a-45c3-ad	
		1.60	SA	Survey abandoned: S/A - OPEN PIPE - SOIL VENT PIPE NOT CONNECTED UP	00:01:28	SVPX_9d8 768b1-86d d-4d7b-b1	

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	1.0	0.6	1.0	1.0	1	2.0	1.3	2.0	3.0



Section Pictures - 14/07/2024 - SVPX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
12	Upstream	SVPX	JSD7518	JSD7518



SVPX_1032148c-1afa-44ba-b9d4-c41939b75ca1_20240725_095215_787.jpg, 00:00:28, 0.00 m
Start node, manhole, reference: MANHOLE 6 (MH6)



SVPX_74d44b96-72da-442c-8602-c87605640ac0_20240725_095222_464.jpg, 00:00:28, 0.00 m
Water level, 0% of the vertical dimension



SVPX_6126ff3a-8feb-42cf-b4a8-289a35627abd_20240725_095243_344.jpg, 00:00:43, 0.81 m
Joint displaced, medium



SVPX_6dc84003-04ba-4f4b-a2bc-ade636d85d44_20240725_095258_153.jpg, 00:00:43, 0.81 m
Material changes to polyvinyl chloride



Section Pictures - 14/07/2024 - SVPX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
12	Upstream	SVPX	JSD7518	JSD7518



SVPX_37643050-054d-409b-a034-ef1a40900360_20240725_095307_792.jpg, 00:00:43, 0.81 m
Size changes, new size(s), 110mm high



SVPX_1a7c91c5-7811-4395-aac0-3828833b4982_20240725_095342_984.jpg, 00:00:49, 0.91 m
Line deviates left



SVPX_b8b7fa38-33f3-45aa-a30b-8dfd9bcbd768_20240725_095417_154.jpg, 00:01:07, 1.36 m
Settled deposits, hard or compacted, 15% cross-sectional area loss



SVPX_7b6e8666-8fb9-44b5-8e1a-aafe5937a5df_20240725_095424_962.jpg, 00:01:07, 1.36 m
Line deviates right



Section Pictures - 14/07/2024 - SVPX

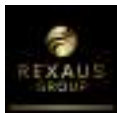
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
12	Upstream	SVPX	JSD7518	JSD7518



SVPX_4b44048b-62fa-45c3-ad0b-12c365183034_20240725_095440_985.jpg, 00:01:10, 1.44 m
Loss of vision, other, DEBRIS



SVPX_9d8768b1-86dd-4d7b-b136-613c52434c58_20240725_095530_137.jpg, 00:01:28, 1.60 m
Survey abandoned, S/A - OPEN PIPE - SOIL VENT PIPE NOT CONNECTED UP



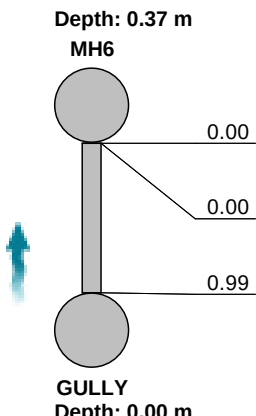
Section Inspection - 14/07/2024 - GULLYX

Item No. 13	Insp. No. 1	Date 14/07/24	Time 10:37	Client's Job Ref JSD7518	Weather No Rain Or Snow	Pre Cleaned No	PLR GULLYX
Operator Darren		Vehicle LX16 YYL		Camera Push Rod	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	GULLY
Road:	Copthorne Bank	Inspected Length:	0.99 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	0.99 m	Downstream Node:	MH6
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.370 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	MH	Start node, manhole, reference: MANHOLE 6 (MH6)	00:00:22	GULLYX_3ca80480-fda7-476d-	
		0.00	WL	Water level, 0% of the vertical dimension	00:00:22	GULLYX_b46c2eaf-a3f2-43f6-	
		0.99	GYF	Finish node, gully, reference: GULLY	00:00:39	GULLYX_6d63e6bc-a192-46ee	

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



Section Pictures - 14/07/2024 - GULLYX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
13	Upstream	GULLYX	JSD7518	JSD7518



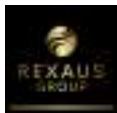
GULLYX_3ca80480-fda7-476d-bdd4-121782959120_20240725_095710_019.jpg, 00:00:22, 0.00 m
Start node, manhole, reference: MANHOLE 6 (MH6)



GULLYX_b46c2eaf-a3f2-43f6-8702-b889b9e7cbee_20240725_095719_471.jpg, 00:00:22, 0.00 m
Water level, 0% of the vertical dimension



GULLYX_6d63e6bc-a192-46ee-bb28-5b54a1a3e0d8_20240725_095748_794.jpg, 00:00:39, 0.99 m
Finish node, gully, reference: GULLY



Section Inspection - 14/07/2024 - GULLYX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
14	1	14/07/24	10:37	JSD7518	No Rain Or Snow	No	GULLYX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	GULLY
Road:	Copthorne Bank	Inspected Length:	1.03 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	1.03 m	Downstream Node:	MH6
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.370 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition		Lining Material:	No Lining	

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.37 m MH6							
		0.00	MH	Start node, manhole, reference: MANHOLE 6 (MH6)	00:00:12	GULLYX_4ba6a257-bb96-4b74	
		0.00	WL	Water level, 0% of the vertical dimension	00:00:12	GULLYX_94a6fb12-c47d-431c	
		0.97	CLJ	Crack, longitudinal at joint at 2 o'clock	00:00:24	GULLYX_36dc49d5-3dc1-4da4	2
		1.03	GYF	Finish node, gully, reference: GULLY	00:00:28	GULLYX_c67647b2-92e2-40c2	
GULLY Depth: 0.00 m							

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	10.0	9.7	10.0	2.0	0	0.0	0.0	0.0	1.0



Section Pictures - 14/07/2024 - GULLYX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
14	Upstream	GULLYX	JSD7518	JSD7518



GULLYX_4ba6a257-bb96-4b74-8e54-361352db541e_20240725_095949_671.jpg, 00:00:12, 0.00 m
Start node, manhole, reference: MANHOLE 6 (MH6)



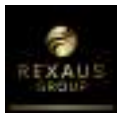
GULLYX_94a6fb12-c47d-431c-aea1-e051d22a5117_20240725_095957_784.jpg, 00:00:12, 0.00 m
Water level, 0% of the vertical dimension



GULLYX_36dc49d5-3dc1-4da4-862e-24eaa0b586df_20240725_100014_047.jpg, 00:00:24, 0.97 m
Crack, longitudinal at joint at 2 o'clock



GULLYX_c67647b2-92e2-40c2-a9d7-fb213594d517_20240725_100025_314.jpg, 00:00:28, 1.03 m
Finish node, gully, reference: GULLY



Section Inspection - 14/07/2024 - BASINX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
15	1	14/07/24	10:37	JSD7518	No Rain Or Snow	No	BASINX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	BASIN
Road:	Copthorne Bank	Inspected Length:	1.33 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	1.33 m	Downstream Node:	MH6
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.370 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.37 m MH6							
	0.00	MH	Start node, manhole, reference: MANHOLE 6 (MH6)	00:00:16	BASINX_0	6fc371f-58	
	0.00	WL	Water level, 0% of the vertical dimension	00:00:17	BASINX_b	ec-4fc7-ae	
	1.01	LU	Line deviates up: REST BEND	00:00:28	BASINX_4	5442afa-9	
	1.33	BRF	Finish node, major connection without manhole, reference: REDUCER/ WASTE PIPE - BASIN	00:00:40	BASINX_9	474-4cc7-	
BASIN Depth: 0.00 m							

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



Section Pictures - 14/07/2024 - BASINX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
15	Upstream	BASINX	JSD7518	JSD7518



BASINX_06fc371f-58ec-4fc7-ae67-9aa21aea31b2_20240725_100939_050.jpg, 00:00:16, 0.00 m
Start node, manhole, reference: MANHOLE 6 (MH6)



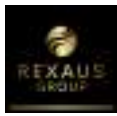
BASINX_b5442afa-9474-4cc7-a6b7-a40489fc90f7_20240725_100946_511.jpg, 00:00:17, 0.00 m
Water level, 0% of the vertical dimension



BASINX_40e5934f-6751-4c2f-8103-7d817af70ed0_20240725_101004_289.jpg, 00:00:28, 1.01 m
Line deviates up, REST BEND



BASINX_9248be23-d4a8-4061-a653-8e507cdcbef7b_20240725_101033_921.jpg, 00:00:40, 1.33 m
Finish node, major connection without manhole, reference: REDUCER/ WASTE PIPE - BASIN



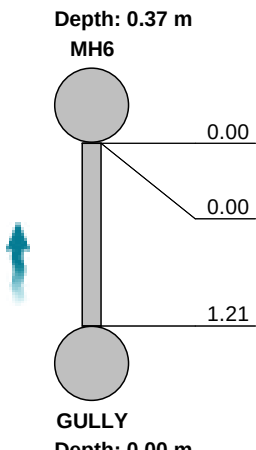
Section Inspection - 14/07/2024 - GULLYX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
16	1	14/07/24	10:37	JSD7518	No Rain Or Snow	No	GULLYX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	GULLY
Road:	Copthorne Bank	Inspected Length:	1.21 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	1.21 m	Downstream Node:	MH6
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.370 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
Depth: 0.37 m MH6							
	0.00	MH	Start node, manhole, reference: MANHOLE 6 (MH6)	00:00:17	GULLYX_		
	0.00	WL	Water level, 0% of the vertical dimension	00:00:17	GULLYX_		
	1.21	GYF	Finish node, gully, reference: GULLY	00:00:31	GULLYX_		
GULLY Depth: 0.00 m							

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



Section Pictures - 14/07/2024 - GULLYX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
16	Upstream	GULLYX	JSD7518	JSD7518



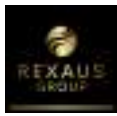
GULLYX_d2c349c2-d30e-442d-af5f-1d65018bdba0_20240725_101122_416.jpg, 00:00:17, 0.00 m
Start node, manhole, reference: MANHOLE 6 (MH6)



GULLYX_4edcba58-4532-41ba-84a5-e89377a1176d_20240725_101128_712.jpg, 00:00:17, 0.00 m
Water level, 0% of the vertical dimension



GULLYX_0146e961-7b26-494e-83c0-d047bf27c81e_20240725_101142_978.jpg, 00:00:31, 1.21 m
Finish node, gully, reference: GULLY



Section Inspection - 14/07/2024 - GULLYX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
17	1	14/07/24	10:37	JSD7518	No Rain Or Snow	No	GULLYX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	GULLY
Road:	Copthorne Bank	Inspected Length:	4.19 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	4.19 m	Downstream Node:	MH6
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.370 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.37 m MH6							
		0.00	MH	Start node, manhole, reference: MANHOLE 6 (MH6)	00:00:30	GULLYX_f6cd9efa-6157-4a0b-d01c-4b94	
		0.00	WL	Water level, 0% of the vertical dimension	00:00:30	GULLYX_cf37c378-d01c-4b94	
		0.43	FC	Fracture, circumferential from 10 o'clock to 3 o'clock	00:00:39	GULLYX_2b29d929-3dfa-4401-	3
		2.53	JDM	Joint displaced, medium	00:01:00	GULLYX_a0d2ed5e-7b7e-4ae5	1
		2.53	MCPVC	Material changes to polyvinyl chloride	00:01:00	GULLYX_28ba29e2-e34d-48d9	
		2.53	SC	Size changes, new size(s), 110mm high	00:01:00	GULLYX_ae4d2037-60f9-42b2-	
		2.92	LL	Line deviates left	00:01:09	GULLYX_0fb9ef59-34cb-4c01-	
		3.42	JN	Junction at 12 o'clock, diameter: 110mm: W/C	00:01:16	GULLYX_299e09be-81f4-44b5-	
		4.19	GYF	Finish node, gully, reference: GULLY	00:02:49	GULLYX_3f037892-fcfe-4d39-a	
Depth: 0.00 m							

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
2	40.0	9.8	41.0	3.0	0	0.0	0.0	0.0	1.0



Section Pictures - 14/07/2024 - GULLYX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
17	Upstream	GULLYX	JSD7518	JSD7518



GULLYX_f6cd9efa-6157-4a0b-8db5-4b277d0362a3_20240725_101255_468.jpg, 00:00:30, 0.00 m
Start node, manhole, reference: MANHOLE 6 (MH6)



GULLYX_cf37c378-d01c-4b94-8619-aecae9d0c76e_20240725_101301_448.jpg, 00:00:30, 0.00 m
Water level, 0% of the vertical dimension



GULLYX_2b29d929-3dfa-4401-bebe-b29732e2f259_20240725_101316_226.jpg, 00:00:39, 0.43 m
Fracture, circumferential from 10 o'clock to 3 o'clock



GULLYX_a0d2ed5e-7b7e-4ae5-a077-94c7952a4929_20240725_101329_585.jpg, 00:01:00, 2.53 m
Joint displaced, medium



Section Pictures - 14/07/2024 - GULLYX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
17	Upstream	GULLYX	JSD7518	JSD7518



GULLYX_28ba29e2-e34d-48d9-9e89-110dddac1be6_20240725_101336_880.jpg, 00:01:00, 2.53 m
Material changes to polyvinyl chloride



GULLYX_ae4d2037-60f9-42b2-acb6-9ea13a7fabb5_20240725_101346_335.jpg, 00:01:00, 2.53 m
Size changes, new size(s), 110mm high



GULLYX_0fb9ef59-34cb-4c01-8650-9407a85952f5_20240725_101359_633.jpg, 00:01:09, 2.92 m
Line deviates left



GULLYX_299e09be-81f4-44b5-a1cc-c1a653637af6_20240725_101416_847.jpg, 00:01:16, 3.42 m
Junction at 12 o'clock, diameter: 110mm, W/C

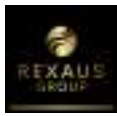


Section Pictures - 14/07/2024 - GULLYX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
17	Upstream	GULLYX	JSD7518	JSD7518



GULLYX_3f037892-fcfe-4d39-acea-14b3e8eb825e_20240725
_101441_137.jpg, 00:02:49, 4.19 m
Finish node, gully, reference: GULLY



Section Inspection - 14/07/2024 - RWDPX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
18	1	14/07/24	10:38	JSD7518	No Rain Or Snow	No	RWDPX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	RWDP
Road:	Copthorne Bank	Inspected Length:	11.51 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	11.51 m	Downstream Node:	MH7 (CP)
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.520 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	110 mm		
Flow Control:	No flow control	Pipe Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:100	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.52 m MH7 (CP)							
		0.00	CP	Start node, catchpit, reference: MANHOLE 7 (MH7) - CATCHPIT (CP): (HIGH LEVEL PIPE - INVERT - 0.52M)	00:00:33	RWDPX_2 1485e2f-4 097-497f-8	
		0.00	WL	Water level, 0% of the vertical dimension	00:00:33	RWDPX_8 9c9a47e-f 38b-4e45-	
		2.80	JN	Junction at 9 o'clock, diameter: 110mm: RAINWATER DOWNPIPE (RWDP)	00:00:51	RWDPX_7 7261d0d-3 cf9-4a7a-b	
		3.24	LR	Line deviates right	00:00:58	RWDPX_b 04b44a7-7 c3f-4146-a	
		8.67	LL	Line deviates left	00:01:16	RWDPX_9 497cd0e-e ee7-4c16-	
		11.19	LU	Line deviates up: REST BEND	00:01:49	RWDPX_8 6dc6ebb-d a85-45a0-	
		11.51	BRF	Finish node, major connection without manhole, reference: RAINWATER DOWNPIPE (RWDP)	00:02:06	RWDPX_f 74d9b74-e fa2-4767-b	
				RWDP Depth: 0.00 m			

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



Section Pictures - 14/07/2024 - RWDPX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
18	Upstream	RWDPX	JSD7518	JSD7518



RWDPX_21485e2f-4097-497f-806e-9df9c5496cab_20240725_101604_864.jpg, 00:00:33, 0.00 m
Start node, catchpit, reference: MANHOLE 7 (MH7) - CATCHPIT (CP), (HIGH LEVEL PIPE - INVERT - 0.52M)



RWDPX_89c9a47e-f38b-4e45-82cf-ce0769a25807_20240725_101610_577.jpg, 00:00:33, 0.00 m
Water level, 0% of the vertical dimension



RWDPX_77261d0d-3cf9-4a7a-b815-6f3534f8d7cb_20240725_101701_695.jpg, 00:00:51, 2.80 m
Junction at 9 o'clock, diameter: 110mm, RAINWATER DOWNPIPE (RWDP)

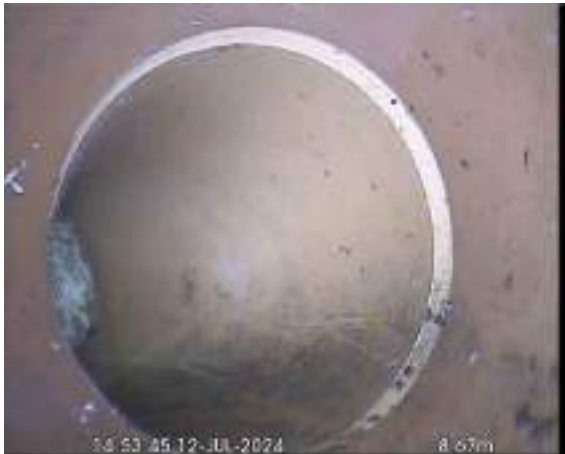


RWDPX_b04b44a7-7c3f-4146-a3f3-0906ec81aae0_20240725_101714_425.jpg, 00:00:58, 3.24 m
Line deviates right



Section Pictures - 14/07/2024 - RWDPX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
18	Upstream	RWDPX	JSD7518	JSD7518



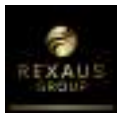
RWDPX_9497cd0e-eee7-4c16-afb8-0b0c38f1904e_20240725_101729_175.jpg, 00:01:16, 8.67 m
Line deviates left



RWDPX_86dc6ebb-da85-45a0-a40c-1b8118d31bb7_20240725_101744_768.jpg, 00:01:49, 11.19 m
Line deviates up, REST BEND



RWDPX_f74d9b74-efa2-4767-b22b-1b8d34b363b9_20240725_101807_038.jpg, 00:02:06, 11.51 m
Finish node, major connection without manhole, reference:
RAINWATER DOWNPIPE (RWDP)



Section Inspection - 14/07/2024 - S. GULLYX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
19	1	14/07/24	10:38	JSD7518	No Rain Or Snow	No	S. GULLYX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
Darren		LX16 YYL		Push Rod	Not Specified	Private Drain	Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	S. GULLY
Road:	Copthorne Bank	Inspected Length:	2.00 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	2.00 m	Downstream Node:	MH7 (CP)
Surface Type:		Joint Length:		Downstream Pipe Depth:	1.300 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 1.30 m MH7 (CP)							
		0.00	CP	Start node, catchpit, reference: MANHOLE 7 (MH7) - CATCHPIT (CP): (HIGH LEVEL PIPE - INVERT - 1.05M)	00:00:18	S. GULLYX_1936f2bd-f	
		0.00	WL	Water level, 0% of the vertical dimension	00:00:18	S. GULLYX_f522f8fa-6b	
		2.00	GYF	Finish node, gully, reference: STORM DRAIN GULLY: (CAR PARK)	00:00:50	S. GULLYX_93bfaba3-	
		S. GULLY Depth: 0.00 m					

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



Section Pictures - 14/07/2024 - S. GULLYX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
19	Upstream	S. GULLYX	JSD7518	JSD7518



S.

GULLYX_1936f2bd-fadb-4ee4-970e-625fa54c3882_20240725_101907_238.jpg, 00:00:18, 0.00 m
Start node, catchpit, reference: MANHOLE 7 (MH7) - CATCHPIT (CP), (HIGH LEVEL PIPE - INVERT - 1.05M)



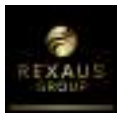
S.

GULLYX_f522f8fa-6ba8-4e1c-9885-92deb8a6fca7_20240725_101928_567.jpg, 00:00:18, 0.00 m
Water level, 0% of the vertical dimension



S.

GULLYX_93bfaba3-13dc-422c-8380-7c0a4b47328c_20240725_101952_581.jpg, 00:00:50, 2.00 m
Finish node, gully, reference: STORM DRAIN GULLY, (CAR PARK)



Section Inspection - 14/07/2024 - MANHOLEX

Item No. 20	Insp. No. 1	Date 14/07/24	Time 10:38	Client's Job Ref JSD7518	Weather No Rain Or Snow	Pre Cleaned No	PLR MANHOLEX
Operator Darren		Vehicle LX16 YYL		Camera Push Rod	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	MANHOLE
Road:	Copthorne Bank	Inspected Length:	4.95 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	4.95 m	Downstream Node:	MH7 (CP)
Surface Type:		Joint Length:		Downstream Pipe Depth:	1.300 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Pipe Material:	Cast iron		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 1.30 m MH7 (CP)							



Section Pictures - 14/07/2024 - MANHOLEX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
20	Upstream	MANHOLEX	JSD7518	JSD7518



MANHOLEX_092f6c46-9f5c-4244-a0a7-58e180fb86e7_20240725_102110_815.jpg, 00:00:25, 0.00 m
Start node, catchpit, reference: MANHOLE 7 (MH7) - CATCHPIT (CP), (HIGH LEVEL PIPE - INVERT - 0.50M)



MANHOLEX_057cd0e1-2aeb-4f6e-ab3b-a7fcd1b02335_20240725_102146_679.jpg, 00:00:25, 0.00 m
Water level, 0% of the vertical dimension



MANHOLEX_eaa616f7-975f-4e97-ac3b-557e21e09b41_20240725_102200_152.jpg, 00:00:38, 1.29 m
Settled deposits, fine, 10% cross-sectional area loss



MANHOLEX_9f739453-0b6d-4c3b-aa2f-970cef82bb99_20240725_102213_871.jpg, 00:00:51, 3.01 m
Settled deposits, fine, 5% cross-sectional area loss



Section Pictures - 14/07/2024 - MANHOLEX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
20	Upstream	MANHOLEX	JSD7518	JSD7518



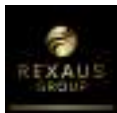
MANHOLEX_3776ed84-49e6-4422-b862-3e0982192f67_20240725_102228_650.jpg, 00:00:58, 3.60 m
Settled deposits, fine, 10% cross-sectional area loss



MANHOLEX_d574a494-dbda-46c8-9c0c-5e761cd3587d_20240725_102253_591.jpg, 00:01:02, 3.62 m
General remark, **BOUNDARY POINT**



MANHOLEX_fcf897e3-6b5d-4475-8745-3d5110d5f99c_20240725_102321_800.jpg, 00:01:32, 4.95 m
Finish node, manhole, reference: ENTERS MANHOLE ON THE PAVEMENT AREA



Section Inspection - 14/07/2024 - S. GULLYX

Item No. 21	Insp. No. 1	Date 14/07/24	Time 10:38	Client's Job Ref JSD7518	Weather No Rain Or Snow	Pre Cleaned No	PLR S. GULLYX
Operator Darren		Vehicle LX16 YYL		Camera Push Rod	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Copthorne	Inspection Direction:	Upstream	Upstream Node:	S. GULLY
Road:	Copthorne Bank	Inspected Length:	1.84 m	Upstream Pipe Depth:	0.000 m
Location:	Property with buildings	Total Length:	1.84 m	Downstream Node:	MH8 (CP)
Surface Type:		Joint Length:		Downstream Pipe Depth:	2.000 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm		
Flow Control:	No flow control	Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection of condition	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 2.00 m							
MH8 (CP)							
		0.00	CP	Start node, catchpit, reference: MANHOLE 8 (MH8) - CATCHPIT (CP): (HIGH LEVEL PIPE - INVERT - 1.10M)	00:01:01	S. GULLYX_3a0c83bd-	
		0.00	WL	Water level, 0% of the vertical dimension	00:01:01	S. GULLYX_6f7a757b-	
		1.84	GYF	Finish node, gully, reference: STORM DRAIN GULLY: (CAR PARK)	00:01:29	S. GULLYX_f034c1d8-0	
S. GULLY							
Depth: 0.00 m							

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



Section Pictures - 14/07/2024 - S. GULLYX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
21	Upstream	S. GULLYX	JSD7518	JSD7518



S.

GULLYX_3a0c83bd-35f0-40f8-a549-da594daf344d_20240725_102511_498.jpg, 00:01:01, 0.00 m
Start node, catchpit, reference: MANHOLE 8 (MH8) - CATCHPIT (CP), (HIGH LEVEL PIPE - INVERT - 1.10M)



S.

GULLYX_6f7a757b-2003-4cb7-bbfd-ce81999d6647_20240725_102518_056.jpg, 00:01:01, 0.00 m
Water level, 0% of the vertical dimension



S.

GULLYX_f034c1d8-0777-4aa3-8500-2217c705d67b_20240725_102547_297.jpg, 00:01:29, 1.84 m
Finish node, gully, reference: STORM DRAIN GULLY, (CAR PARK)

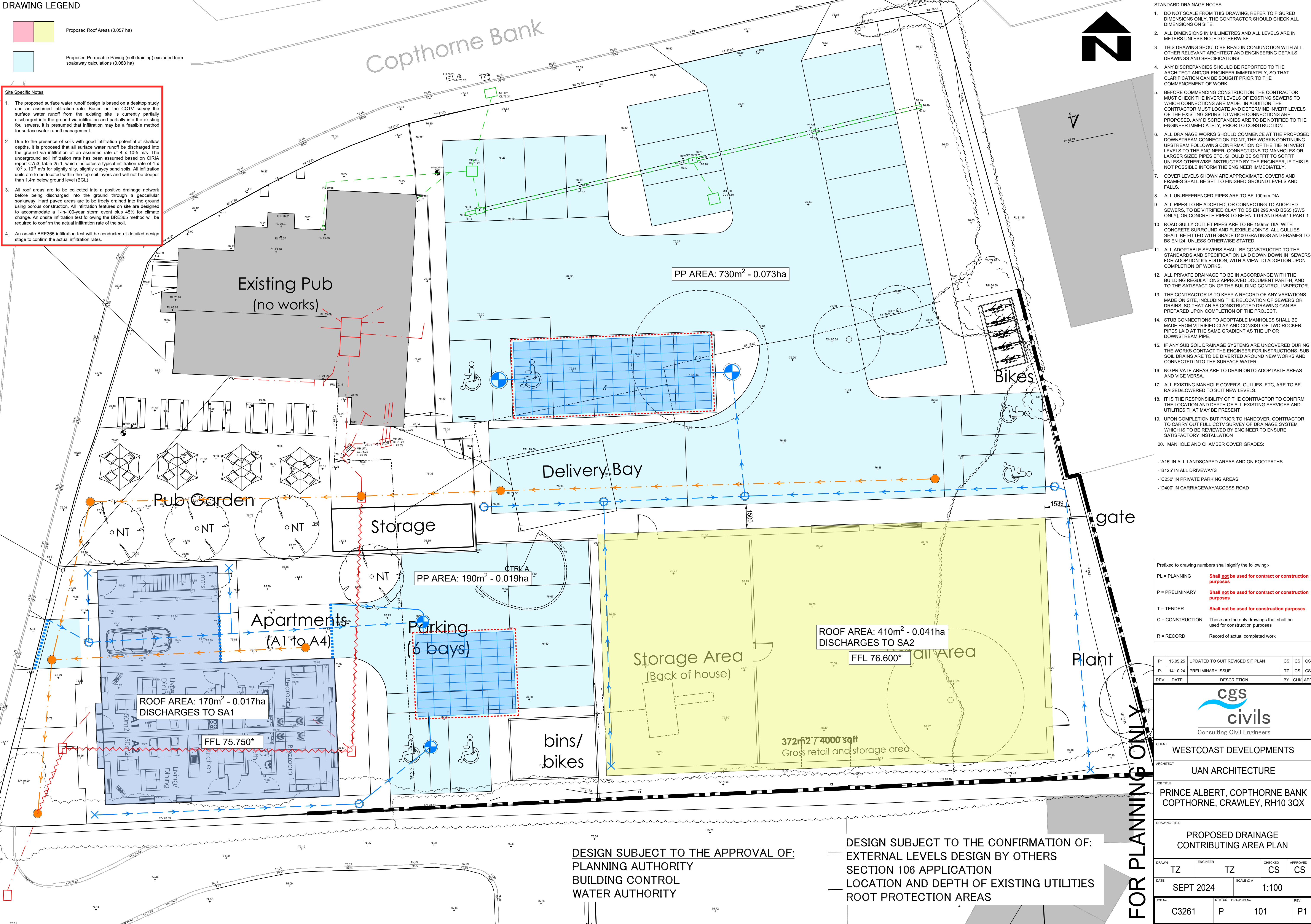
7.4 **Appendix D – Proposed Drainage Strategy Plans, Proposed Drainage Contributing Area Plan, Hydraulic calculations for infiltration and attenuation option**

DRAWING LEGEND

- Proposed Roof Areas (0.057 ha)
- Proposed Permeable Paving (self draining) excluded from soakaway calculations (0.068 ha)

Site Specific Notes

- The proposed surface water runoff design is based on a desktop study and an assumed infiltration rate. Based on the CCTV survey the surface water runoff from the existing site is currently partially discharged into the ground via infiltration and partially into the existing foul sewers, it is presumed that infiltration may be a feasible method for surface water runoff management.
- Due to the presence of soils with good infiltration potential at shallow depths, it is proposed that all surface water runoff be discharged into the ground via infiltration at an assumed rate of 4 x 10-5 m/s. The underground soil infiltration rate has been assumed based on CIRIA report C753, table 25.1, which indicates a typical infiltration rate of 1 x 10-5 x 10-7 m/s for slightly silty, slightly clayey sand soils. All infiltration units are to be located within the top soil layers and will not be deeper than 1.4m below ground level (BGL).
- All roof areas are to be collected into a positive drainage network before being discharged into the ground through a geocellular soakaway. Hard paved areas are to be freely drained into the ground using porous construction. All infiltration features on site are designed to accommodate a 1-in-100-year storm event plus 45% for climate change. An on-site infiltration test following the BRE365 method will be required to confirm the actual infiltration rate of the soil.
- An on-site BRE365 infiltration test will be conducted at detailed design stage to confirm the actual infiltration rates.



- STANDARD DRAINAGE NOTES
- DO NOT SCALE FROM THIS DRAWING. REFER TO FIGURED DIMENSIONS ONLY. THE CONTRACTOR SHOULD CHECK ALL DIMENSIONS ON SITE.
 - ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
 - THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECT AND ENGINEERING DETAILS, DRAWINGS AND SPECIFICATIONS.
 - ANY DISCREPANCIES SHOULD BE REPORTED TO THE ARCHITECT AND/OR ENGINEER IMMEDIATELY, SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO THE COMMENCEMENT OF WORK.
 - BEFORE COMMENCING CONSTRUCTION THE CONTRACTOR MUST CHECK THE INVERT LEVELS OF EXISTING SEWERS TO WHICH CONNECTIONS ARE MADE. IN ADDITION THE CONTRACTOR MUST LOCATE AND DETERMINE INVERT LEVELS OF THE EXISTING SPURS TO WHICH CONNECTIONS ARE PROPOSED. ANY DISCREPANCIES ARE TO BE NOTIFIED TO THE ENGINEER IMMEDIATELY, PRIOR TO CONSTRUCTION.
 - ALL DRAINAGE WORKS SHOULD COMMENCE AT THE PROPOSED DOWNSTREAM CONNECTION POINT. THE WORKS CONTINUING UPSTREAM FOLLOWING CONFIRMATION OF THE TIE-IN INVERT LEVELS TO THE ENGINEER. CONNECTIONS TO MANHOLES OR LARGER SIZED PIPES ETC. SHOULD BE SOFFIT TO SOFFIT UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER. IF THIS IS NOT POSSIBLE INFORM THE ENGINEER IMMEDIATELY.
 - COVER LEVELS SHOWN ARE APPROXIMATE. COVERS AND FRAMES SHALL BE SET TO FINISHED GROUND LEVELS AND FALLS.
 - ALL UN-REFERENCED PIPES ARE TO BE 100mm DIA.
 - ALL PIPES TO BE ADOPTED, OR CONNECTING TO ADOPTED SEWERS, TO BE VITRIFIED CLAY TO BS EN 295 AND BS65 (SWS ONLY), OR CONCRETE PIPES TO BE EN 1916 AND BS5911:PART 1.
 - ROAD GULLY OUTLET PIPES ARE TO BE 150mm DIA. WITH CONCRETE SURROUND AND FLEXIBLE JOINTS. ALL GULLIES SHALL BE FITTED WITH GRADE D400 GRATINGS AND FRAMES TO BS EN124, UNLESS OTHERWISE STATED.
 - ALL ADOPTABLE SEWERS SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATION LAID DOWN IN 'SEWERS FOR ADOPTION' 6th EDITION, WITH A VIEW TO ADOPTION UPON COMPLETION OF WORKS.
 - ALL PRIVATE DRAINAGE TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS APPROVED DOCUMENT PART-H, AND TO THE SATISFACTION OF THE BUILDING CONTROL INSPECTOR.
 - THE CONTRACTOR IS TO KEEP A RECORD OF ANY VARIATIONS MADE ON SITE, INCLUDING THE RELOCATION OF SEWERS OR DRAINS, SO THAT AN AS CONSTRUCTED DRAWINGS CAN BE PREPARED UPON COMPLETION OF THE PROJECT.
 - STUB CONNECTIONS TO ADOPTABLE MANHOLES SHALL BE MADE FROM VITRIFIED CLAY AND CONSIST OF TWO ROCKER PIPES LAID AT THE SAME GRADIENT AS THE UP OR DOWNSTREAM PIPE.
 - IF ANY SUB SOIL DRAINAGE SYSTEMS ARE UNCOVERED DURING THE WORKS CONTACT THE ENGINEER FOR INSTRUCTIONS. SUB SOIL DRAINS ARE TO BE DIVERTED AROUND NEW WORKS AND CONNECTED INTO THE SURFACE WATER.
 - NO PRIVATE AREAS ARE TO DRAIN ONTO ADOPTABLE AREAS AND VICE VERSA.
 - ALL EXISTING MANHOLE COVERS, GULLIES, ETC. ARE TO BE RAISED/LOWERED TO SUIT NEW LEVELS.
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 - UPON COMPLETION BUT PRIOR TO HANDOVER, CONTRACTOR TO CARRY OUT FULL CCTV SURVEY OF DRAINAGE SYSTEM WHICH IS TO BE REVIEWED BY ENGINEER TO ENSURE SATISFACTORY INSTALLATION.
 - MANHOLE AND CHAMBER COVER GRADES:

- 'A15' IN ALL LANDSCAPED AREAS AND ON FOOTPATHS
- 'B125' IN ALL DRIVEWAYS
- 'C250' IN PRIVATE PARKING AREAS
- 'D400' IN CARRIAGEWAY/ACCESS ROAD

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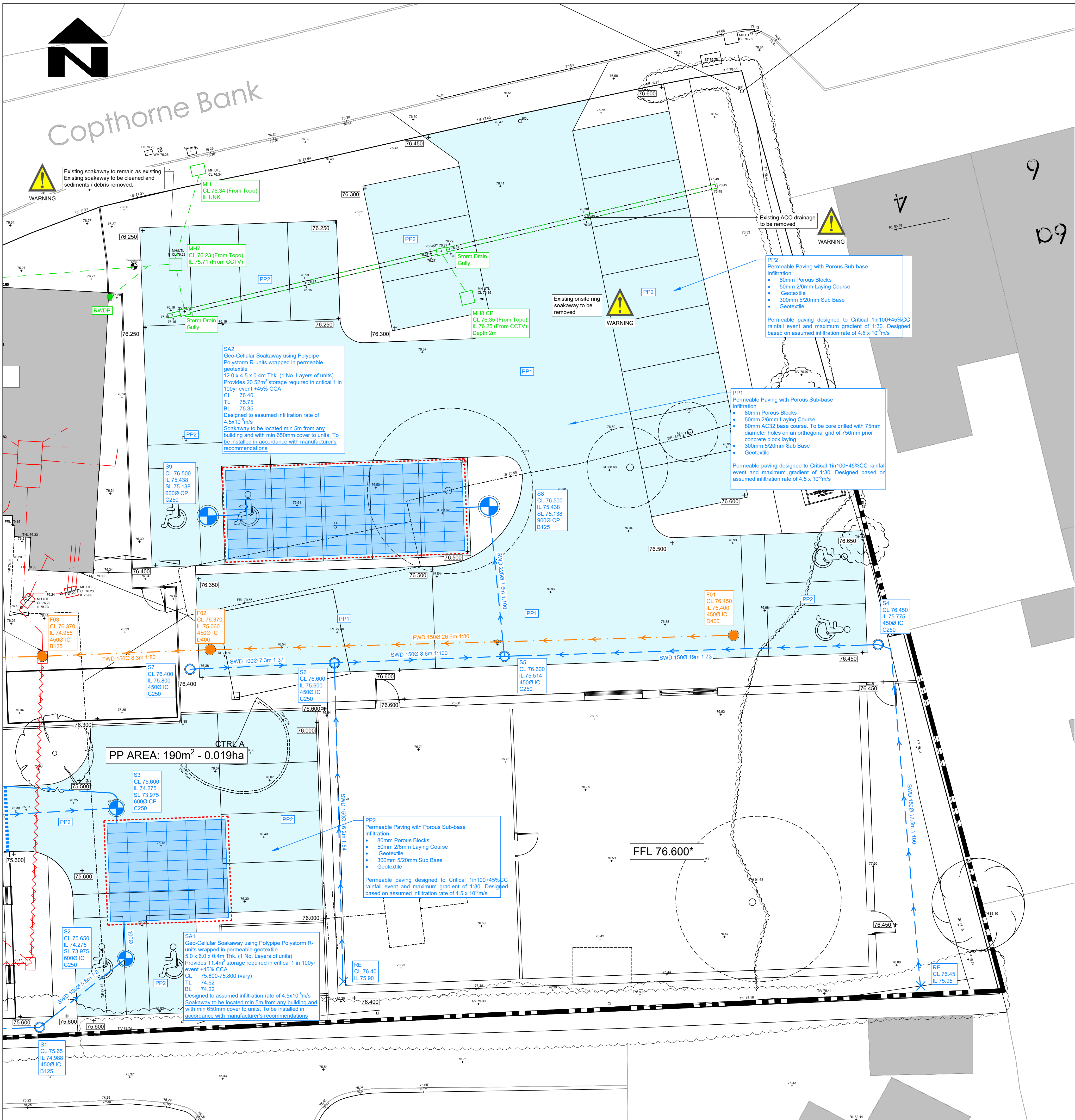
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P1	15.05.25	UPDATED TO SUIT REVISED SIT PLAN	CS	CS	CS
P	14.10.24	PRELIMINARY ISSUE	TZ	CS	CS
REV	DATE	DESCRIPTION	BY	CHK	APP

cgs civils Consulting Civil Engineers				
CLIENT WESTCOAST DEVELOPMENTS				
ARCHITECT UAN ARCHITECTURE				
JOB TITLE PRINCE ALBERT, COPTHORNE BANK COPHTHORNE, CRAWLEY, RH10 3QX				
DRAWING TITLE PROPOSED DRAINAGE CONTRIBUTING AREA PLAN				
DRAWN TZ	ENGINEER TZ	CHECKED CS	APPROVED CS	
DATE SEPT 2024	SCALE @ A1 1:100			
JOB No. C3261	STATUS P	DRAWING No. 101	REV. P1	

DESIGN SUBJECT TO THE APPROVAL OF:
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BUILDING CONTROL
WATER AUTHORITY

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SECTION 106 APPLICATION
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ROOT PROTECTION AREAS



DRAINAGE LEGEND

EXISTING FEATURES

- Ex FWD Existing foul water sewer/drain and manhole
- Ex SWD Existing surface water sewer/drain and manhole
- Existing foul/surface water sewer/drain and manhole to be abandoned

PROPOSED FEATURES

- FWD Foul Drainage
- Foul Rising Main
- SWD Surface Water Drainage
- CD Channel drain
- Storm water inspection chamber (4500)
- Storm water catchpit chamber (4500)
- Storm water rodding eye
- Extent of permeable paving with porous sub-base
- Foul water inspection chamber (4500)
- Masonry retaining wall (shown indicatively only)
- Proposed surface level (shown indicatively only)
Final design to be confirmed at detail design stage
- Finished floor level (assumed - shown indicatively only)

1000 4.5m 1:100
Z BED

ABBREVIATIONS

- MH - MANHOLE
- IC - INSPECTION CHAMBER
- AC - ACCESS CHAMBER
- CP - CATCHPIT
- BC - BRAKE CHAMBER
- RE - RODDING EYE
- IL - INVERT LEVEL
- SL - SUMP LEVEL
- RA - RESTRICTED ACCESS COVER
- CL - COVER LEVEL
- TL - TOP OF CELLULAR SA
- BL - BASE OF CELLULAR SA
- FL - FORMATION LEVEL

STANDARD DRAINAGE NOTES

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- ROAD GULLY OUTLET PIPES ARE TO BE 150mm DIA, WITH CONCRETE SURROUND AND FLEXIBLE JOINTS. ALL GULLIES SHALL BE FITTED WITH GRADE D400 GRATINGS AND FRAMES TO BS EN124, UNLESS OTHERWISE STATED.
- ALL ADAPTABLE SEWERS SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATION LAID DOWN DOWN IN 'SEWERS FOR ADOPTION' 6th EDITION, WITH A VIEW TO ADOPTION UPON COMPLETION OF WORKS.
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DESIGN SUBJECT TO THE CONFIRMATION OF:
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SECTION 106 APPLICATION
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ROOT PROTECTION AREAS

Site Specific Notes

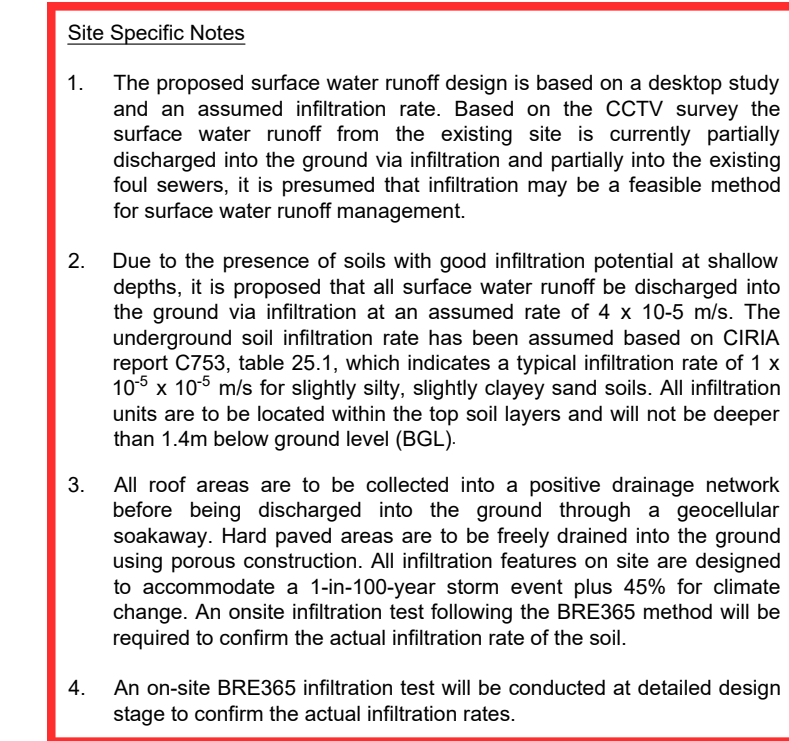
- The proposed surface water runoff design is based on a desktop study and an assumed infiltration rate. Based on the CCTV survey the surface water runoff from the existing site is currently partially discharged into the ground via infiltration and partially into the existing foul sewers. It is presumed that infiltration may be a feasible method for surface water runoff management.
- Due to the presence of soils with good infiltration potential at shallow depths, it is proposed that all surface water runoff be discharged into the ground via infiltration at an assumed rate of 4 x 10-5 m/s. The underground soil infiltration rate has been assumed based on CIRIA report C753, table 25.1, which indicates a typical infiltration rate of 1 x 10-5 x 10-4 m/s for slightly silty, slightly clayey sand soils. All infiltration units are to be located within the top soil layers and will not be deeper than 1.4m below ground level (BGL).
- All roof areas are to be collected into a positive drainage network before being discharged into the ground through a geocellular soakaway. Hard paved areas are to be freely drained into the ground using porous construction. All infiltration features on site are designed to accommodate a 1-in-100-year storm event plus 45% for climate change. An on-site infiltration test following the BRE365 method will be required to confirm the actual infiltration rate of the soil.
- An on-site BRE365 infiltration test will be conducted at detailed design stage to confirm the actual infiltration rates.

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cgs civils Consulting Civil Engineers							
CLIENT WESTCOAST DEVELOPMENTS							
ARCHITECT UAN ARCHITECTURE							
JOB TITLE PRINCE ALBERT, COPHTHORNE BANK COPHTHORNE, CRAWLEY, RH10 3QX							
DRAWING TITLE PROPOSED SW & FW DRAINAGE PLAN SHEET 1							
DRAWN TZ		ENGINEER TZ		CHECKED CS		APPROVED CS	
DATE SEPT 2024			SCALE @ A1		1:100		
JOB No. C3261		STATUS P	DRAWING No. 201			REV. P1	



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Copthorne Bank



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 Consulting Civil Engineers				
CLIENT WESTCOAST DEVELOPMENTS				
ARCHITECT UAN ARCHITECTURE				
JOB TITLE PRINCE ALBERT, COPTHORNE BANK COPTHORNE, CRAWLEY, RH10 3QX				
DRAWING TITLE PROPOSED DRAINAGE EXCEEDANCE FLOW PLAN				
DRAWN TZ	ENGINEER TZ	CHECKED CS	APPROVED CS	
DATE SEPT 2024	SCALE @ A1 1:100			
JOB No. C3261	STATUS P	DRAWING No. 301	REV. P1	

FOR PLANNING ONLY

BLUE ARROWS SHOW ROUTE OF EXCEEDANCE FLOWS FROM PROJECTED POINTS OF EMERGENCE TOWARDS DIRECTION OF FALL.

ALL STRUCTURES DESIGNED TO ACCOMMODATE BELOW GROUND THE CRITICAL 1 IN 100 YEAR STORM EVENT PLUS 45%. EXCEEDANCE WOULD ONLY OCCUR IN STORMS OF GREATER INTENSITY THAN THIS.

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)	1.200
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S1	0.009	4.00	75.650	450	531296.748	139381.404	0.662
S2			75.700	600	531301.121	139384.887	1.425
S3	0.008	4.00	75.650	450	531302.378	139392.401	1.375
SA1	0.000		75.650	450	531302.491	139389.329	1.405
S4	0.020	4.00	76.450	450	531339.322	139400.828	0.675
S5	0.001	4.00	76.600	450	531320.350	139400.236	1.086
S6	0.020	4.00	76.600	450	531311.714	139399.895	1.000
S7		4.00	76.400	450	531304.381	139399.580	0.600
S8			76.500	900	531319.567	139407.840	1.062
SA2	0.000		76.400	450	531312.919	139407.906	1.050
1			75.650	150	531302.179	139389.351	1.395
Carpark 1	0.010		76.400		531306.910	139405.435	0.500

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
3.000	S1	S2	5.591	0.600	74.988	74.275	0.713	7.8	100	4.03	50.0
3.001	S2	1	1.900	0.600	74.275	74.255	0.020	95.0	100	4.07	50.0
4.000	S3	1	1.000	0.600	74.275	74.265	0.010	100.0	100	4.02	50.0
1.000	S4	S5	18.981	0.600	75.775	75.514	0.261	72.7	150	4.27	50.0
2.000	S7	S6	7.340	0.600	75.800	75.600	0.200	36.7	150	4.07	50.0
2.001	S6	S5	8.643	0.600	75.600	75.514	0.086	100.0	150	4.22	50.0
1.001	S5	S8	7.644	0.600	75.514	75.438	0.076	100.6	150	4.40	50.0
1.002	S8	SA2	1.000	0.600	75.438	75.350	0.088	11.4	150	4.40	50.0
3.002	1	SA1	1.000	0.600	74.255	74.245	0.010	100.0	100	4.10	50.0

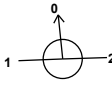
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
3.000	2.778	21.8	1.6	0.562	1.325	0.009	0.0	18	1.618
3.001	0.789	6.2	1.6	1.325	1.295	0.009	0.0	35	0.662
4.000	0.769	6.0	1.4	1.275	1.285	0.008	0.0	33	0.629
1.000	1.180	20.9	3.6	0.525	0.936	0.020	0.0	42	0.890
2.000	1.667	29.4	0.0	0.450	0.850	0.000	0.0	0	0.000
2.001	1.005	17.8	3.6	0.850	0.936	0.020	0.0	46	0.791
1.001	1.002	17.7	7.4	0.936	0.912	0.041	0.0	68	0.958
1.002	3.005	53.1	7.4	0.912	0.900	0.041	0.0	38	2.127
3.002	0.769	6.0	3.1	1.295	1.305	0.017	0.0	50	0.771

Pipeline Schedule

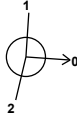
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
3.000	5.591	7.8	100	Circular	75.650	74.988	0.562	75.700	74.275	1.325
3.001	1.900	95.0	100	Circular	75.700	74.275	1.325	75.650	74.255	1.295
4.000	1.000	100.0	100	Circular	75.650	74.275	1.275	75.650	74.265	1.285
1.000	18.981	72.7	150	Circular	76.450	75.775	0.525	76.600	75.514	0.936
2.000	7.340	36.7	150	Circular	76.400	75.800	0.450	76.600	75.600	0.850
2.001	8.643	100.0	150	Circular	76.600	75.600	0.850	76.600	75.514	0.936
1.001	7.644	100.6	150	Circular	76.600	75.514	0.936	76.500	75.438	0.912
1.002	1.000	11.4	150	Circular	76.500	75.438	0.912	76.400	75.350	0.900
3.002	1.000	100.0	100	Circular	75.650	74.255	1.295	75.650	74.245	1.305

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
3.000	S1	450	Manhole	Adoptable	S2	600	Manhole	Adoptable
3.001	S2	600	Manhole	Adoptable	1	150	Manhole	Adoptable
4.000	S3	450	Manhole	Adoptable	1	150	Manhole	Adoptable
1.000	S4	450	Manhole	Adoptable	S5	450	Manhole	Adoptable
2.000	S7	450	Manhole	Adoptable	S6	450	Manhole	Adoptable
2.001	S6	450	Manhole	Adoptable	S5	450	Manhole	Adoptable
1.001	S5	450	Manhole	Adoptable	S8	900	Manhole	Adoptable
1.002	S8	900	Manhole	Adoptable	SA2	450	Manhole	Adoptable
3.002	1	150	Manhole	Adoptable	SA1	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1	531296.748	139381.404	75.650	0.662	450				
						0	3.000	74.988	100
S2	531301.121	139384.887	75.700	1.425	600		1	3.000	74.275
						0	3.001	74.275	100
S3	531302.378	139392.401	75.650	1.375	450		0	4.000	74.275
						1	3.002	74.245	100
SA1	531302.491	139389.329	75.650	1.405	450				
S4	531339.322	139400.828	76.450	0.675	450		0	1.000	75.775
						1	2.001	75.514	150
						2	1.000	75.514	150
S5	531320.350	139400.236	76.600	1.086	450		0	1.001	75.514
									150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S6	531311.714	139399.895	76.600	1.000	450	1 → 0 	2.000	75.600	150
S7	531304.381	139399.580	76.400	0.600	450	0 → 	2.001	75.600	150
S8	531319.567	139407.840	76.500	1.062	900	1 ← 0 	1.001	75.438	150
SA2	531312.919	139407.906	76.400	1.050	450	0 → 1 	1.002	75.350	150
1	531302.179	139389.351	75.650	1.395	150	1 → 2 	4.000 3.001	74.265 74.255	100 100
Carpark 1	531306.910	139405.435	76.400	0.500		0 	3.002	74.255	100

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0
30	0	0	0
30	40	0	0
100	0	0	0
100	45	0	0

Node SA1 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.16200	Invert Level (m)	74.220	Depth (m)	0.400
Side Inf Coefficient (m/hr)	0.16200	Time to half empty (mins)	117	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	6.000	Number Required	1
Porosity	0.95	Pit Length (m)	3.000		

Node SA2 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.16200	Invert Level (m)	75.350	Depth (m)	0.400
Side Inf Coefficient (m/hr)	0.16200	Time to half empty (mins)	125	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	12.000	Number Required	1
Porosity	0.95	Pit Length (m)	4.500		

Node Carpark 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.16200	Invert Level (m)	75.900	Slope (1:X)	30.0
Side Inf Coefficient (m/hr)	0.16200	Time to half empty (mins)	19	Depth (m)	0.300
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Approval Settings

Node Size	✓	Minimum Full Bore Velocity (m/s)	
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)		Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	x
Backdrops	✓	Discharge Rates	✓
Minimum Backdrop Height (m)		Discharge Volume	✓
Maximum Backdrop Height (m)	1.500	100 year 360 minute (m³)	
Full Bore Velocity	✓		

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.64%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	75.016	0.028	3.6	0.0044	0.0000	OK
120 minute summer	S2	86	74.392	0.117	1.5	0.0330	0.0000	SURCHARGED
120 minute summer	S3	84	74.392	0.117	1.4	0.0185	0.0000	SURCHARGED
120 minute summer	SA1	86	74.391	0.146	2.5	2.9524	0.0000	OK
15 minute summer	S4	10	75.839	0.064	8.0	0.0102	0.0000	OK
15 minute summer	S5	10	75.636	0.122	16.4	0.0195	0.0000	OK
15 minute summer	S6	10	75.673	0.073	8.0	0.0116	0.0000	OK
15 minute summer	S7	1	75.800	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S8	9	75.524	0.086	16.4	0.0546	0.0000	OK
120 minute summer	SA2	86	75.497	0.147	6.8	7.5430	0.0000	OK
120 minute summer	1	86	74.391	0.136	2.6	0.0025	0.0000	SURCHARGED
30 minute summer	Carpark 1	22	76.060	0.160	3.5	1.0451	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	S1	3.000	S2	3.6	1.204	0.165	0.0265
120 minute summer	S2	3.001	1	1.3	0.376	0.217	0.0149
120 minute summer	S3	4.000	1	1.3	0.408	0.214	0.0078
120 minute summer	SA1	Infiltration		0.5			
15 minute summer	S4	1.000	S5	8.0	0.710	0.384	0.2144
15 minute summer	S5	1.001	S8	16.4	1.257	0.926	0.0986
15 minute summer	S6	2.001	S5	8.0	0.668	0.451	0.1031
15 minute summer	S7	2.000	S6	0.0	0.000	0.000	0.0311
15 minute summer	S8	1.002	SA2	16.5	2.221	0.310	0.0088
120 minute summer	SA2	Infiltration		1.3			
120 minute summer	1	3.002	SA1	2.5	0.597	0.415	0.0078
30 minute summer	Carpark 1	Infiltration		1.1			

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.64%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	75.020	0.032	4.7	0.0050	0.0000	OK
60 minute summer	S2	58	74.453	0.178	3.1	0.0503	0.0000	SURCHARGED
60 minute summer	S3	60	74.454	0.179	2.7	0.0284	0.0000	SURCHARGED
60 minute summer	SA1	60	74.451	0.206	4.9	3.9893	0.0000	OK
15 minute summer	S4	10	75.850	0.075	10.5	0.0119	0.0000	OK
15 minute summer	S5	10	75.692	0.178	20.7	0.0283	0.0000	SURCHARGED
15 minute summer	S6	10	75.718	0.118	10.5	0.0187	0.0000	OK
15 minute summer	S7	1	75.800	0.000	0.0	0.0000	0.0000	OK
120 minute summer	S8	90	75.552	0.114	8.8	0.0727	0.0000	OK
120 minute summer	SA2	90	75.552	0.202	8.8	10.4100	0.0000	OK
60 minute summer	1	61	74.452	0.197	5.1	0.0035	0.0000	SURCHARGED
30 minute summer	Carpark 1	22	76.090	0.190	4.6	1.4823	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	S1	3.000	S2	4.7	1.194	0.215	0.0278
60 minute summer	S2	3.001	1	2.7	0.423	0.442	0.0149
60 minute summer	S3	4.000	1	2.4	0.426	0.404	0.0078
60 minute summer	SA1	Infiltration		0.5			
15 minute summer	S4	1.000	S5	10.5	0.747	0.503	0.2508
15 minute summer	S5	1.001	S8	20.1	1.239	1.137	0.1136
15 minute summer	S6	2.001	S5	9.9	0.688	0.559	0.1402
15 minute summer	S7	2.000	S6	0.0	0.000	0.000	0.0545
120 minute summer	S8	1.002	SA2	8.8	1.378	0.166	0.0160
120 minute summer	SA2	Infiltration		1.4			
60 minute summer	1	3.002	SA1	4.9	0.729	0.809	0.0078
30 minute summer	Carpark 1	Infiltration		1.4			

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.64%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	75.026	0.038	6.6	0.0060	0.0000	OK
120 minute winter	S2	114	74.576	0.301	1.8	0.0851	0.0000	SURCHARGED
120 minute winter	S3	114	74.576	0.301	1.6	0.0478	0.0000	SURCHARGED
120 minute winter	SA1	114	74.575	0.330	3.0	6.1294	0.0000	OK
15 minute summer	S4	11	75.922	0.147	14.7	0.0234	0.0000	OK
15 minute summer	S5	11	75.807	0.293	26.9	0.0466	0.0000	SURCHARGED
15 minute summer	S6	11	75.870	0.270	14.7	0.0429	0.0000	SURCHARGED
15 minute summer	S7	11	75.872	0.072	1.1	0.0114	0.0000	OK
120 minute summer	S8	98	75.650	0.212	12.3	0.1349	0.0000	SURCHARGED
120 minute summer	SA2	98	75.650	0.300	12.0	15.4328	0.0000	OK
120 minute winter	1	114	74.576	0.321	3.1	0.0058	0.0000	SURCHARGED
30 minute summer	Carpark 1	23	76.132	0.232	6.5	2.1897	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	S1	3.000	S2	6.6	1.233	0.303	0.0295
120 minute winter	S2	3.001	1	1.6	0.360	0.264	0.0149
120 minute winter	S3	4.000	1	1.5	0.409	0.243	0.0078
120 minute winter	SA1	Infiltration		0.5			
15 minute summer	S4	1.000	S5	13.4	0.828	0.643	0.3334
15 minute summer	S5	1.001	S8	26.7	1.528	1.510	0.1300
15 minute summer	S6	2.001	S5	12.9	0.734	0.728	0.1522
15 minute summer	S7	2.000	S6	1.1	0.101	0.039	0.0951
120 minute summer	S8	1.002	SA2	12.0	1.495	0.226	0.0176
120 minute summer	SA2	Infiltration		1.4			
120 minute winter	1	3.002	SA1	3.0	0.570	0.489	0.0078
30 minute summer	Carpark 1	Infiltration		1.7			

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.64%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	75.024	0.036	6.0	0.0057	0.0000	OK
120 minute winter	S2	112	74.531	0.256	1.6	0.0725	0.0000	SURCHARGED
120 minute winter	S3	112	74.531	0.256	1.5	0.0407	0.0000	SURCHARGED
120 minute winter	SA1	112	74.531	0.286	2.7	5.3595	0.0000	OK
15 minute summer	S4	10	75.872	0.097	13.3	0.0154	0.0000	OK
15 minute summer	S5	11	75.774	0.260	25.1	0.0413	0.0000	SURCHARGED
15 minute summer	S6	11	75.827	0.227	13.3	0.0361	0.0000	SURCHARGED
15 minute summer	S7	11	75.829	0.029	1.1	0.0046	0.0000	OK
60 minute winter	S8	60	75.620	0.182	12.5	0.1160	0.0000	SURCHARGED
60 minute winter	SA2	60	75.620	0.270	12.5	13.9050	0.0000	OK
120 minute winter	1	112	74.531	0.276	2.8	0.0050	0.0000	SURCHARGED
30 minute summer	Carpark 1	23	76.120	0.220	5.9	1.9816	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	S1	3.000	S2	6.0	1.233	0.275	0.0289
120 minute winter	S2	3.001	1	1.5	0.359	0.236	0.0149
120 minute winter	S3	4.000	1	1.4	0.409	0.227	0.0078
120 minute winter	SA1	Infiltration		0.5			
15 minute summer	S4	1.000	S5	12.9	0.824	0.620	0.2809
15 minute summer	S5	1.001	S8	24.8	1.451	1.404	0.1241
15 minute summer	S6	2.001	S5	12.0	0.705	0.674	0.1522
15 minute summer	S7	2.000	S6	-1.1	-0.095	-0.038	0.0733
60 minute winter	S8	1.002	SA2	12.5	1.678	0.236	0.0176
60 minute winter	SA2	Infiltration		1.4			
120 minute winter	1	3.002	SA1	2.7	0.564	0.445	0.0078
30 minute summer	Carpark 1	Infiltration		1.6			

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.64%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	S1	116	75.034	0.046	2.4	0.0073	0.0000	OK
120 minute winter	S2	116	75.035	0.760	2.4	0.2151	0.0000	SURCHARGED
120 minute winter	S3	116	75.035	0.760	2.1	0.1208	0.0000	SURCHARGED
120 minute winter	SA1	116	75.033	0.788	3.9	6.9740	0.0000	OK
15 minute summer	S4	11	76.191	0.416	19.2	0.0662	0.0000	FLOOD RISK
15 minute summer	S5	11	75.996	0.482	34.0	0.0767	0.0000	SURCHARGED
15 minute summer	S6	11	76.090	0.490	19.2	0.0779	0.0000	SURCHARGED
15 minute summer	S7	11	76.091	0.291	2.9	0.0463	0.0000	SURCHARGED
120 minute winter	S8	114	75.872	0.434	10.6	0.2761	0.0000	SURCHARGED
120 minute winter	SA2	116	75.868	0.518	10.3	20.6279	0.0000	OK
120 minute winter	1	116	75.034	0.779	4.1	0.0140	0.0000	SURCHARGED
60 minute summer	Carpark 1	40	76.178	0.278	6.3	3.1362	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
120 minute winter	S1	3.000	S2	2.4	0.744	0.110	0.0316
120 minute winter	S2	3.001	1	2.2	0.352	0.352	0.0149
120 minute winter	S3	4.000	1	1.9	0.411	0.315	0.0078
120 minute winter	SA1	Infiltration		0.6			
15 minute summer	S4	1.000	S5	17.4	0.988	0.834	0.3342
15 minute summer	S5	1.001	S8	33.0	1.872	1.862	0.1346
15 minute summer	S6	2.001	S5	15.7	0.894	0.886	0.1522
15 minute summer	S7	2.000	S6	3.4	0.227	0.115	0.1292
120 minute winter	S8	1.002	SA2	10.3	1.986	0.195	0.0176
120 minute winter	SA2	Infiltration		1.5			
120 minute winter	1	3.002	SA1	3.9	0.552	0.644	0.0078
60 minute summer	Carpark 1	Infiltration		2.0			

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)	1.200
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
ATT1	0.017	75.650	1200	531302.491	139389.329	1.430
ATT2	0.041	76.400	1200	531312.919	139407.906	1.050

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0
30	0	0	0
30	40	0	0
100	0	0	0
100	45	0	0

Node ATT1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	74.220	Product Number	CTL-SHE-0055-1000-0400-1000
Design Depth (m)	0.400	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node ATT2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	75.350	Product Number	CTL-SHE-0052-1000-0600-1000
Design Depth (m)	0.600	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node ATT1 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	74.220	Depth (m)	0.400
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	78	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	6.000	Number Required	1
Porosity	0.95	Pit Length (m)	5.000		

Node ATT2 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	75.350	Depth (m)	0.400
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	240	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	12.000	Number Required	1
Porosity	0.95	Pit Length (m)	6.000		

Approval Settings

Node Size	✓	Minimum Full Bore Velocity (m/s)	
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)		Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	x
Backdrops	✓	Discharge Rates	✓
Minimum Backdrop Height (m)		Discharge Volume	✓
Maximum Backdrop Height (m)	1.500	100 year 360 minute (m³)	
Full Bore Velocity	✓		

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
60 minute summer	ATT1	42	74.316	0.096	4.3	2.8308	0.0000	OK
180 minute summer	ATT2	128	75.487	0.137	5.4	9.5260	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
60 minute summer	ATT1	Hydro-Brake®	1.0	4.3
180 minute summer	ATT2	Hydro-Brake®	1.0	13.8

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 (m³)	Flood (m³)	Status
60 minute summer	ATT1	45	74.352	0.132	5.8	3.9228	0.0000	OK
180 minute summer	ATT2	132	75.531	0.181	6.8	12.5920	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
60 minute summer	ATT1	Hydro-Brake®	1.0	5.7
180 minute summer	ATT2	Hydro-Brake®	1.0	17.2

Results for 30 year +40% CC 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
60 minute summer	ATT1	52	74.419	0.199	8.1	5.8846	0.0000	OK
180 minute winter	ATT2	168	75.624	0.274	6.2	19.0782	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
60 minute summer	ATT1	Hydro-Brake®	1.0	8.0
180 minute winter	ATT2	Hydro-Brake®	1.0	21.5

Results for 100 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
60 minute summer	ATT1	50	74.401	0.181	7.4	5.3537	0.0000	OK
120 minute summer	ATT2	120	75.590	0.240	11.3	16.6633	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
60 minute summer	ATT1	Hydro-Brake®	1.0	7.4
120 minute summer	ATT2	Hydro-Brake®	1.0	18.2

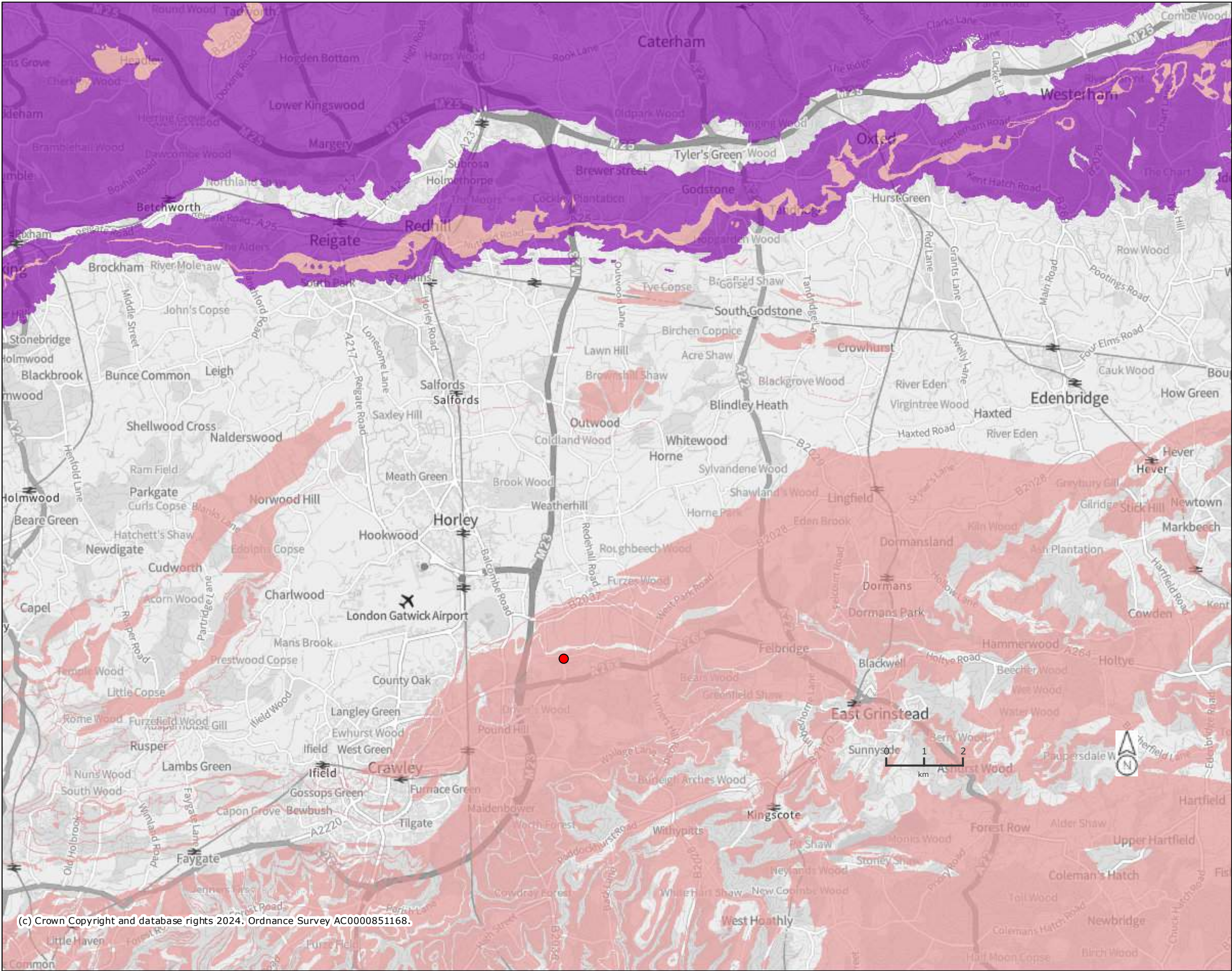
Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	ATT1	61	74.509	0.289	10.8	8.5488	0.0000	OK
180 minute summer	ATT2	180	75.735	0.385	12.3	26.7496	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
60 minute summer	ATT1	Hydro-Brake®	1.0	10.7
180 minute summer	ATT2	Hydro-Brake®	1.0	21.0

7.5 **Appendix E – EA Magic Maps**

Aquifer Designation Map (Bedrock)



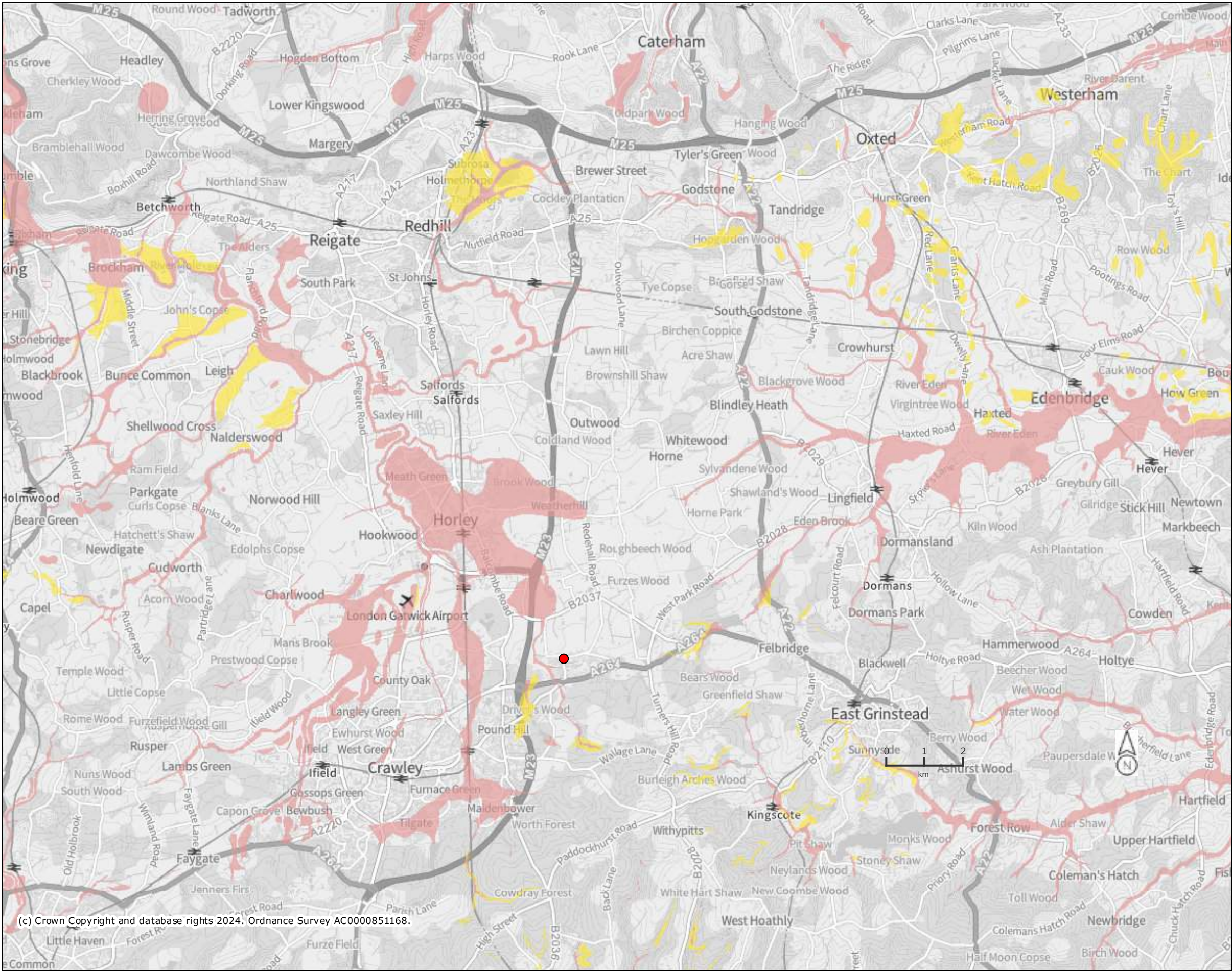
Legend

Aquifer Designation Map (Bedrock) (England)

- Principal
- Secondary A
- Secondary B
- Secondary (undifferentiated)
- Unproductive

Projection = OSGB36
xmin = 507300
ymin = 131300
xmax = 558100
ymax = 156400

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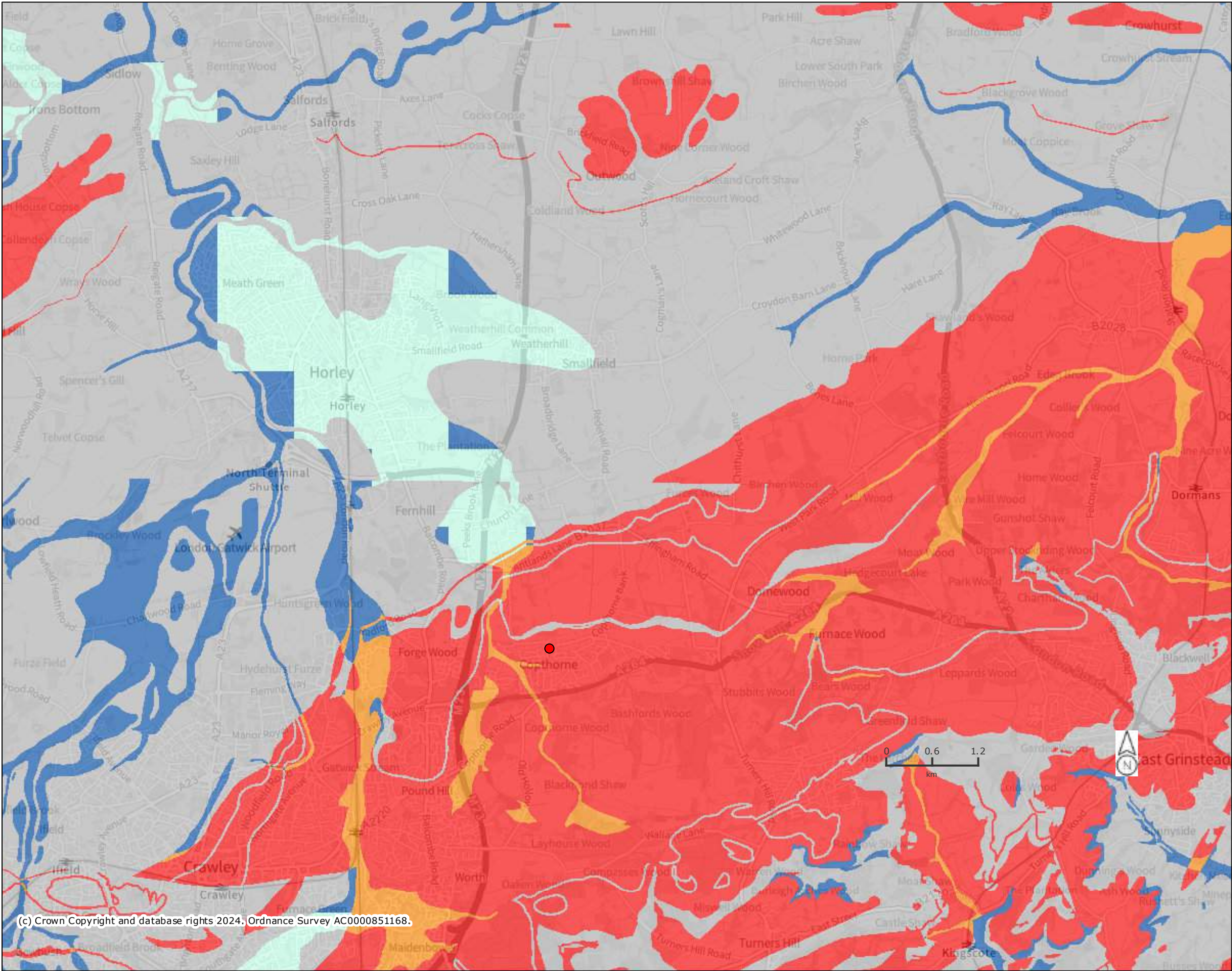
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Legend
Aquifer Designation Map (Superficial Drift) (England)

- Principal
- Secondary A
- Secondary B
- Secondary (undifferentiated)
- Unknown (lakes+landslip)
- Unproductive

Projection = OSGB36
xmin = 507300
ymin = 131300
xmax = 558100
ymax = 156400

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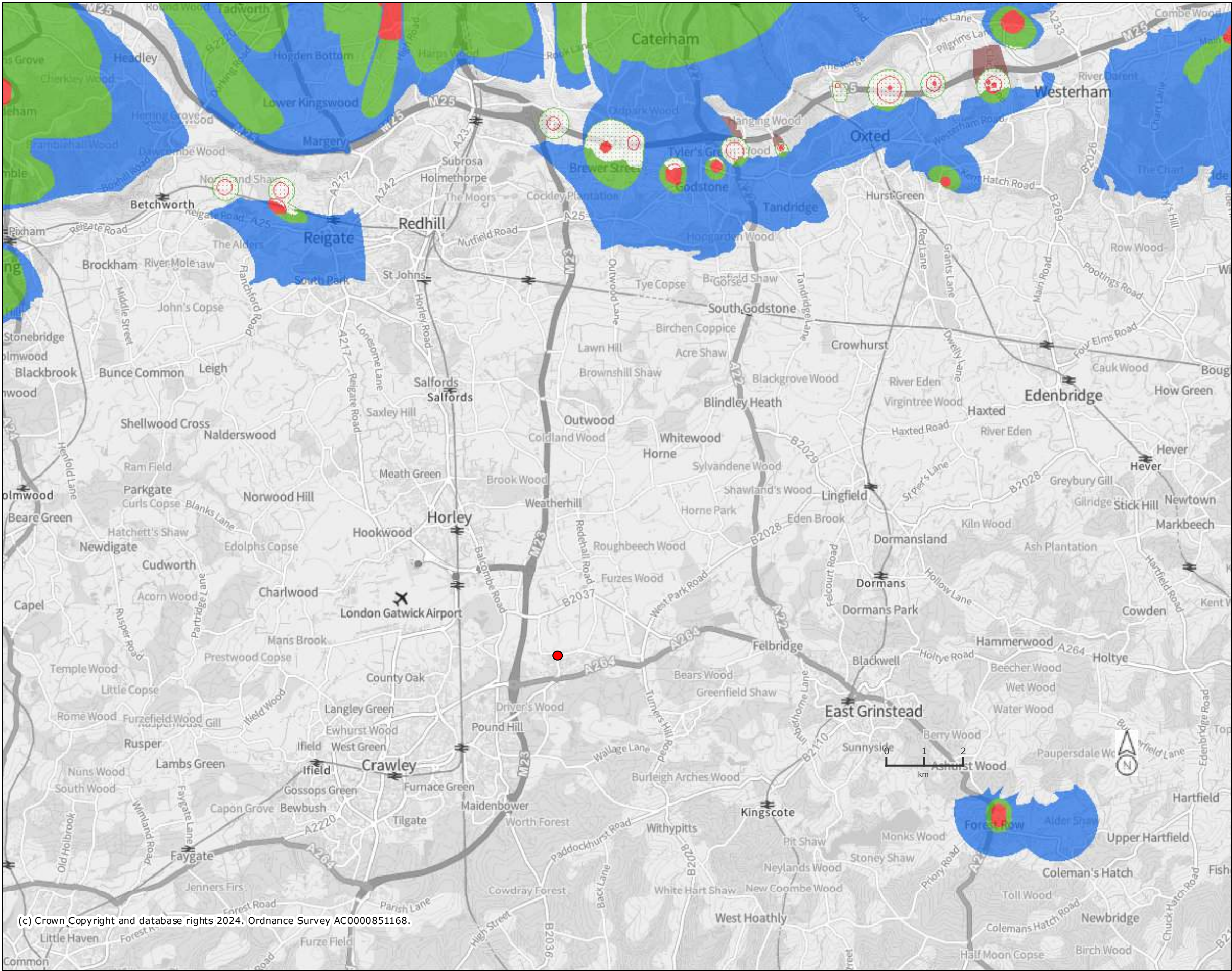


Legend
Groundwater Vulnerability Map (England)

- Local Information
- Soluble Rock Risk
- High
- Medium - High
- Medium
- Medium - Low
- Low
- Unproductive

Projection = OSGB36
xmin = 519500
ymin = 135200
xmax = 544900
ymax = 147800

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Legend

Source Protection Zones merged (England)

- Zone I - Inner Protection Zone
- Zone I - Subsurface Activity
- Zone II - Outer Protection Zone
- Zone II - Subsurface Activity
- Zone III - Total Catchment
- Zone III - Subsurface Activity
- Zone of Special Interest

Projection = OSGB36
xmin = 507400
ymin = 131300
xmax = 558200
ymax = 156300

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7.6 **Appendix F – Maintenance Schedule**



Consulting Civil Engineers

Maintenance Schedule

Prince Albert, Copthorne

For

Westcoast Developments Ltd

Rev - P

Reference **C3261**

Date **15th October 2024**

Revision	Date of Issue	Comments	Prepared By	Checked By
P	15/10/2024	Initial Issue	TZ	CS

Contents

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1 Maintenance

1.1 Introduction

- 1.1.1 During construction, the Contractor will be responsible for maintaining the drainage and SuDS (Sustainable Drainage Systems). Upon handover, the occupier will take on the responsibility of these duties as laid out in this report.
- 1.1.2 The maintenance schedule for the proposed development will be split down into two separate categories; SuDS features and regular private drainage.

1.2 SuDS at Prince Albert, Copthorne

- 1.2.1 As listed above, in section 5.1.2, the SuDS features used on site will be **geocellular crates, permeable paving**.
- 1.2.2 The SuDS features have been designed for easy maintenance and comprise:
- Regular Day-to-Day care – litter collection, regular gardening to control vegetation growth and checking inlets where water enters the SuDS features
 - Occasional tasks – checking the SuDS features and removing any silt that builds up in the SuDS feature
 - Remedial work – repairing damage where necessary

1.3 SuDS Drainage Maintenance Specification

1.3.1 Soakaway

In order to maintain the functioning of the attenuation tanks, the following maintenance requirements should be adhered to:

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 per-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

1.3.2 Permeable Paving

In order to maintain the functioning of the permeable paving, the following maintenance requirements should be adhered to:

Table 21.3 Operation and maintenance requirements for permeable paving		
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 50mm of 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, 48h after large storms in first six months
	Inspect silt accumulation rate and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

1.4 General Drainage Maintenance Specification

1.4.1 Inlet Structures and Inspection Chambers

- Inlet structures such as rainwater downpipes, road gullies and channel drains should be free from obstruction at all times to allow free flow through the SuDS
- Inspection Chambers and Rodding Eyes are used on bends or where pipes come together. They allow access and cleaning to the system if necessary.

Inlet Structures and Inspection Chambers	
Regular Maintenance	Frequency
Inlet Structures Inspect rainwater downpipes, channel drains and road gullies, removing obstructions and silt as necessary. Check that there is no physical damage. Trim vegetation 1m min surround to structures and keep area free from silt and debris	Monthly
Inspection Chambers and below ground control chambers. Remove cover and inspect, ensuring that the water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt. Undertake inspection after leaf fall in Autumn	Annually
Occasional Maintenance Check topsoil levels are 20mm above edges of chambers to avoid mower damage.	As necessary
Remedial Work Repair physical damage if necessary	As required

1.4.2 Below ground drainage pipes

- Below ground drainage pipes convey water to the SuDS system. They should always be free from obstruction to allow free flow.

Below Ground Drainage Pipes	
Regular Maintenance	Frequency
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
Remove sediment from pre-treatment inlet structures and inspection chambers.	Annually or as required
Maintain vegetation to designed limits within the vicinity of below ground drainage pipes and tanks.	Monthly or as required
Remedial Work	
Repair physical damage if necessary	As required
Monitoring	
Inspect all inlets, outlets and vents to ensure that they are in good conditions and operating as designed.	Annually
Survey inside of pipe runs for sediment build up and remove if necessary.	Every 5 years or as required