

LAND WEST OF RAVENSCROFT, STORRINGTON

DRAINAGE ASSESSMENT

Final Report v1.0
September 2026

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List of Abbreviations

AEP	Annual Exceedance Probability	GSPZ	Groundwater Source Protection Zone
AOD	Above Ordnance Datum	ha	Hectare
ASGWF	Areas Susceptible to Groundwater Flooding	IDB	Internal Drainage Board
bgl	Below Ground Level	km	Kilometres
BGS	British Geological Survey	LFRMS	Local Flood Risk Management Strategy
BRE	Building Research Establishment	LiDAR	Light Detection and Ranging
BSI	British Standards Institute	LLFA	Lead Local Flood Authority
CC	Climate Change	LPA	Local Planning Authority
CCMA	Coastal Change Management Area	l/s	Litres per Second
CDA	Critical Drainage Area	m	Metres
CFMP	Catchment Flood Management Plan	m ²	Square Metres
CIRIA	Construction Industry Research and Information Association	m ³	Cubic Metres
CRT	Canal and River Trust	NFM	Natural Flood Management
DA	Drainage Assessment	NGR	National Grid Reference
DEFRA	Department for Environment, Food and Rural Affairs	NPPF	National Planning Policy Framework
EA	Environment Agency	NVZ	Nitrate Vulnerable Zone
FCERM	Flood and Coastal Erosion Risk Management	OS	Ordnance Survey
FEH	Flood Estimation Handbook	PFRA	Preliminary Flood Risk Assessment
FFL	Finished Floor Level	PPG	Planning Practice Guidance
FMfP	Flood Map for Planning	QBAR	Mean Annual Maximum Flow Rate
FMP	Flood Management Plan	QMED	Median Annual Maximum Flow Rate
FRA	Flood Risk Assessment	RBD	River Basin District
FRDA	Flood Risk and Drainage Assessment	RBMP	River Basin Management Plan
FRDSA	Flood Risk, Drainage and Sequential Assessment	RFI	Request for Information (to the EA)
FRMP	Flood Risk Management Plan	RMA	Risk Management Authority
FRSA	Flood Risk and Sequential Assessment	RoFSW	Risk of Flooding from Surface Water
FRSSA	Flood Risk Sequential Site Assessment	SAC	Special Area of Conservation
FWA	Flood Warning Area	SFRA	Strategic Flood Risk Assessment
FWEP	Flood Warning and Evacuation Plan	SMP	Shoreline Management Plan
FWMA	Flood and Water Management Act	SoP	Standard of Protection
FWS	Flood Warning System	SSSI	Site of Special Scientific Interest
		SuDS	Sustainable Drainage System
		SWMP	Surface Water Management Plan
		WFD	Water Framework Directive

1 INTRODUCTION

1.1 Purpose of Report

Weetwood Services Ltd ('Weetwood') has been instructed by A2Dominion to prepare a DA report to accompany a reserved matters application for the proposed development of land to the west of Ravenscroft, Storrington ("the site") for residential use.

The assessment has been undertaken in accordance with the requirements of the NPPF and PPG.

1.2 Structure of the Report

The report is structured as follows:

- Section 1** Introduction and report structure
- Section 2** Provides background information relating to the development site
- Section 3** Presents national and local drainage planning policy
- Section 4** Presents an illustrative foul water drainage scheme
- Section 5** Presents an illustrative surface water drainage scheme
- Section 6** Presents a summary of key findings and the recommendations

1.3 Relevant Documents and Planning Policy

The assessment has been informed by the following documents, policy and information:

- National Planning Policy Framework, Ministry of Housing, Communities and Local Government, Published 17 August 2026, <https://www.gov.uk/guidance/national-planning-policy-framework>;
- Preparing a Flood Risk Assessment - Standing Advice, EA, Updated 28 May 2026, <https://www.gov.uk/guidance/preparing-a-flood-risk-assessment-standing-advice>;
- Planning Practice Guidance Section 7 - Flood Risk and Coastal Change, Ministry of Housing, Communities and Local Government, Updated on 17 September 2025, <https://www.gov.uk/guidance/flood-risk-and-coastal-change>;
- National Standards for Sustainable Drainage Systems, DEFRA, Updated 30 July 2025, <https://www.gov.uk/government/publications/national-standards-for-sustainable-drainagesystems/national-standards-for-sustainable-drainage-systems-suds>;
- Design and Construction Guidance: Sewerage Sector Guidance Appendix C, Water UK, Approved Version 2.3, November 2023;
- Flood Risk Assessments - Climate Change Allowances, Government, Updated 27 May 2022, <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>;
- BRE Digest 365 Soakaway Design, BRE, February 2016;
- The SuDS Manual (C753), CIRIA, December 2015;
- Horsham District Strategic Flood Risk Assessment (SFRA) 2010;
- Soilscales, Soil and AgriFood Institute, Cranfield University, www.landis.org.uk/soilscales;
- National Geoscience Data Centre's Single Onshore Borehole Index, <https://www.bgs.ac.uk/download/single-onshore-borehole-index-sobi-dataset/>;
- BGS Mapping of Surface Geology, <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/>; and
- MAGIC, Natural England, <https://magic.defra.gov.uk/MagicMap.html>.

1.4 Third Party Surveys, Drawings and Assessments

The assessment has been informed by the following third party surveys, drawings and assessments:

- Proposed Site Plan (Block), HNW Architects, Ref. 26025-HNW-ZZ-ZZ-DR-A-2100 rev P06 September 2026 (**Appendix A**);
- Full Site Coloured Render, Turley, Ref. 05963-1006, September 2026 (**Appendix A**);
- Topographic Survey, M.J.Zara Associates, Ref. 9026, June 2020 (**Appendix B**);
- Desk Study and Preliminary Risk Assessment Report extract, Southern Testing, Ref. J13159, June 2017 (**Appendix C**); and

- Public sewer records - Records provided by Southern Water in April 2020 (**Appendix D**)

1.5 Explanatory Note on Flood Probability

This report refers to the likelihood of a flood event occurring in terms of an AEP expressed as a percentage. This terminology is consistent with the definition of flood zones presented in Table 1 of the PPG.

The AEP is the reciprocal of the return period which describes the rarity of an event in terms of its statistical reoccurrence interval in years. For example, a '1 in 30 year event' has a $1/30 = 0.033$ (3.3%) probability of occurring in any one year, whilst a '1 in 100 year event' has a $1/100 = 0.010$ (1.0%) probability of occurring in any one year.

AEP	AEP (expressed as a %)	Return Period (years)	Alternative Expression
1.000	100.0%	1	1 in 1
0.500	50.0%	2	1 in 2
0.100	10.0%	10	1 in 10
0.050	5.0%	20	1 in 20
0.033	3.3%	30	1 in 30
0.020	2.0%	50	1 in 50
0.010	1.0%	100	1 in 100
0.005	0.5%	200	1 in 200
0.001	0.1%	1,000	1 in 1,000

2 SITE DETAILS AND PROPOSED DEVELOPMENT

2.1 Site Location

The approximately 10.0 ha site (excluding 1.43 ha allotment area) is located west of Ravenscroft and south of Browns Lane, Storrington at OS NGR TQ 08816 13985, as shown in **Figure 1**.

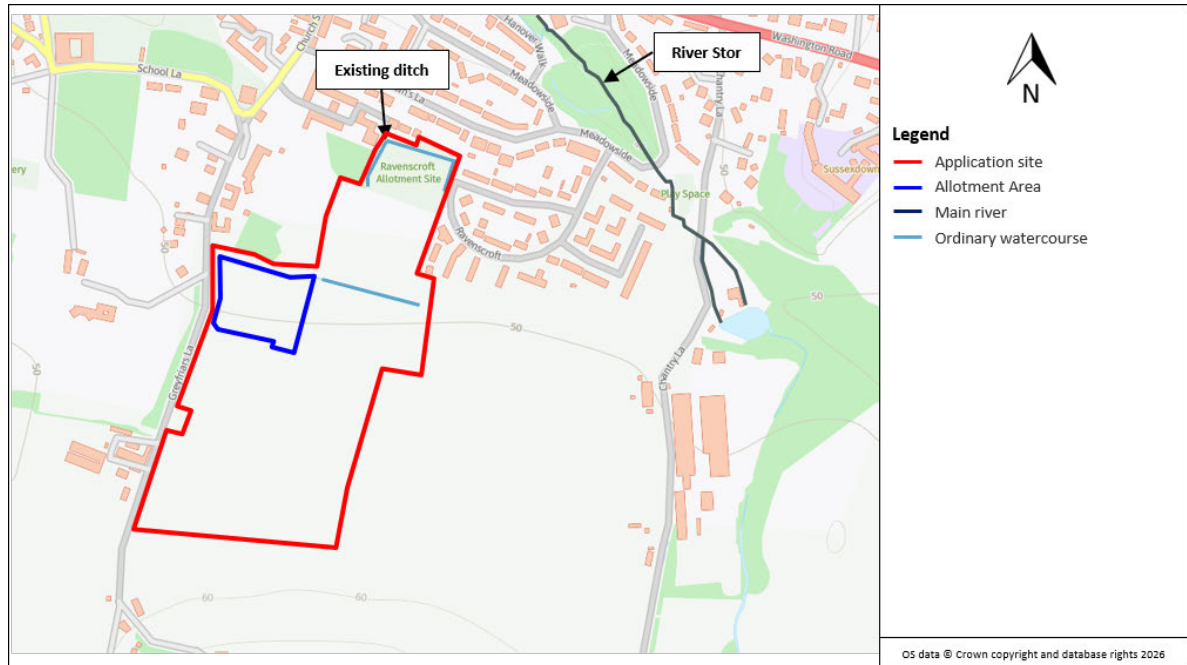


Figure 1: Site Location and Location of Surface Waterbodies

2.2 Proposed Development

The proposals are for a 'Hybrid application consisting of full permission for the relocation and enhancement of the Ravenscroft Allotment site and outline planning permission for up to 78 homes with all matters reserved except access (excluding internal estate roads) from Ravenscroft, and new community parkland.'

It should be noted that the wider site is split into three parts;

- Residential - 78 new residential properties (in place of current allotments);
- New community parkland - to consist of open green space with mowed footpaths and various proposed areas of vegetation (e.g. meadows and trees), with no formal drainage requirements; and
- Relocation of allotments - to be located within the new community parkland and not considered as part of this DA report.

Vehicular access will be provided via Ravenscroft. The proposed site plan and wider development layout is provided in **Appendix A**.

2.3 Surface Waterbodies in the Vicinity of the Site

As shown in **Figure 1** and on the topographic survey (**Appendix B**) existing drainage ditches are located along the eastern, northern and western site boundaries in the northern portion of the site. These drainage ditches are understood to enter a 300 mm diameter culvert in the north-east corner of the site before flowing offsite in an easterly direction. The nearest main watercourse is the River Stor located approximately 250 metres north-east of site.

2.4 Topographic Levels

A topographic survey of the site has been undertaken by M.J.Zara Associates (**Appendix B**).

Site levels generally fall in a northerly direction towards the existing drainage ditches, with levels in the region of 42.8 m AOD to 48.8 m AOD.

2.5 Ground Conditions

According to the Soilscape soils dataset produced by the Cranfield Soil and AgriFood Institute, soil conditions at the site and within the surrounding area are described as well drained coarse and fine loamy soils over interbedded sands and sandstones.

BGS mapping of surface geology indicates the underlying bedrock formation comprises sandstone, overlain by clay, silt, sand and gravel superficial deposits.

According to the MAGIC website the superficial deposits at the site are classified as an unproductive aquifer whilst the underlying bedrock is classified as a principal aquifer. The site is not shown to be located within a designated GSPZ.

A geotechnical Desk Study and Preliminary Risk Assessment was undertaken at the site by Southern Testing in 2017 and an extract of this report is provided in **Appendix C**. The assessment concluded that the site is located on Gault Clay and in area where springs are common, although none were observed during a site visit.

3 PLANNING POLICY AND GUIDANCE

3.1 National Planning Policy and Policy Guidance

National planning policy seeks to minimise the present and future risks to development from all sources of flooding and coastal change by steering development away from areas of risk, ensuring that the development will be safe for its lifetime without increasing flood risk elsewhere, and incorporating SuDS where appropriate.

In respect of flood risk, policies F1 to F3 relate to plan-making, and policies F4 to F9 relate to decision making. The objective of the decision-making policies is to ensure that development proposals are informed by appropriate information and decided in a way that is proportionate, timely, and effective.

Policy F8 - Sustainable Drainage Systems and Watercourses requires development proposals that could affect drainage on or around the development site to incorporate SuDS to control flow rates and reduce volumes of runoff in ways proportionate to the nature and scale of the proposal. The systems should provide multifunctional benefits where possible, facilitating improvements in water quality, biodiversity, and amenity. Also, the sustainable drainage system should: (a) Be designed in accordance with the National Standards for SuDS; (b) Have maintenance arrangements in place for the lifetime of the development; and (c) For major development, take account of advice from the LLFA.

3.2 Local Planning Policy

The Horsham District Planning Framework was adopted by Horsham District Council in November 2015. The following policy is relevant in respect of flood risk and drainage:

Policy 38: Flooding

1. Development proposals will follow a sequential approach to flood risk management, giving priority to development sites with the lowest risk of flooding and making required development safe without increasing flood risk elsewhere. Development proposals will;

- a) take a sequential approach to ensure most vulnerable uses are placed in the lowest risk areas.*
- b) avoid the functional floodplain (Flood zone 3b) except for water-compatible uses and essential infrastructure.*
- c) only be acceptable in Flood Zone 2 and 3 following completion of a sequential test and exceptions test if necessary.*
- d) require a site-specific Flood Risk Assessments for all developments over 1 hectare in Flood Zone 1 and all proposals in Flood Zone 2 and 3*

2. Comply with the tests and recommendations set out in the Horsham District Strategic Flood Risk Assessment (SFRA).

3. Where there is the potential to increase flood risk, proposals must incorporate the use of sustainable drainage systems (SuDS) where technically feasible, or incorporate water management measures which reduce the risk of flooding and ensure flood risk is not increased elsewhere.

4. Consider the vulnerability and importance of local ecological resources such as water quality and biodiversity when determining the suitability of SuDS. New development should undertake more detailed assessments to consider the most appropriate SuDS methods for each site. Consideration should also be given to amenity value and green infrastructure.

5. Utilise drainage techniques that mimic natural drainage patterns and manage surface water as close to its source as possible will be required where technically feasible.

6. Be in accordance with the objective of the Water Framework Directive, and accord with the findings of the Gatwick Sub Region Water Cycle Study in order to maintain water quality and water availability in rivers and wetlands and wastewater treatment requirements.

3.3 Drainage Technical Guidance

National Standards for SuDS published by DEFRA set out how surface water runoff generated by “everyday rainfall”, and during the 50.0%, 3.3% and 1.0% AEP rainfall events should be managed, how peak runoff rates should be restricted, how water quality measures should be implemented, how amenity and biodiversity should be used in SuDS and how maintenance and management plans shall be considered.

3.4 Water Framework Directive

The WFD provides a legal framework for the protection, improvement and sustainable use of inland surface waters, groundwater, transitional waters, and coastal waters across England, and seeks to:

- Prevent deterioration in the status of surface water and groundwater bodies;
- Protect, enhance and restore surface water and groundwater bodies (except artificial or heavily modified water bodies) with the aim of achieving good ecological, chemical and groundwater quantitative status by December 2021;
- Protect and enhance artificial and heavily modified water bodies with the aim of achieving good ecological potential and good chemical status by December 2021; and
- Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment and progressively reduce pollution of groundwater.

The WFD applies to any proposed development which has the potential to impact on a waterbody. Where this is the case, the EA may require evidence demonstrating that the proposed development does not compromise the aims of the WFD.

3.5 Environmental Permitting and Land Drainage Consent

Under the Environmental Permitting (England and Wales) Regulations 2016 an Environmental Permit for Flood Risk Activities¹ is required from the EA for any permanent or temporary works, including works:

- In, over or under a designated main river; and / or
- Within 8 m of the top of bank of a designated main river or of the landward toe of a flood defence (16 m if it is a tidal main river or a sea defence).

In addition, any permanent or temporary works within the floodplain of a designated main river may also require an Environmental Permit for Flood Risk Activities. A permit is separate to and in addition to any planning permission granted.

Land drainage consent may be required from the LLFA for work to an ordinary watercourse.

Undertaking activities controlled by local byelaws also requires the relevant consent.

¹ <https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>

4 FOUL WATER MANAGEMENT

4.1 Existing Assets

An extract of the public sewer records obtained from Southern Water is provided in **Appendix D** and indicates that a 150 mm diameter public foul sewer flows in a north-westerly direction in Browns Lane to the north of the site.

4.2 New Connections

The anticipated domestic foul loading from the site has been calculated in accordance with Design and Construction Guidance. The expected total peak flow rate from the development would be 3.6 l/s.

Under the Water Industry Act (1991), developers have a right to connect foul water flows from new developments to public sewer. The Act places a general duty on sewerage undertakers to provide the additional capacity that may be required to accommodate additional flows and loads arising from new domestic development.

It is proposed to discharge foul flows from the site to the existing 150 mm diameter public foul sewer in Browns Lane.

It is likely a Section 106 application will need to be made to Southern Water for the new connection of the proposed network into the existing sewer, this will need to be made at the detailed design stage.

A preliminary foul water drainage layout is provided in **Appendix E**.

5 SURFACE WATER MANAGEMENT

5.1 Surface Water Drainage at the Existing Site

The existing site consists of allotment gardens to the north and undeveloped greenfield to the south. As such, no formal surface water drainage is expected to be present. Given site topography and ground conditions, surface water runoff would be expected to infiltrate, in so far as soil conditions allow, and flow overland towards the existing drainage ditches as determined by topography.

5.2 Surface Water Drainage at the Developed Site

5.2.1 Post Development Impermeable Area

The area of impermeable surfaces within the proposed development has been calculated to be 1.008 ha, based on **Appendix A**. An impermeable area plan is included in **Appendix F**.

An additional 10% of impermeable surfaces has been allowed for to account for urban creep.

5.2.2 Runoff Destinations (Standard 1)

In accordance with the National Standards for SuDS, surface water runoff from impermeable surfaces should be disposed of according to the following hierarchy: Collected for non-potable use; Infiltrated to ground; To an above ground surface water body; To a surface water sewer or another piped surface water drainage system; To a combined sewer.

The demand for non-potable water within a residential development is low. As such, the incorporation of rainwater harvesting has been discounted.

As detailed in **Section 2.5**, the site is underlain by soils with impeded drainage (i.e. Gault Clay) and potentially high groundwater levels. As concluded in the Southern Testing geotechnical Desk Study and Preliminary Risk Assessment (**Appendix C**), the site is not suitable for soakaways. In addition, it is not possible to access the site to undertake infiltration testing due to the presence of existing allotments. It is subsequently proposed to direct all runoff from the developed site to the existing drainage ditch located adjacent to the northern boundary.

As noted in **Section 2.2**, the proposed community parkland area does not require any formal drainage. Surface water runoff in this area is expected to continue to drain as per existing arrangements.

5.2.3 Management of Everyday Rainfall (Standard 2)

The National Standards for SuDS states that a SuDS approach shall be applied so that the first 5 mm of rainfall for the majority of rainfall events does not leave the site, and that evidence shall be provided that the approach to managing everyday rainfall has been developed alongside and in support of the management of runoff quality and the delivery of amenity and biodiversity benefits.

To achieve the above, the use of water butts, tree pits, permeable surfaces and attenuation basins have been considered and are illustrated on the preliminary surface water drainage layout (**Appendix E**).

5.2.4 Management of Extreme Rainfall and Flooding (Standard 3)

Peak Flow Control

The site has a total developable area of 2.16 ha; however, for the purposes of this assessment the proposed developable area is taken as 1.008 ha (refer to **Section 5.2.1**). This excludes gardens and areas of open space, which are expected to continue to drain as existing.

It is proposed to restrict surface water runoff to the existing 50.0% AEP and 3.3% AEP greenfield runoff rate. Calculated using the rainfall-runoff method (ReFH2 modelling software) and based on the area of impermeable surfaces (i.e. 1.008 ha), the proposed discharge rate equates to 3.0 l/s for events up to 50% AEP and up to a maximum of 6.6 l/s for 3.3% AEP and greater events, this is in accordance with local policy that

require sites to mimic natural drainage patterns. Details of the input parameters and the output results are provided in **Appendix G**.

Volume Control

Where reasonably practicable, for greenfield sites, the runoff volume from the proposed development to any highway drain, sewer or surface water body in the 1.0% AEP, 6 hour rainfall event should not exceed the greenfield runoff volume for the same event.

As outlined within The SuDS Manual extra runoff volumes in extreme events may be managed by releasing all runoff (above the 100.0% AEP event) from the site at a maximum rate of 2 l/s/ha or QBAR, whichever is the higher value.

It is therefore proposed to restrict peak discharge rates to the 50.0% AEP and 3.3% AEP greenfield runoff rate in up to the 1.0% AEP event, including an allowance for climate change.

Attenuation Storage

Attenuation storage will be provided to store surface water runoff generated across roofs and hardstanding.

The attenuation storage facility has been modelled using Causeway Flow (**Appendix H**) and has been sized to store the 1.0% AEP rainfall event including a 45% increase in rainfall intensity to allow for climate change in accordance with Government guidance.

Assuming a peak discharge rate of 6.6 l/s, a total storage volume of 1,298.9 m³ would be required.

The storage volume could be accommodated within oversized pipes, geo-cellular attenuation tanks, permeable paving sub-base and an attenuation basin, with an area of 138.8 m² and a depth of 0.95 m.

The use of geo-cellular attenuation tanks is based on the implementation of at source SuDS (i.e. permeable paving) being used to filter and prevent debris/silt from becoming a blockage risk. Catchpit manholes will also be used to capture any debris/silt, thus ensuring the continued performance of the proposed tanks (refer to **Section 5.2.5** below). Alternative below ground storage tanks (e.g. concrete) could be incorporated at the detailed design stage.

A preliminary surface water drainage layout is provided in **Appendix E**.

Exceedance Routes

Flows resulting from rainfall in excess of the 1.0% AEP rainfall event including an allowance for climate change will be managed in exceedance routes. It is assumed that as the development proposals progress, the design of the site would ensure flood flows are directed towards carriageways, with the site being profiled to ensure that flood flows are directed away from built development. Illustrative exceedance routes are shown on the preliminary surface water drainage layout (**Appendix E**) and will be confirmed at the detailed design stage.

5.2.5 Water Quality and Pollution Control (Standard 4)

Table 26.2 of the CIRIA SuDS Manual identifies residential roofs and individual driveways/low traffic roads as having a very low to low pollution hazard level and indicates that the pollution hazard indices associated with such uses for total suspended solids, metals and hydrocarbons are 0.20, 0.20 and 0.05, and 0.50, 0.40 and 0.40 respectively.

Given the very low pollution hazard level to residential roofs, minimal treatment measures would be required to treat the quality of water from roof runoff.

The use of permeable paving within driveways and parking areas, and the incorporation of rain gardens (tree pits) into external areas, together with the attenuation basin to provide storage for surface water runoff will help to manage pollution risks within the proposed development. A summary of the benefits each SuDS feature provides, and the SuDS mitigation indices, as presented in Table 26.3 of the CIRIA SuDS Manual, is provided in **Table 1**.

Table 1: SuDS Benefits and Mitigation Indices

SuDS	SuDS Benefit	SuDS Mitigation Indices		
		Suspended Solids	Metals	Hydrocarbons
Permeable paving	Provide enhanced water quality treatment within the surface structure, including filtration, adsorption, biodegradation and sedimentation	0.70	0.60	0.70
Rain Gardens (Tree Pits)	Reduce runoff rates and volumes, and treat pollution through the use of engineered soils and vegetation	0.80	0.80	0.80
Attenuation basins	Provide water quality benefits via the settlement of pollutants in still or slow-moving water, adsorption by the soil, and biological activity	0.50	0.50	0.60

Additionally, catchpit manholes will help prevent contaminants discharging into the downstream receptor, whilst the use of rainwater butts and planters will be considered where possible and as space allows.

5.2.6 Amenity and Biodiversity (Standard 5 and Standard 6)

The proposed layout includes landscaped areas/trees in several locations, in particular the new community parkland, which will provide aesthetic benefits and interception of water surface, thus helping with volume control (via evapotranspiration).

It is generally recommended that native vegetation is used to maximise the biodiversity value of these areas. However, it may be valuable to include some non-native vegetation to support pollinators, such as butterflies and bees.

The implementation of soft landscaping will also help provide users of the site with health and wellbeing benefits.

5.2.7 Adoption and Maintenance of SuDS (Standard 7)

The pipe network, designed in accordance with Design and Construction Guidance, may be adopted by Southern Water.

SuDS elements within the curtilage of residential dwellings would be the responsibility of the owner of the property.

SuDS in open spaces would be maintained by Southern Water, or a management company. SuDS which convey highway runoff (i.e. tree pits) may be adopted by the local highway authority.

An indicative maintenance schedule is presented in **Table 2**.

Table 2: Maintenance Requirements

Schedule	Required action	Frequency
Attenuation Basin		
Regular maintenance	Remove litter and debris	Monthly
	Cut grass	Monthly during grow season Or as required)
	Manage other vegetation and remove nuisance plants	Monthly at start, then as required
	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly
	Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies	Monthly for first year, then annually or as required

Schedule	Required action	Frequency
Occasional maintenance	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets/outlets	Annually (or as required)
	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every two years, or as required
	Remove sediments from inlets/outlets and main basin when required	
Remedial actions	Repair erosion or other damage by reseedling or re-turfing	As required
	Realignment of rip-rap	
	Repair/rehabilitation of inlets/outlets	
	Relevel uneven surface and reinstate design levels	
Permeable Paving		
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.
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosphate 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 the 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	
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required
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 rates and establish appropriate brushing frequencies accumulation rates and establish appropriate removal frequencies	Annually
	Monitor inspection chambers	
Geo-cellular attenuation storage tank		
Regular maintenance	Inspect and identify any areas that are not operating correctly	Monthly for 3 months, then annually
	Remove debris from the catchment surface	Monthly
	Remove sediment from internal forebays	Annually, or as required
Remedial action	Repair inlet/outlet and vents	As required
Monitoring	Inspect catchpit manholes and note rate of sediment accumulation	Monthly in the first year and then annually
	Inspect inlet/outlet and vents 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
Rain Gardens (Tree Pits)		
Regular maintenance	Remove sediments, litter, surface debris and weeds	Quarterly
	Replace any plants, to maintain planting density.	As required
Occasional maintenance	Infill any holes or scour in the filter, improve erosion protection if required	

Schedule	Required action	Frequency
Remedial actions	Remove and replace filter and vegetation above	As required but likely to be > 20 years
Flow Control Unit		
Routine maintenance	Remove litter and debris and inspect for sediment accumulation	Six Monthly
	Remove sediment from sump	As necessary – Indicated by system inspections
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor operation	Six Monthly
	Inspect flow control unit and establish appropriate replacement frequencies	Six Monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first year of operation, then every six months

6 SUMMARY AND RECOMMENDATIONS

This report has been prepared on behalf of A2Dominion and relates to the proposed development of land west of Ravenscroft, Storrington for residential use.

Foul Water Drainage

Foul water is proposed to connect to a 150 mm diameter public foul sewer located in Browns Lane to the north of the site.

Surface Water Drainage

The assessment presents a preliminary scheme for the management of surface water from the proposed development. A summary of the principal findings is provided below:

- It is proposed to direct all runoff from the developed site to the existing drainage ditch located adjacent to the northern boundary;
- Flow rates will be restricted to the existing 50.0% AEP and 3.3% AEP greenfield runoff rate with runoff stored within oversized pipes, geo-cellular attenuation tanks, permeable paving sub-base and an attenuation basin;
- Everyday rainfall will be managed through the use of water butts, permeable surfaces, rain gardens (tree pits) and an attenuation basin. These SuDS features will also provide the necessary water quality treatment measures; and
- The pipe network and SuDS features may be adopted by Southern Water. SuDS elements within the curtilage of residential dwellings would be the responsibility of the owner of the property. SuDS in open spaces may be maintained by a management company. SuDS which convey highway runoff may be adopted by the local highway authority.

Overall Conclusion

This assessment and information presented in this report demonstrates that the proposed development may be completed in accordance with the requirements of planning policy.

APPENDIX A

Proposed Site Plan



N

1:500@A1

0

5m

10m

25m

50m

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10424

P06	Issued for Coordination	NC	GP	04/08/26
P05	Western Range Adjustment	GP	LD	13/08/26
P04	Design Freeze Issue	GP	LD	07/08/26
P03	General Adjustments	GP	LD	06/08/26
P02	Revised Semi-Detached Layout	NC	LD	28/07/26
P01	Initial Issue	GP	LD	21/07/26
Rev	Amendments	By	Chkd	Date

HNW Architects

Document Status

Preliminary

Client Name

A2Dominion

Project Name

Land West of Ravenscroft, Storrington

Scale

HNW Project No.

Date Created

A1 - 1: 500

26025

21/07/26

Document Title

Proposed Site Plan (Block Plan)

Document Reference

Revision

26025-HNW-ZZ-ZZ-DR-A-2100

P06

Chichester

61 North Street, Chichester, PO19 1NB

01243 533300

Brighton & Hove

Plattfirm, Church Road, Hove, BN3 2AF

01273 932485



Client
A2 Dominion

Project
Land West of Ravenscroft,
Storrington

Drawing
Full Site Coloured Render

Project Number
05963

Drawing Number
1006

Revision
-

Scale
1:1000 @ A1

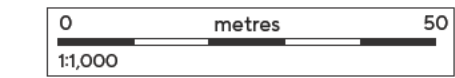
Date
September 2026

Checked By
RM

Status
DRAFT

- Red Line Boundary
- Existing Trees Retained
- Proposed Large Feature Trees
- Proposed Medium Street Trees
- Proposed Small Street Trees
- Proposed POS Trees
- Proposed Bulbs
- Proposed Ornamental Hedgerow
- Proposed Ornamental Shrubs
- Proposed Native Scrub
- Proposed Amenity Grass
- Proposed Meadow Grassland
- Proposed Semi-shade Meadow Grassland
- Proposed Attenuation basin
- Retained Dense Vegetation
- Retained Wetland Grass
- Mown Footpath
- Compacted Self-binding Gravel
- Tarmac - Vehicular
- Tarmac - Pedestrian
- Tarmac - Rear Garden paths
- Permeable Block Paving
- Block Paving
- Small Flag Paving

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APPENDIX B

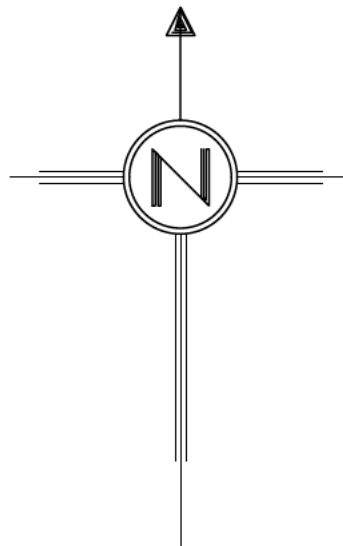
Topographic Survey

LAYER INFORMATION	
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BORDER	TITLE BLOCK & BORDER
BTTELECOM	BRITISH TELECOM M/S ETC.
BTUKES	BRITISH TELECOM ROUTES
BUILDING	BUILDING OUTLINE
CABLETV	CABLE TV COVERS
CONTOURS	CONTOURS
CROSSES	CROSSES
DRAINAGE	POINT MARKERS
ELECTRIC	M/S GULLYS ETC.
FENCES	ELECTRICAL M/S ETC.
FOLIAGE	FENCE LINES
FURNITURE	FOUL WATER M/S
GAS	STREET FURNITURE
GASLINES	GAS M/S VALVES ETC.
GRID	GAS ROUTING
LEVELS	GRID
ROADS	LEVELS
STATIONS	ROAD OUTLINE
STORM	SURVEY STATIONS
SURFACES	STORM WATER M/S, GULLYS ETC.
TEXT	SURFACE EDGES
TREES	TEXT
UNKNOWN	TREE OUTLINE & FOLIAGE
WALLS	UNKNOWN SERVICES
WATER	WALLS
WSERVICES	WATER OUTLINE
	WATER METERS, STOP VALVES ETC.

LINETYPES & SYMBOLS	
	BUILDING OUTLINE
	KERB LINE
	FENCE
	SURFACE EDGE
	FOUL DRAINAGE
	STORM DRAINAGE
	OVERHEAD CABLES
	FOLIAGE OUTLINE
	SURVEY STATION
	GATES
	TREE CANOPY
	SLOPE SYMBOL

LEGEND			
AV	AIR VALVE	NP	NAME PLATE
BB	BOLLARD	OB	OPEN BOMBED FENCE
BS	BUS STOP	OP	OPEN PAULING FENCE
BS	BRITISH TELECOM BOX	PC	POST & CHAIN FENCE
BW	BARB WIRE FENCE	PH	PUBLIC HOUSE
CB	CLOSE BOARD FENCE	PL	PURVIEW LIGHT
CH	CHIMNEY	PM	PARKING METER
CH	CORRUGATED IRON FENCE	PM	POST & WIRE FENCE
CM	CHAIN LINK FENCE	PM	POST & WIRE MESH
CP	CELLAR MANHOLE	RE	ROAD SIGN
CTV	CABLE TELEVISION POINT	RTW	RETAINING WALL
DC	DRAINAGE CHANNEL	SV	STOP VALVE
DX	DROP KERB	SV	STOP VALVE
ELC	ELECTRICITY SUB	TT	TOP OF FENCE LEVEL
STN	STATION	TT	TOP OF FENCE LEVEL
EP	ELECTRICITY POLE	TS	TRAFFIC SIGNAL
FB	FOOT BRIDGE	UN	UNABLE TO LIFT
FI	FIRE ESCAPE	VP	VENT PIPE
FP	FOOTPATH	WB	WHITE BIN
FS	FLASHTAG	WM	WATER METER
GR	GRATING	WO	WASH OUT
GV	GAS VALVE		
	HYDRANT		
	INSPECTION COVER		
	IRON RAILINGS		
KD	KERB OUTLET (GULLY)		
LP	LAMP POST		
LB	LETTER BOX		
MISC	MIXED CONSTRUCTION FENCE		
MHT	MANHOLE		
MHT	BRITISH TELECOM		
MHC	ELECTRICAL		
MHC	GAS		
MHC	MERCURY		
MP	MISC POST		
NB	NOTICE BOARD		

NORTH (INDICATIVE)



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EAST SUSSEX - BN7 1XS	
TEL 01273 472492	
E-MAIL: m.j.z.associates@gmail.com	

SITE
LAND WEST OF RAVENSCROFT
STORRINGTON
WEST SUSSEX

CLIENT
NEAME SUTTON LIMITED
CHARTERED TOWN PLANNERS
COLES YARD BARN
NORTH LANE
CLANFIELD
HAMPSHIRE
PO8 ORN

NOTES
LEVELS AND COORDINATES BASED ON ORDNANCE
SURVEY VIA G.P.S.
TREE INFORMATION
GIRTH/DIAMETER/HEIGHT/SPREAD

JOB REF 9026	DRAWING No. MJZ-9026-10
SCALE 1:200	SHEET SIZE A1 LANDSCAPE
DATE JUNE 2020	SURVEYED BY CS/TC

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508660 E

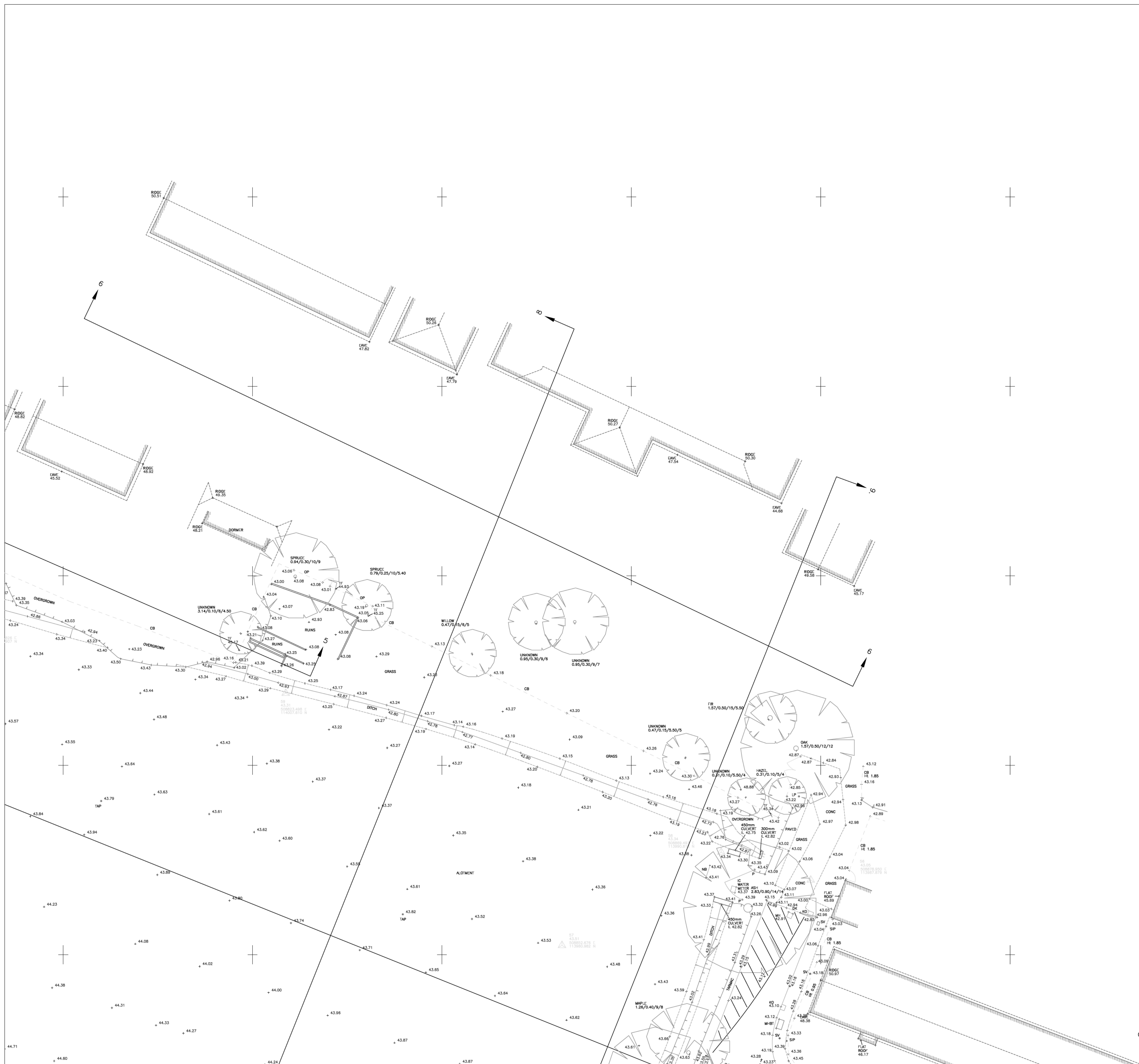
114040 N
508660 E

114020 N
508660 E

114000 N
508660 E

113980 N
508660 E



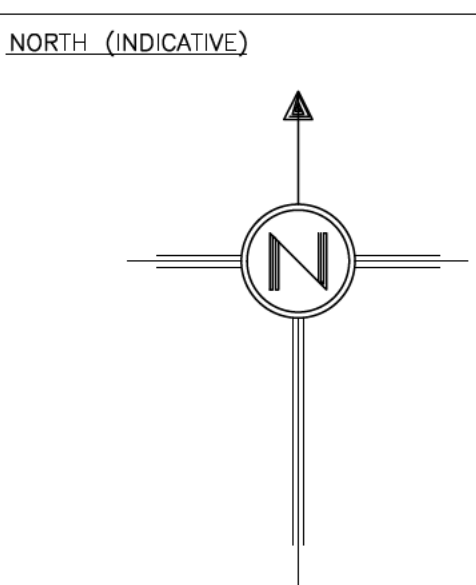


LAYER INFORMATION

0	EMPTY
BORDER	BITUMEN & BORDER
BUTYLENE	BITUMEN & BUTYLENE M/PS ETC.
CLINERS	BITUMEN & HELOCUM ROUTES
BUILDING	CLINERS & OUTLINE
CABLETV	CABLE TV COVERS.
CONCRETE	CONCRETE
CROSSIES	CABLE MARKERS
DRAINAGE	MUL GULLY ETC.
ELECTRIC	ELECTRICAL M/PS ETC.
FENCES	FENCE LINES
FOLD	FOLD FOR M/PS
FURNITURE	STREET FURNITURE
GAS	GAS M/VALVES ETC.
GASLINES	GAS ROUTING
GRID	GRID
LEVELS	LEVELS
ROADS	ROADS
STATIONS	SURVEY STATIONS
TELE	TELEPHONE M/PS, GULLY'S ETC.
SURFACES	SURFACE EDGES
TREES	TREES
UNKNOWN	TREE OUTLINE & FOLIAGE
WALLS	UNKNOWN SERVICES
WATER	WATER
WATER	WATER OUTLINE
WATER	WATERMETERS, STOP VALVES ETC.

LINETYPES & SYMBOLS

	BUILDING OUTLINE
	KERB LINE
	FENCE
	SURFACE EDGE
	FOUL DRAINAGE
	STORM DRAINAGE
	OVERHEAD CABLES
	FOLIAGE OUTLINE
	SURVEY STATION
	
	GATES
	TREE CANOPY
	SLOPE SYMBOL

[illegible]

 LAND & MEASURED BUILDING SURVEYORS

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STORRINGTON
WEST SUSSEX

CLIENT
NEAME SUTTON LIMITED
CHARTERED TOWN PLANNERS
COLES YARD BARN
NORTH LANE
CLANFIELD
HAMPSHIRE
PO8 0RN

NOTES
LEVELS AND COORDINATES BASED ON ORDNANCE
SURVEY VIA G.P.S.
TREE INFORMATION
CIRTH / DIAMETER / HEIGHT / SPREAD

<u>JOB REF</u> 9026	<u>DRAWING No.</u> MJZ-9026-11
<u>SCALE</u> 1:200	<u>SHEET SIZE</u> A1 LANDSCAPE
<u>DATE</u> JUNE 2020	<u>SURVEYED BY</u> CS/TC



NORTH (INDICATIVE)

+++++

+++++

+++++

+++++

+++++

LAND & MEASURED BUILDING SURVEYORS

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SITE

LAND WEST OF RAVENSCROFT

STORRINGTON

WEST SUSSEX

CLIENT

NEAME SUTTON LIMITED

CHARTERED TOWN PLANNERS

COLES YARD BARN

NORTH LANE

CLANFIELD

HAMPSHIRE

PO8 0RN

NOTES

LEVELS AND COORDINATES BASED ON ORDNANCE

SURVEY VIA G.P.S.

TREE INFORMATION

GIRTH/DIAMETER/HEIGHT/SPREAD

JOB REF

9026

DRAWING No.

MJZ-9026-8

SCALE

1:200

SHEET SIZE

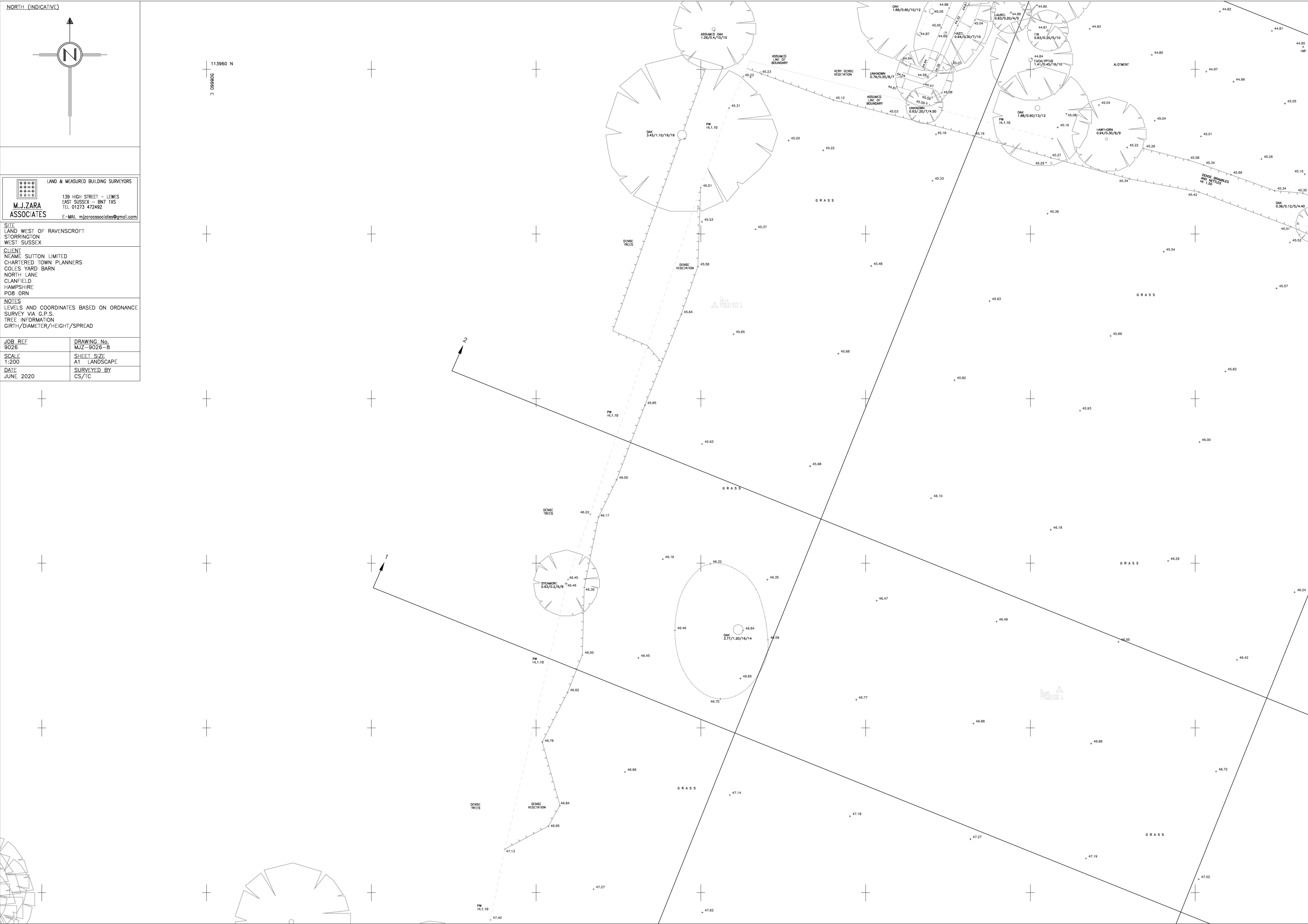
A1 LANDSCAPE

DATE

JUNE 2020

SURVEYED BY

CS/TC

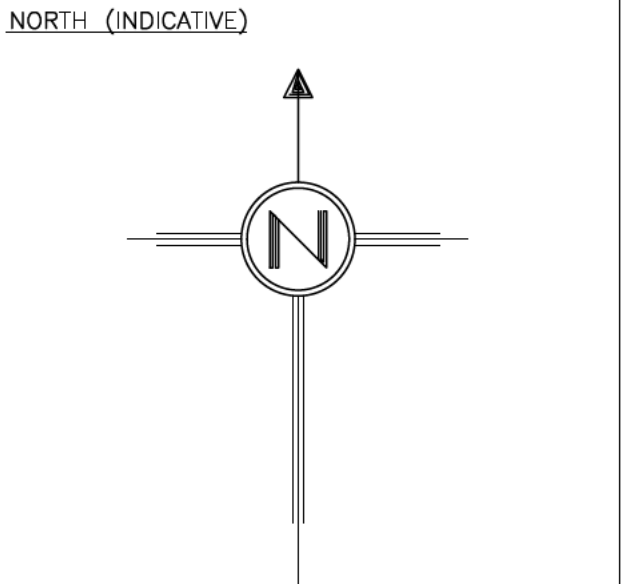




LAYER INFORMATION	
0	EMPTY
BORDER	TELEBLOCK & BORDER
BTELECOM	BRITISH TELECOM MYS ETC.
BTUNITS	BRITISH TELECOM ROUTES
BUILDING	BUILDING OUTLINE
CABLE	CABLE TV COVERS
CABLETV	CONTOURS
CONTOURS	CONTOURS
CROSSES	POINT MARKERS
DRAINAGE	MYS GULLYS ETC.
ELECTRIC	ELECTRICAL MYS ETC.
FENCES	FENCE LINES
GULL	TOUR WATER MYS
FURNITURE	STREET FURNITURE
GAS	GAS MYS VALVES ETC.
GAS LINES	GAS ROUTING
GRID	GRID
LEVELS	LEVELS
ROADS	ROAD OUTLINE
STATIONS	SURVEY STATIONS
STORM	STORM WATER MYS, GULLYS ETC.
SURFACES	SURFACE (DGIS)
TEXT	TEXT
TREES	TREE OUTLINE & FOLIAGE
UNKNOWN	UNKNOWN SERVICES
WALLS	WALLS
WATER	WATER OUTLINE
WSERVICES	WATER METERS, STOP VALVES ETC.

LINETYPES & SYMBOLS	
	BUILDING OUTLINE
	KERB LINE
	FENCE
	SURFACE EDGE
	FOUL DRAINAGE
	STORM DRAINAGE
	OVERHEAD CABLES
	FOLIAGE OUTLINE
	SURVEY STATION
	GATES
	TREE CANOPY
	SLOPE SYMBOL

LEGEND	
AV	AIR VALVE
BB	BOLLARD
BM	BENCH MARK
BS	BUS STOP
BTB	BRITISH TELECOM BOX
BW	BARB WIRE FENCE
CB	CLOSE BOARD FENCE
CH	COAL HOLE
CHFF	CHIMNEY
CI	CORRUGATED IRON FENCE
CM	CHAIN LINK FENCE
CP	CELLAR MANHOLE
CP	CHESNAUT PAVING
CIV	CABLE TELEVISION POINT
DC	DRAINAGE CHANNEL
DK	DROP KERB
ELC SUB	ELECTRICITY SUB STATION
EP	ELECTRICITY POLE
FB	FOOT BRIDGE
FE	FIRE ESCAPE
FI	FIRE HYDRANT
FP	FOOTPATH
FS	FLAGSTAFF
GR	GULLY
GV	GAS VALVE
HY	HYDRANT
IP	INSPECTION COVER
IP	INVERT LEVEL
IP	IRON RAILINGS
KO	KERB OUTLET (GULLY)
LP	LAMP POST
LB	LETTER BOX
MISC	MIXED CONSTRUCTION FENCE
MH	MANHOLE
MHBT	BRITISH TELECOM
MHC	ELECTRICAL
MHG	GAS
MIMC	MERCURY
MP	MILE POST
NB	NOTICE BOARD
NP	NAME PLATE
OB	OPEN BOARD FENCE
OP	OPEN PAILING FENCE
PC	POST & CHAIN FENCE
PH	PUBLIC HOUSE
PH	PUBLIC CALL BOX
PH	PARKING LIGHT
PM	PARKING METER
PM	POST & WIRE FENCE
PM	POST & WIRE MESH
RE	ROAD SIGN
RE	ROOFTOP EYE
RTW	RETAINING WALL
RS	SERVICE INDICATOR POST
SV	STOP VALVE
SV	TELEPHONE CALL BOX
TS	TOP OF FENCE LEVEL
TS	TELEGRAPH POLE
TS	TRAFFIC SIGNAL
TS	UNABLE TO LIFT
VP	VENT PIPE
WB	WASTE BIN
WM	WATER METER
WO	WASH OUT



++++
++++
++++
++++

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SITE LAND WEST OF RAVENSCROFT STORRINGTON WEST SUSSEX	
CLIENT NEAME SUTTON LIMITED CHARTERED TOWN PLANNERS COLES YARD BARN NORTH LANE CLANFIELD HAMPSHIRE PO8 0RN	
NOTES LEVELS AND COORDINATES BASED ON ORDNANCE SURVEY VIA G.P.S. TREE INFORMATION GIRTH/DIAMETER/HEIGHT/SPREAD	
JOB REF 9026	DRAWING No. MJZ-9026-6
SCALE 1:200	SHEET SIZE A1 LANDSCAPE
DATE JUNE 2020	SURVEYED BY CS/TC

APPENDIX C

Desk Study and Preliminary Risk Assessment Report

Desk Study and Preliminary Risk Assessment Report



Desk Studies | Risk Assessments | Site Investigations | Geotechnical | Contamination Investigations | Remediation Design and Validation

Site: Land at St Joseph's, Greyfriars Lane, Storrington

Client: A2 Dominion Housing Group Limited

Report Date: 19 June 2017

Project Reference: J13159

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FS 29280

EMS 506775

OHS 506776

SUMMARY

The site, which extends to about 10.7ha, comprises former agricultural fields containing scattered mature trees. It is proposed to redevelop the site with 2 storey housing

Geological records indicate the site to be predominantly underlain by Gault Clay, with the underlying Folkestone Formation shown in the far north of the site. Some head deposits are also shown, associated with a ditch.

A historical Ordnance Survey map search and desk study was carried out and indicates that the site has a history of agricultural use.

The site is one of low contamination risk, but testing as part of a full contamination investigation is recommended.

Drainage will be a critical consideration in the redevelopment of the site. A depression, connected to a ditch crosses the site from south to north and these are believed to be spring fed. Rushes are present in the south of the site suggesting wet or waterlogged ground and maintaining good surface water drainage through the site will be essential. Surface water drainage by soakaways is not likely to be effective over the majority of the site.

This report has been prepared for the sole internal use and reliance of A2Dominion Housing Group Ltd and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorization of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The findings and opinions conveyed via this Desk Study Report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd believes are reliable. Nevertheless, Southern Testing Laboratories Ltd cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.



D Vooght MSc
(Countersigned)



S F Pratt MSc CGeol
(Signed)

For and on behalf of Southern Testing Laboratories Limited

STL: J13159
19 June 2017

TABLE OF CONTENTS

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APPENDIX A	Site Plans
APPENDIX B	Photographs
APPENDIX C	Desk Study Results

A INTRODUCTION

1 Authority

Our authority for carrying out this work is contained in a completed Purchase Order from Sam MacDonald of A2Dominion dated 31st May 2017.

2 Location

The site is located on the south side of the village of Storrington, West Sussex, to the east of Greyfriars Lane. The approximate National Grid Reference of the site is TQ 087 137.

3 Proposed Construction

It is proposed to construct new housing at the site. It is not known at this stage what form these will take but for the purposes of this report houses and flats up to two storeys are assumed.

For the purposes of the contamination risk assessment, the proposed development land use is classified as **Residential with plant uptake, (CLEA model¹/C4SL report²)**. The gas sensitivity of the site is rated as High (CIRIA C665³).

4 Object

This is a Phase 1 Desk Study and Walkover investigation. The object of the investigation was to assess the site visually, carry out a historical and environmental review of the site and the immediate surrounding area in order to determine sources of contamination, identify potential contaminants and allow the development of a conceptual understanding of the site.

5 Scope

This report presents our desk study findings, and test results and our interpretation of these data.

This report is not an engineering design and the figures and calculations contained in the report should be used by the Engineer, taking note that variations will apply, according to variations in design loading, in techniques used, and in site conditions. Our figures therefore should not supersede the Engineer's design.

The findings and opinions conveyed via this Desk Study Report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd believes are reliable. Nevertheless, Southern Testing Laboratories Ltd cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

The report has been prepared for the sole internal use and reliance of A2Dominion Housing Group Ltd. and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorization of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the

¹ Environment Agency Publication SC050021/SR3 'Updated technical background to the CLEA Model' (2009).

² SP1010 Development of Category 4 Screening Levels DEFRA (2014)

³ CIRIA C665 (2006) Assessing risks posed by hazardous ground gases to buildings.

authors owe them no duty of care and skill.

The recommendations contained in this report may not be appropriate to alternative development schemes. The contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based on them. Their validity should be confirmed at the time of site development.

B DESK STUDY & WALKOVER SURVEY

6 Desk Study

A desk study has been carried out. Reference has been made to the following information sources.

- Geological Maps
- Hydrogeological/Groundwater Vulnerability maps
- Aerial Photographs
- Historical Ordnance Survey Maps
- Environmental Databases
- Previous Reports
- Enquiries with the Local Authority
- Environment Agency website
- LIDAR maps
- BRE Radon Atlas⁴

The environmental databases search report compiled for this desk study contains site-specific environmental data drawn from data sets that comprise publicly available information together with data from third parties, some of which is under review. Accordingly, Southern Testing Laboratories Limited does not warrant its accuracy, reliability or completeness.

The full report is included in Appendix C, a summary of the salient features is included in the following sections of this report.

6.1 Geology

The British Geological Survey Map for the area indicates that the site geology consists largely of the Gault Clay, which covers the southern 2/3 of the site. The Underlying Folkestone Formation is shown over the northern 1/3, and within this, a thin 'finger' of head deposits encroaches into the site from the north alongside the ditch in the northern part of the site.

Head

Head is a superficial deposit predominantly formed by solifluction processes during cold, periglacial periods in the Ice Ages. Shallow soils were frequently waterlogged during these periods and together with freeze/thaw cycles caused a gradual downward migration of shallow soils. Although the climate has since changed, poorly designed engineering works, or periods of adversely high rainfall may still reactivate the relic slip surfaces.

Head soils characteristically comprise sandy silty clay containing randomly oriented fragments of angular materials of local derivation. Stratification, if present, is generally poor and the upper and lower surfaces of the deposits are rarely horizontal.

⁴ BR 211 (2015) 'Radon: guidance on protective measures for new buildings'

Folkestone Formation (Lower Greensand Group)

The Folkestone Formation, formerly called the Folkestone Beds, is a Cretaceous deposit and are described as poorly consolidated quartzose sand, with seams of pebbles, clay, veins and doggers of hard ferruginous sandstone ('carstone'). The sands are usually stained yellow or reddish brown by limonite and are usually of fine to medium grade. It is quite common to find that the sands are weakly cemented.

Gault Clay

The Gault formation consists of dark, bluish grey to pale grey weak mudstone and silty mudstone, which weather to yellow and brown clays.

Gault Clay is commonly highly plastic, and the presence of vertical fissures caused by clay shrinkage can cause extreme instability in excavations.

6.2 Hydrology and Hydrogeology

Data from the Environment Agency and other information relating to controlled waters is summarised below.

Data		Remarks	Possible Hazard to/from Site Y/N
Aquifer Designation	Superficial Deposits	A small area in the north of the site, associated with Head deposits is classified as a Secondary Undifferentiated Aquifer.	Y
	Bedrock	The majority of the site is situated on Unproductive strata (the Gault Clay) with a small area to the north situated on a Principal Aquifer (the Folkestone Formation).	Y
Groundwater Vulnerability		The majority of the site is situated on a Non-Aquifer, with an area to the north indicated as a Major Aquifer with Intermediate leaching potential (The Gault Clay and Folkestone Formation respectively).	Y
Abstractions		Mineral washing abstraction 587m East. No others within 500m.	N
Source Protection Zones		The site does not lie within a groundwater Source Protection Zone.	N
Surface Water Features		There is a ditch running south to north through the western part of the site. This is thought to be spring fed.	Y
Marine/Fluvial Flood Risk		The site is not shown within/adjacent to an area mapped as being at risk.	N
Surface Water Flood Risk		The site is not shown within/adjacent to an area mapped as being at risk.	N

Data	Remarks	Possible Hazard to/from Site Y/N
Reservoir Flood Risk	The site is not shown within/adjacent to an area mapped as being at risk.	N
Groundwater Flood Risk	The very north of the site is shown within an area that may be susceptible to groundwater flooding for properties both below and above ground level.	Y
Discharge Consents	Nearest is 90m to the SW, and relates to domestic sewage discharge to a freshwater stream	N

The groundwater flow direction is expected to be to the north towards the River Stor. Any on site contamination is unlikely to have an impact on groundwater quality due to the effectively impermeable nature of the Gault Clay, which is listed as Unproductive strata in terms of a groundwater resource. The far north of the site is however underlain by a Principal Aquifer and therefore any on site contamination could in theory have an impact on groundwater quality. As the groundwater flow direction is expected to be towards the north, and there are no significant potentially contaminative land uses on land to the south of the site, the likelihood of off site contamination being transmitted to the site through groundwater is negligible.

The site does however contain a ditch and depression thought to be spring fed from groundwater issuing at the junction of the Upper Greensand and Gault Clay beyond the site to the south, and this feeds a pond close to the northern site boundary, and another pond beyond the site to the north. Water within this could become contaminated by on site sources, although the likelihood of any such contamination would seem remote at this stage.

6.3 Historical Map Search

Copy extracts of historical Ordnance Survey plans dating from 1876 to 1999 were obtained and are presented in Appendix C together with a summary of the salient features. In brief, the site was shown on the earliest map as agricultural land, but with different internal field boundaries than at the present day. These early field boundaries are still shown up to the 1993 map, but at the present time, the site has only limited internal fencing or boundaries, including a ditch crossing the site with a concrete bridge in the northern third, and hedge lines separating the two southern fields. Four small ponds are shown within the site up until the map dated 1973 indicating that these had either been filled in, or were no longer collecting water beyond this date.

6.4 Environmental Databases

	Distance (m)	Direction	Details	Possible Hazard to site
Historical Industrial Land Uses	8	W	Brick and Tile Works	Y
	8	W	Potentially infilled land	Y
Trade Directory Entries	4	SW	Dry rot and damp control	Y
	15	SW	Car Body repairs	Y

	Distance (m)	Direction	Details	Possible Hazard to site
	26	SW	Printers	Y
	14	SW	Union Colours (Chemical Mans.)	Y
	52	W	Classic Car Specialists	Y
	84	W	Garage Services	Y
	84	W	Car Body Repairs	Y
Current and Historical Landfills	365	E	Chantry Lane Tip	N
Fuel Sites			None within 500m	N
Pollution Incidents	125	N	500 gallons of diesel to soakaway, possibly River Stor, 1994 (Minor Incident)	N
IPC Part B Authorisations			None within 350m (all to the north)	N
Hazardous Substances Consents			None within 500m	N
Sensitive Land Use Designations			South Downs National Park	N

The listings from Trade Directory entries are all from a single site, the Gerston Business Park, Greyfriars La, Storrington, situated on the former brick and tile works site (as depicted on the 1876 historical OS Map). The site in its entirety is around 60m x 80m and contains a number of businesses, some of which are potentially contaminative, but are therefore relatively small in scale. Only mobile contaminants would likely migrate to the subject site, however, the business park and the subject site are both situated on the Gault Clay and the likelihood of contaminant migration through the Gault Clay to the site is considered to be very low.

Potentially infilled ground relates to the former brick and tile works, the site of which is now the Gerston Business Park. Reference to historical maps does not show any indications of excavation or infilling ever having taken place, although the site was in existence since before the 1st Edition OS map was released. The site is not listed as a historical landfill, and it is considered unlikely that the site has been significantly filled. Such filled ground could be a potential source of land gas, however, the geology of the Gerston Business Park, and of the subject site are Gault Clay which would provide a barrier to the migration of any land gases that might be generated. The risks from this potential source are therefore considered low.

6.5 Geological Hazards and Mining Activities

Data from various sources relating to potential geological hazards at the site are summarized below. The Hazard Potentials listed for the BGS data are as presented in the Envirocheck report, derived from various generic BGS sources, which are not considered as site-specific. It is important that this information is considered in context of the actual site topography, ground conditions encountered during future investigation, and development proposals.

Data Source	Hazard	Hazard Potential to Site	Remarks
BGS	Potential for Collapsible Ground Stability Hazard	Very Low	
	Potential for Compressible Ground Stability Hazard	No Hazard	
	Potential for Ground Dissolution Stability Hazard	No Hazard	
	Potential for Landslide Ground Stability Hazard	Very Low	
	Potential for Running Sand Ground Stability Hazard	No Hazard/Very Low/Low	Dependent on geology. Water bearing Folkestone Formation will potentially run.
	Potential for Swelling or Shrinking Clay Ground Stability Hazard	No Hazard/Low/Very Low/Moderate	Dependent on geology. Gault Clay likely to have high plasticity and be susceptible to swelling and shrinkage near vegetation.
	Non-Coal mining Hazard	Low (Rare)	
ARUP	Mining Instability	Very Low	There are no listed mine workings within the 1km grid square within which the site is situated.
CSS/KURG*	Underground openings	Low Risk	Nearest listing is for Ice Wells, approximately 200m to the north.

*Chelsea Speleological Society/ Kent Underground Research Group

6.6 Other Sources

LIDAR data available on the internet has been studied and provides a depiction of the topography of the site, and shows the spring fed ditch line prominently.

Our own records for a Site Investigation carried out in 1979 on a site just to the east of the residential street Ravenscroft, around 250m to the east of the north eastern corner of the site indicates sandy clay soils overlying sands. The clays provided only poor bearing capacity (50kPa) and the underlying sands 100kPa. No contamination testing was carried out.

6.7 Radon Risk

With reference to BRE guidance, no radon protection is required on this site.

7 Walkover Survey

A walkover survey was carried out on the 13th June 2017. The site comprises unmanaged agricultural fields which were overgrown with long grass at the time of our survey.

7.1 General Description and Boundaries

The site is formed by several interconnecting agricultural fields, with limited fencing and hedging between the fields. The perimeter of the site generally comprises a dense and broad hedge line

containing mature native deciduous trees. There are scattered mature trees within the site itself (these can be seen on the aerial 1999 plan contained in the envirocheck report in Appendix C). The site is bound to the north by allotment gardens, by a private residence, The Domain and by the grounds of a former abbey and convent, now converted to housing, St Joseph's Abbey. To the south and west lies further agricultural land, other than in the extreme north west of the site where the boundary is with the gardens of houses in a residential street, 'Ravenscroft'. To the east lies a narrow paved lane, Greyfriars Lane, which is roughly at level with the site in the south, but becomes progressively incised to the north. There is a gas pressure reducing station just off site to the south west that shares a boundary with the site.

7.2 Topography and Drainage

The site is situated around 600m north of the South Downs chalk escarpment and lies at an elevation of between around 46mAOD and 55mAOD based on Google Earth imagery. The site is gently undulating, with falls generally to the north at an overall angle of around 1.3 degrees. There are cross falls towards a central tree lined ditch situated in the northern half of the site which is aligned with a shallow depression to its south assumed to be the course of an ephemeral spring. The ditch floor is around 1m below the adjacent ground level and empties into a shallow boggy pond just within the site on the northern boundary. A similar ditch, running east to west on its east side also empties into the pond. There is an assumed connection to a further pond a few metres away within the grounds of the former convent just beyond the northern boundary, but this area was too overgrown for close inspection.

The majority of the site is situated on the Gault Clay, with the underlying Folkestone Formation outcropping in the extreme north of the site and the overlying Upper Greensand and Chalk outcropping beyond the site to the south. The regional dip is at a few degrees to the south. Springs are commonly associated with the junction of the Upper Greensand and the underlying and largely impermeable Gault Clay, as is evidenced by numerous northward flowing streams shown on OS mapping in an east/west trending line along the base of the escarpment, and place names such as Springhead Farm and Waterfall Cottage. On the subject site there is no evidence of a spring head although rushes are common, and abundant in the two southern-most fields, and indicative of wet ground. The depression leading to the ditch on site are therefore thought to be fed by a spring or springs in wet and winter months, although they were dry at the time of our survey (this being carried out after a particularly dry Spring)

7.3 Vegetation

The majority of the site is covered in long grasses, with broad hedges of brambles, Thorn, and other species containing mature native deciduous trees. Tree species within the hedgerows are mostly Oak and Ash, with some Sycamore, Lime, and Field Maple. On the boundary with the allotments to the north there is a line of Beech cut into a tall hedge and along the boundary with property The Domain, a short line of coniferous trees.

Rushes, indicative of wet ground are present in abundance within the two southern-most fields and are also present scattered around the southern part of the site in general. There are also Horse Tails alongside the ditch in the northern part of the site.

7.4 Buildings and Land Use on Site and Nearby

There are no buildings currently on site, and based on historical mapping, no buildings have been present historically.

7.5 Photographs

A series of photographs showing the site as it appeared on the 13th June 2017 is included in Appendix B.

C PRELIMINARY CONCEPTUAL MODEL

8 Introduction

In the context of this report, the conceptual model summarises the potential pollutant linkages identified for the site and forms the basis of the risk assessment for the site. The preliminary model comprises the potential sources of contamination, receptors that could be harmed and exposure pathways identified from the desk study and walkover survey. These potential linkages form the basis upon which the investigation is designed and reported.

9 Potential Sources of Contamination

The site has a history of agricultural use and is located within a rural/agricultural area.

No significantly contaminative uses have been identified, on site or in the locality, however it is theoretically possible that pesticides may have been used on the land in the past, or that mobile contaminants from the Gerston Business Park may have migrated to the site.

9.1 On Site Sources

Source	Potential Contaminants
Agricultural Spray	Pesticides/Herbicides

9.2 Off Site Sources

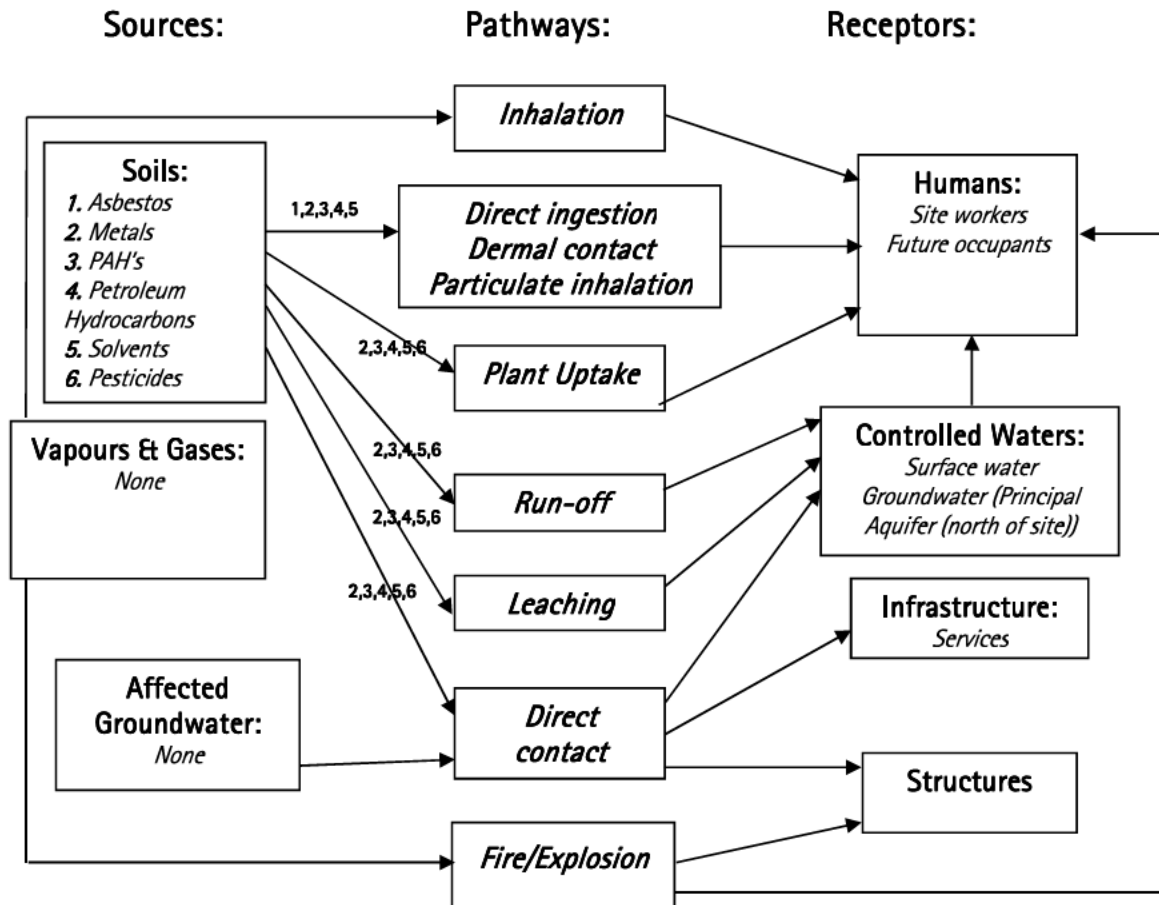
The site may be impacted by contamination migrating from beyond the site boundary. The following potential off-site sources have been identified.

Source	Distance from Site Boundary	Direction	Potential Contaminants	Likely Hazard to Site
Gerston Business Park (various Industries)	4m or more	W	Metals, PAH, Petroleum Hydrocarbons, Solvents, Asbestos	Very Low

As previously discussed, the Gerston Business Park is situated close to the south west part of the site, and contains numerous and varied businesses. Only mobile contaminants could potentially have an impact on the subject site, and the geology at this location is the effectively impermeable Gault Clay, which would severely reduce the transmission of contaminants in groundwater. Accordingly this hazard is considered a very low risk.

10 Pollutant Linkages and Model Summary

The following diagram shows the potential pollutant linkages identified for the site and summarises the preliminary conceptual model:



// Denotes potential pollutant linkage not complete

11 Conclusions and Recommendations

In general the site can be considered one of low risk in terms of the hazards from contamination. Only limited potential sources of contamination have been identified, and these are considered unlikely to have a significant impact on soils or groundwater. However, only testing can confirm this, and therefore a contamination investigation including soil sampling and testing based on the results of this Desk Study Report is recommended. This could be carried out in conjunction with a geotechnical ground investigation to address geotechnical issues such as for foundations, drainage and road design.

12 Geotechnical Considerations

The site is likely to be dominated by clay soils. The Gault Clay is typically a high plasticity clay and is susceptible to swelling and shrinkage movements when in proximity to vegetation. Allowance for deepened foundations should be made where proposed properties are close to trees, or potentially

for piling if proximity makes foundation depths uneconomic. The presence of springs could indicate a high groundwater level, and water ingress into foundation and other excavations should not be overlooked. It is however, not anticipated that significant water entry into the Gault Clay soils would be experienced due to the very low anticipated permeability. A BGS borehole situated around 200m west of Greyfriars lane indicates that rock strata, '1ft thick' is present at the base of the Gault Clay, and this could therefore be encountered towards the north of the site near the junction with the underlying Folkestone Formation.

In the north of the site, the Folkestone Formation is shown as outcropping, and these soils are typically sands and consequently not susceptible to swelling and shrinkage movements.

In respect of bearing capacity, both soil types would normally be expected to have sufficient integrity to adequately support two storey housing, although the Folkestone Formation can be loose in places, and some ground improvement or piling may be required.

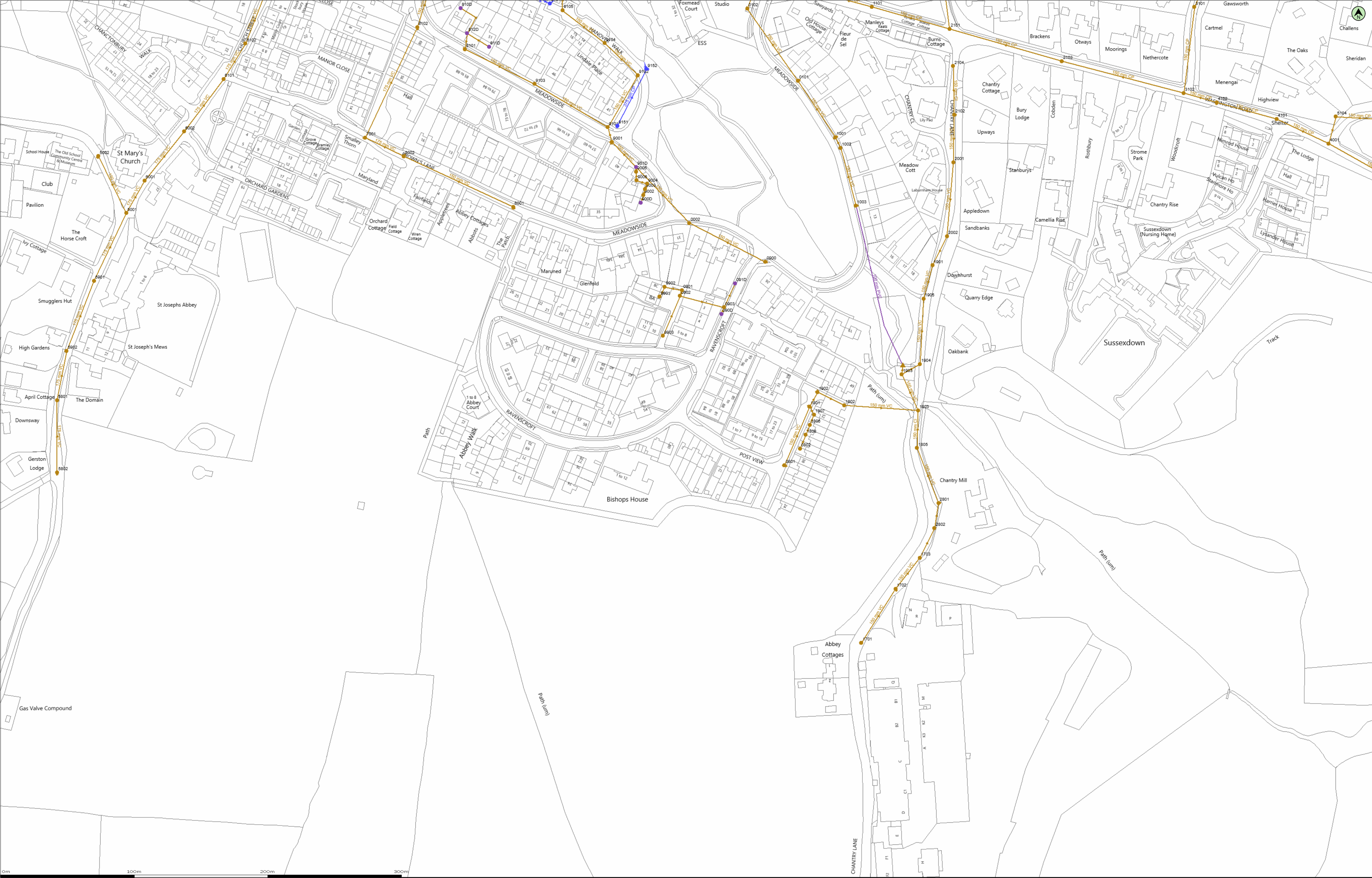
Our own records for a Site Investigation carried out in 1979 on a site just to the east of the residential street Ravenscroft, around 250m to the east of the north eastern corner of the site, and situated on the Folkestone Formation, indicates sandy clay soils overlying sands. The clays provided only poor bearing capacity (50kPa) and the underlying sands 100kPa. Some seepages were present at a high level, but significant problems with groundwater were not envisaged. Immediate blinding of formations formed on the sands was recommended and nominal mesh reinforcement advised. No contamination testing was carried out.

Effective site drainage is likely to be a significant issue if existing storm water infrastructure cannot be relied upon. The Gault Clay which predominates the site is not suitable for soakaways, and the Folkestone Formation, situated in the north of the site may have only poor soakage capacity. Groundwater levels may be high, meaning storage capacity may be restricted in any case. It may be possible to utilise the ditch/stream that runs through the site, but Environment Agency and Local Authority approval would be required and it is not clear whether this water course is still effectively open as far as the ultimate receiving water course, the River Stour.

Due to the anticipated high groundwater condition, and possible spring flow, excavations may be unstable and require dewatering, particularly in wet/winter months. Maintaining good surface drainage (or improving the existing drainage) through the site will be critical in avoiding long term drainage issues.

APPENDIX D

Southern Water Public Sewer Record



(c) Crown copyright and database rights 2020 Ordnance Survey 100031673

Date: 26/05/20

Scale: 1:1250

Map Centre: 509015,113867

Data updated: 01/04/20

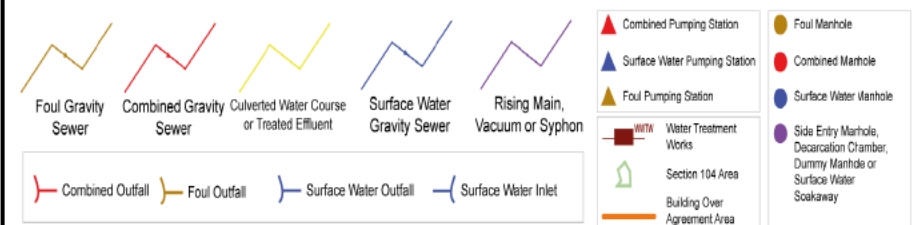
Our Ref: 390546 - 2

Wastewater Plan A1

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2020 Ordnance Survey 100031673. This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.



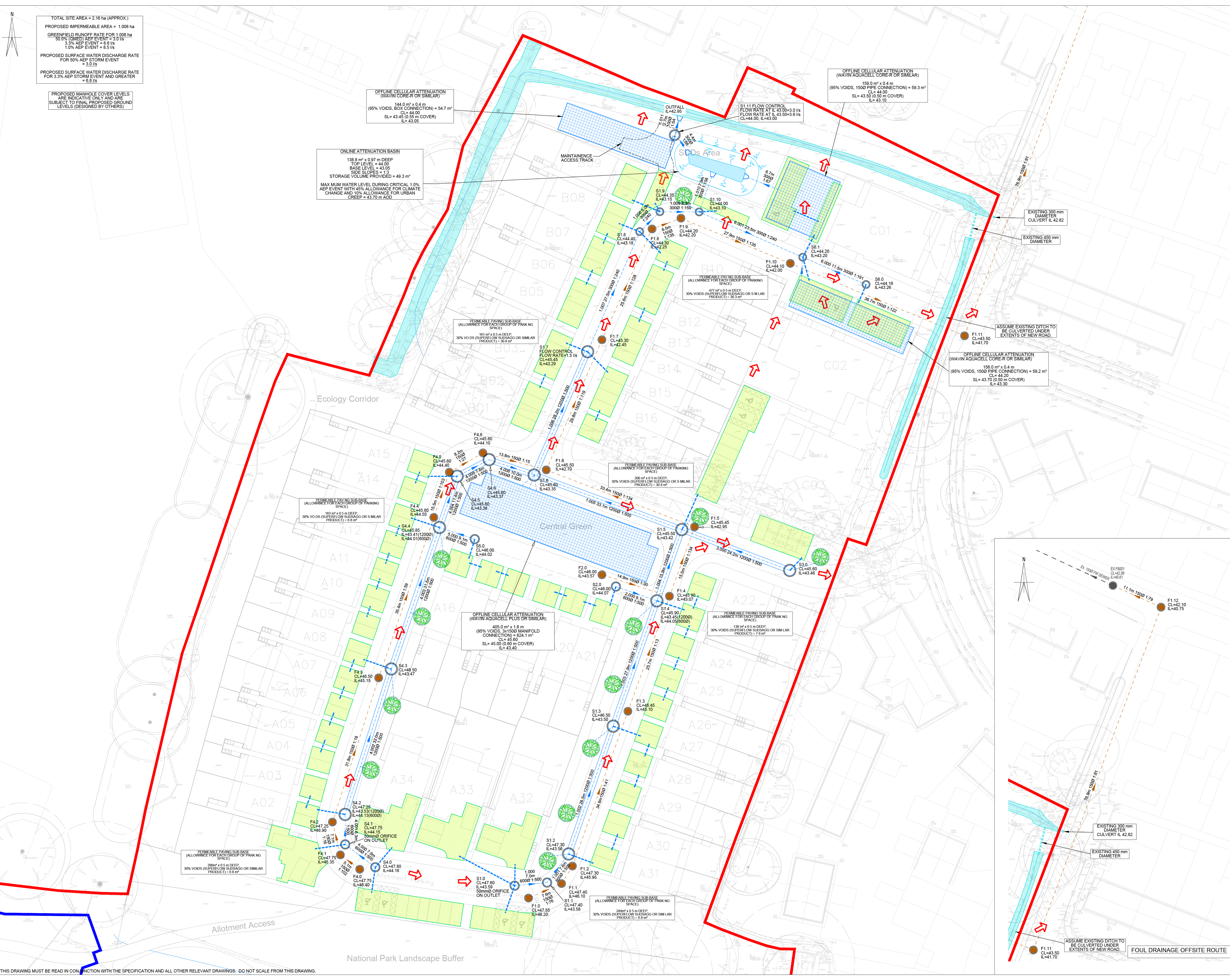
sc@stuartmichael.co.uk

Plot 1



APPENDIX E

Preliminary Drainage Layout



NOTES

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS. ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF WEETWOOD.
- ANNUAL EXCEEDANCE PROBABILITY RAINFALL EVENTS:
 - 100.0% (1:1) AEP RAINFALL EVENT
 - 50.0% (1:2) AEP RAINFALL EVENT
 - 3.3% (1:30) AEP RAINFALL EVENT
 - 1.0% (1:100) AEP RAINFALL EVENT
- PROPOSED SITE LAYOUT TAKEN FROM HNW ARCHITECTS 'PROPOSED SITE PLAN' DRAWING (REF: 26025-HNW-22-ZZ-DR-A-2100-P06, SEP 2026).
- EXISTING LEVEL INFORMATION TAKEN FROM M.J. ZARA ASSOCIATES 'TOPOGRAPHIC SURVEY' (REF: MJZ-6026, JUN 2026).
- EXISTING DRAINAGE LOCATION TAKEN FROM SOUTHERN WATER RECORD DRAWING (MAY 2020). LOCATION DETAILS ARE INDICATIVE ONLY AND TO BE CONFIRMED.

DRAINAGE KEY

- EXISTING PUBLIC FOUL WATER SEWER
- EXISTING WATERCOURSE
- PROPOSED SURFACE WATER SEWER
- PROPOSED FOUL WATER SEWER
- EXISTING PUBLIC FOUL WATER MANHOLE
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED FOUL WATER MANHOLE
- SEWER EASEMENT
- PROPOSED PERMEABLE PAVING
- PROPOSED PERMEABLE PAVING OUTLET CONNECTION
- PROPOSED TREE PIT
- PROPOSED CELLULAR STORAGE
- PROPOSED ATTENUATION BASIN
- EXISTING LEVEL
- SITE BOUNDARY
- ALLOTMENT AREA
- OVER AND FLOW ROUTE

Client
A2DOMINION

Drawing Status
PLANNING

Project
LAND WEST OF RAVENSCROFT STORRINGTON

Drawing Number
6997-WTWD-00-XX-DR-D-1101

Drawing Title
PRELIMINARY DRAINAGE LAYOUT

Date
SEP 2026

Scale (A0)
1:250

Drawn by
WC

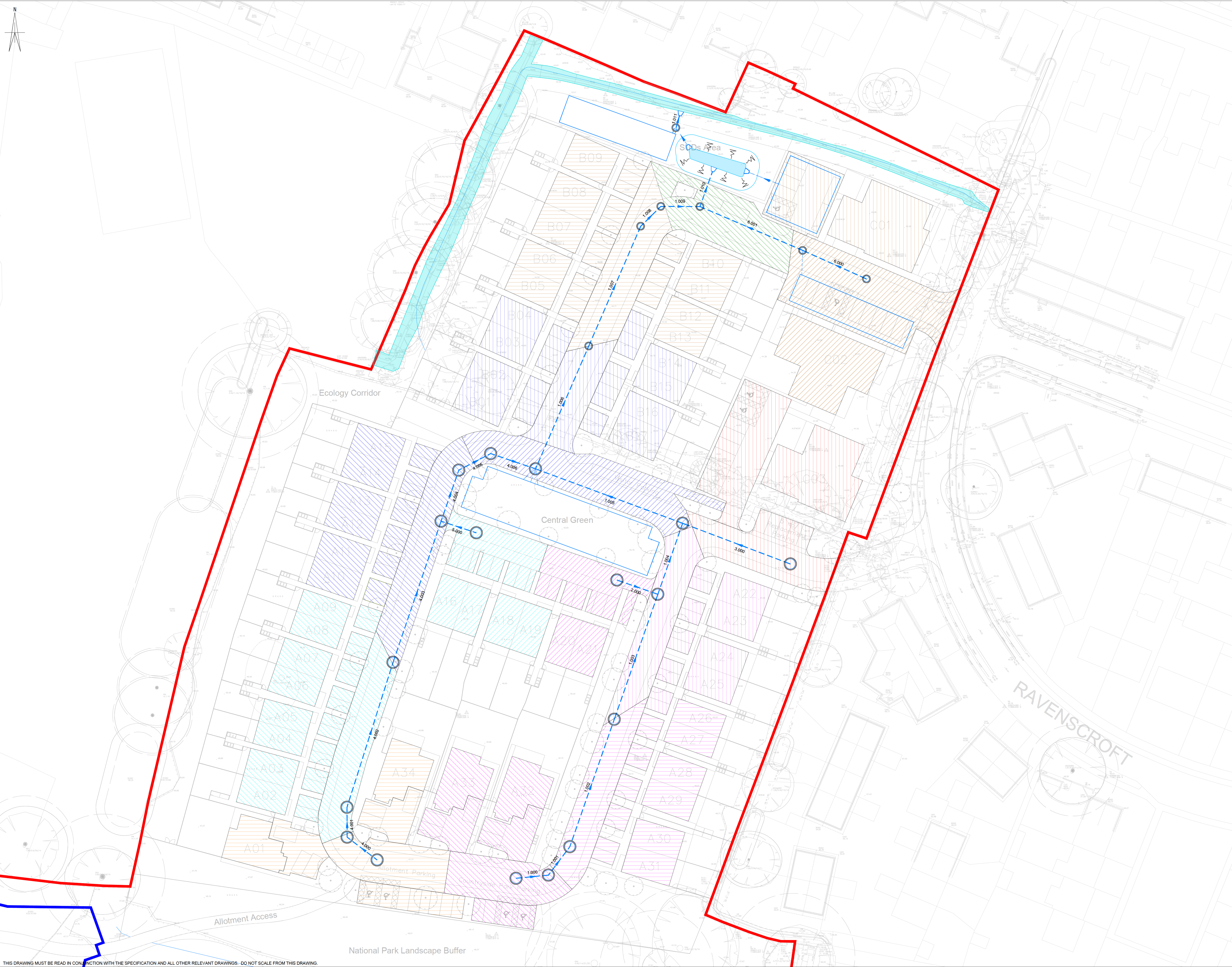
Check by
TB

Revision
P2

Project Address
Park House, Florrid
Byrnat Ovarit, Mold
CH7 1FQ
Tel 01352 700045
info@weetwood.net
www.weetwood.net

APPENDIX F

Impermeable Area Plan



NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS. ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF WEETWOOD.
- ANNUAL EXCEEDANCE PROBABILITY RAINFALL EVENTS:
 - 100.0% (1:1) AEP RAINFALL EVENT
 - 50.0% (1:2) AEP RAINFALL EVENT
 - 3.3% (1:30) AEP RAINFALL EVENT
 - 1.0% (1:100) AEP RAINFALL EVENT
- PROPOSED SITE LAYOUT TAKEN FROM HW ARCHITECTS 'PROPOSED SITE PLAN' DRAWING (REF: 26025-HNW-ZZ-ZZ-DR-A-2100-P05, AUG 2026).
- EXISTING LEVEL INFORMATION TAKEN FROM M.J. ZARA ASSOCIATES TOPOGRAPHIC SURVEY (REF: MJZ-6026, JUN 2020).
- EXISTING DRAINAGE LOCATION TAKEN FROM SOUTHERN WATER RECORD DRAWING (MAY 2020). LOCATION DETAILS ARE INDICATIVE ONLY AND TO BE CONFIRMED.

IMPERMEABLE AREA KEY

	PROPOSED S104 SURFACE WATER SEWER
	SITE BOUNDARY
	ALLOTMENT AREA
	1.001 (0.067ha)
	1.001 (0.000ha)
	1.002 (0.000ha)
	1.003 (0.073ha)
	2.000 (0.033ha)
	1.004 (0.060ha)
	3.000 (0.044ha)
	1.005 (0.000ha)
	4.000 (0.072ha)
	4.001 (0.000ha)
	4.002 (0.000ha)
	4.003 (0.063ha)
	4.005 (0.062ha)
	4.006 (0.000ha)
	1.006 (0.042ha)
	1.007 (0.000ha)
	1.008 (0.000ha)
	1.009 (0.112ha)
	6.000 (0.077ha)
	6.001 (0.044ha)
	1.010 (0.030ha)
	1.011 (0.000ha)

P2	22.09.26	SITE BOUNDARY UPDATED	WC	TB
P1	04.09.26	INITIAL ISSUE	WC	TB
REV	DATE	DESCRIPTION	DRAWN BY	CHECK BY

Development • Planning • Environment

Client
A2DOMINION

Drawing Status
PLANNING

Project
LAND WEST OF RAVENSCROFT STORRINGTON

Drawing Number
6997-WTWD-00-XX-DR-D-3101

Drawing Title
IMPERMEABLE AREAS LAYOUT

Park House, Flordd
Brynant Gwair, Mold
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Tel 01352 700045
info@weetwood.net
www.weetwood.net

Date
SEP 2026

Scale (m)
1:250

Drawn by
WC

Check by
TB

Revised
P2

APPENDIX G

Greenfield Runoff Calculations

UK Design Flood Estimation

Generated on Tuesday, September 01, 2026 4:36:23 PM by ModellingMold
Printed from the ReFH2 Flood Modelling software package, version 4.0.8560.23190

Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH2)

Site details

Checksum: E45A-3CAC

Site name: FEH_Point_Descriptors_508810_113934_v5_1_0

Easting: 508810

Northing: 113934

Country: England, Wales or Northern Ireland

Catchment Area (km²): 0.01008

Using plot scale calculations: Yes

Model: 2.3

Site description: None

Model run: 2 year

Summary of results

Rainfall - FEH22 (mm):	30.83	Total runoff (ML):	0.03
Total Rainfall (mm):	23.35	Total flow (ML):	0.11
Peak Rainfall (mm):	3.98	Peak flow (m ³ /s):	0.0030

Parameters

Where the user has overridden a system-generated value, this original value is shown in square brackets after the value used.

* Indicates that the user locked the duration/timestep

Rainfall parameters (Rainfall - FEH22)

Name	Value	User-defined?
Duration (hh:mm:ss)	06:00:00 [01:54:00]	Yes
Timestep (hh:mm:ss)	00:24:00 [00:06:00]	Yes
SCF (Seasonal correction factor)	0.76	No
ARF (Areal reduction factor)	1	No
Seasonality	Winter	No

Loss model parameters

Name	Value	User-defined?
Cini (mm)	72.38	No
Cmax (mm)	651.96	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	1	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m ³ /s)	0	No
BL (hr)	35.53	No
BR	2.65	No

Urbanisation parameters

Name	Value	User-defined?
Sewer capacity (m ³ /s)	0	No
Exporting drained area (km ²)	0	No
Urban area (km ²)	0	No
Urbext 2000	0	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No

UK Design Flood Estimation

Generated on Friday, September 04, 2026 7:52:53 AM by ModellingMold
Printed from the ReFH2 Flood Modelling software package, version 4.0.8560.23190

Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH2)

Site details

Checksum: F664-ED61

Site name: FEH_Point_Descriptors_508810_113934_v5_1_0

Easting: 508810

Northing: 113934

Country: England, Wales or Northern Ireland

Catchment Area (km²): 0.01008

Using plot scale calculations: Yes

Model: 2.3

Site description: None

Model run: 30 year

Summary of results

Rainfall - FEH22 (mm):	46.23	Total runoff (ML):	0.04
Total Rainfall (mm):	30.95	Total flow (ML):	0.16
		Peak flow (m ³ /s):	0.0066
Peak Rainfall (mm):	4.22		

Parameters

Where the user has overridden a system-generated value, this original value is shown in square brackets after the value used.

* Indicates that the user locked the duration/timestep

Rainfall parameters (Rainfall - FEH22)

Name	Value	User-defined?
Duration (hh:mm:ss)	01:54:00	No
Timestep (hh:mm:ss)	00:06:00	No
SCF (Seasonal correction factor)	0.67	No
ARF (Areal reduction factor)	0.99	No
Seasonality	Winter	No

Loss model parameters

Name	Value	User-defined?
Cini (mm)	72.38	No
Cmax (mm)	651.96	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	1	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m ³ /s)	0	No
BL (hr)	35.53	No
BR	2.65	No

Urbanisation parameters

Name	Value	User-defined?
Sewer capacity (m ³ /s)	0	No
Exporting drained area (km ²)	0	No
Urban area (km ²)	0	No
Urbext 2000	0	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No

UK Design Flood Estimation

Generated on Friday, September 04, 2026 7:53:18 AM by ModellingMold
Printed from the ReFH2 Flood Modelling software package, version 4.0.8560.23190

Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH2)

Site details

Checksum: F664-ED61

Site name: FEH_Point_Descriptors_508810_113934_v5_1_0

Easting: 508810

Northing: 113934

Country: England, Wales or Northern Ireland

Catchment Area (km²): 0.01008

Using plot scale calculations: Yes

Model: 2.3

Site description: None

Model run: 100 year

Summary of results

Rainfall - FEH22 (mm):	57.64	Total runoff (ML):	0.06
Total Rainfall (mm):	38.58	Total flow (ML):	0.20
		Peak flow (m ³ /s):	0.0085
Peak Rainfall (mm):	5.26		

Parameters

Where the user has overridden a system-generated value, this original value is shown in square brackets after the value used.

** Indicates that the user locked the duration/timestep*

Rainfall parameters (Rainfall - FEH22)

Name	Value	User-defined?
Duration (hh:mm:ss)	01:54:00	No
Timestep (hh:mm:ss)	00:06:00	No
SCF (Seasonal correction factor)	0.67	No
ARF (Areal reduction factor)	0.99	No
Seasonality	Winter	No

Loss model parameters

Name	Value	User-defined?
Cini (mm)	72.38	No
Cmax (mm)	651.96	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	1	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m ³ /s)	0	No
BL (hr)	35.53	No
BR	2.65	No

Urbanisation parameters

Name	Value	User-defined?
Sewer capacity (m ³ /s)	0	No
Exporting drained area (km ²)	0	No
Urban area (km ²)	0	No
Urbext 2000	0	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No

APPENDIX H

Surface Water Attenuation - Storage Volume Calculation

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	0.000
Return Period (years)	100	Maximum Rainfall (mm/hr)	0.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	✓
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
✓	1.0	0.067	5.00	47.600	Manhole	Adoptable	1500	508773.974	113849.630	3.410	44.190
✓	1.1			47.400	Manhole	Adoptable	1500	508781.000	113850.024	3.224	44.176
✓	1.2			47.300	Manhole	Adoptable	2100	508785.319	113856.288	3.739	43.561
✓	1.3	0.073	5.00	46.500	Manhole	Adoptable	2100	508794.689	113883.170	2.996	43.504
✓	2.0	0.033	5.00	46.000	Manhole	Adoptable	1500	508795.255	113912.541	1.930	44.070
✓	1.4	0.065	5.00	45.900	Manhole	Adoptable	2100	508803.879	113909.536	2.452	43.448
✓	3.0	0.084	5.00	45.600	Manhole	Adoptable	2100	508831.824	113915.928	2.140	43.460
✓	1.5			45.600	Manhole	Adoptable	2100	508809.101	113924.520	2.189	43.411
✓	4.0	0.072	5.00	47.800	Manhole	Adoptable	1500	508744.678	113853.491	3.640	44.160
✓	4.1			47.750	Manhole	Adoptable	1500	508738.356	113858.304	3.606	44.144
✓	4.2			47.250	Manhole	Adoptable	2100	508738.324	113864.616	3.719	43.531
✓	4.3	0.093	5.00	46.500	Manhole	Adoptable	2100	508748.141	113895.088	3.033	43.467
✓	5.0	0.044	5.00	46.000	Manhole	Adoptable	1500	508765.589	113922.505	1.540	44.460
✓	4.4			45.850	Manhole	Adoptable	2100	508758.166	113924.957	2.446	43.404
✓	4.5	0.082	5.00	45.600	Manhole	Adoptable	2100	508761.897	113935.729	2.219	43.381
✓	4.6			45.600	Manhole	Adoptable	2100	508768.622	113939.218	2.234	43.366

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
✓ 1.6/TANK	0.042	5.00	45.600	Manhole	Adoptable	2100	508778.082	113935.996	2.255	43.345
✓ 1.7/FC	0.090	5.00	45.450	Manhole	Adoptable	2100	508789.311	113961.907	2.161	43.289
✓ 1.8			44.400	Manhole	Adoptable	1200	508800.258	113987.166	1.226	43.174
✓ 1.9	0.112	5.00	44.350	Manhole	Adoptable	1200	508804.508	113991.360	1.201	43.149
✓ 6.0	0.077	5.00	44.160	Manhole	Adoptable	1200	508844.960	113977.570	0.900	43.260
✓ TANK		5.00	44.200	Junction			508837.690	113971.516	0.900	43.300
✓ 6.1	0.044	5.00	44.200	Manhole	Adoptable	1200	508834.417	113982.082	1.000	43.200
✓ 1.10/BASIN	0.030		44.000	Manhole	Adoptable	1200	508812.761	113991.321	0.901	43.099
✓ 1.11/FC/BASIN/TANK		5.00	44.000	Manhole	Adoptable	1200	508807.684	114007.963	1.000	43.000
✓ Outfall			43.500	Junction			508808.512	114010.545	0.550	42.950

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
? 1.000	1.0	1.1	7.037	0.600	Colebrook-White	44.190	44.176	0.014	500.0	600	Circular	5.11	0.0
? 1.001	1.1	1.2	7.609	0.600	Colebrook-White	44.176	44.161	0.015	500.0	600	Circular	5.23	0.0
? 1.002	1.2	1.3	28.468	0.600	Colebrook-White	43.561	43.504	0.057	500.0	1200	Circular	5.51	0.0
? 1.003	1.3	1.4	27.922	0.600	Colebrook-White	43.504	43.448	0.056	500.0	1200	Circular	5.79	0.0

Name	US Node	DS Node	Vel (m/s)	Flow (l/s)	Σ Area (ha)
1.000	1.0	1.1	1.082	0.0	0.067
1.001	1.1	1.2	1.082	0.0	0.067
1.002	1.2	1.3	1.666	0.0	0.067
1.003	1.3	1.4	1.666	0.0	0.140

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
? 2.000	2.0	1.4	9.133	0.600	Colebrook-White	44.070	44.052	0.018	500.0	600	Circular	5.14	0.0
? 1.004	1.4	1.5	15.868	0.600	Colebrook-White	43.448	43.416	0.032	500.0	1200	Circular	5.95	0.0
? 3.000	3.0	1.5	24.293	0.600	Colebrook-White	43.460	43.411	0.049	500.0	1200	Circular	5.24	0.0
? 1.005	1.5	1.6/TANK	33.074	0.600	Colebrook-White	43.411	43.345	0.066	500.0	1200	Circular	6.28	0.0
? 4.000	4.0	4.1	7.946	0.600	Colebrook-White	44.160	44.144	0.016	500.0	600	Circular	5.12	0.0
? 4.001	4.1	4.2	6.312	0.600	Colebrook-White	44.144	44.131	0.013	500.0	600	Circular	5.22	0.0
? 4.002	4.2	4.3	32.014	0.600	Colebrook-White	43.531	43.467	0.064	500.0	1200	Circular	5.54	0.0
? 4.003	4.3	4.4	31.506	0.600	Colebrook-White	43.467	43.404	0.063	500.0	1200	Circular	5.86	0.0
? 5.000	5.0	4.4	7.817	0.600	Colebrook-White	44.460	44.444	0.016	500.0	600	Circular	5.12	0.0

Name	US Node	DS Node	Vel (m/s)	Flow (l/s)	Σ Area (ha)
2.000	2.0	1.4	1.082	0.0	0.033
1.004	1.4	1.5	1.666	0.0	0.238
3.000	3.0	1.5	1.666	0.0	0.084
1.005	1.5	1.6/TANK	1.666	0.0	0.322
4.000	4.0	4.1	1.082	0.0	0.072
4.001	4.1	4.2	1.082	0.0	0.072
4.002	4.2	4.3	1.666	0.0	0.072
4.003	4.3	4.4	1.666	0.0	0.165
5.000	5.0	4.4	1.082	0.0	0.044

Links

	Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
?	4.004	4.4	4.5	11.400	0.600	Colebrook-White	43.404	43.381	0.023	500.0	1200	Circular	5.97	0.0
?	4.005	4.5	4.6	7.576	0.600	Colebrook-White	43.381	43.366	0.015	500.0	1200	Circular	6.04	0.0
?	4.006	4.6	1.6/TANK	9.994	0.600	Colebrook-White	43.366	43.346	0.020	500.0	1200	Circular	6.14	0.0
?	1.006	1.6/TANK	1.7/FC	28.240	0.600	Colebrook-White	43.345	43.289	0.056	500.0	1200	Circular	6.56	0.0
?	1.007	1.7/FC	1.8	27.529	0.600	Colebrook-White	43.289	43.174	0.115	240.0	300	Circular	7.02	0.0
?	1.008	1.8	1.9	5.971	0.600	Colebrook-White	43.174	43.149	0.025	240.0	300	Circular	7.11	0.0
?	1.009	1.9	1.10/BASIN	8.253	0.600	Colebrook-White	43.149	43.099	0.050	165.1	300	Circular	7.23	0.0
?	6.000	6.0	6.1	11.468	0.600	Colebrook-White	43.260	43.200	0.060	191.1	300	Circular	5.17	0.0
?	TANK	TANK	6.1	11.061	0.600	Colebrook-White	43.300	43.200	0.100	110.6	300	Circular	5.12	0.0
?	6.001	6.1	1.10/BASIN	23.544	0.600	Colebrook-White	43.200	43.102	0.098	240.0	300	Circular	5.56	0.0

Name	US Node	DS Node	Vel (m/s)	Flow (l/s)	Σ Area (ha)
4.004	4.4	4.5	1.666	0.0	0.209
4.005	4.5	4.6	1.666	0.0	0.291
4.006	4.6	1.6/TANK	1.666	0.0	0.291
1.006	1.6/TANK	1.7/FC	1.666	0.0	0.655
1.007	1.7/FC	1.8	1.010	0.0	0.745
1.008	1.8	1.9	1.010	0.0	0.745
1.009	1.9	1.10/BASIN	1.221	0.0	0.857
6.000	6.0	6.1	1.134	0.0	0.077
TANK	TANK	6.1	1.494	0.0	0.000
6.001	6.1	1.10/BASIN	1.010	0.0	0.121

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
? 1.011	1.11/FC/BASIN/TANK	Outfall	2.712	0.600	Colebrook-White	43.000	42.950	0.050	54.2	150	Circular	5.03	0.0

Name	US Node	DS Node	Vel (m/s)	Flow (l/s)	Σ Area (ha)
1.011	1.11/FC/BASIN/TANK	Outfall	1.369	0.0	0.000

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Detailed	Additional Storage (m³/ha)	20.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

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 %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	10	0	100	45	10	0
30	40	10	0				

Node 1.11/FC/BASIN/TANK Online Hydro -Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	43.000	Product Number	CTL-SHE-0082-3000-1000-3000
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.0	Min Node Diameter (mm)	1200

Node 1.7/FC Online Hydro -Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	43.289	Product Number	CTL-SHE-0049-1500-2000-1500
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.5	Min Node Diameter (mm)	1200

Node 1.11/FC/BASIN/TANK Online Hydro -Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	43.500	Product Number	CTL-SHE-0101-3600-0200-3600
Design Depth (m)	0.200	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	3.6	Min Node Diameter (mm)	1200

Node 4.1 Online Orifice Control

Flap Valve	x	Invert Level (m)	44.144	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.050		

Node 1.0 Online Orifice Control

Flap Valve	x	Invert Level (m)	44.190	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.050		

Node 1.6/TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	43.400
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	405.0	405.0	1.600	405.0	519.1	1.601	0.0	519.1

Node 1.11/FC/BASIN/TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	43.100
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	928

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	150.0	150.0	0.400	150.0	167.4	0.401	0.0	167.4

Node TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	43.300
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	384

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	156.0	156.0	0.400	156.0	173.7	0.401	0.0	173.7

Node 1.11/FC/BASIN/TANK Pond Storage Structure

Invert Level (m)	43.050	Analyse flow through structure	✓	Main Channel Slope (1:X)	400.0
Time to half empty (mins)	536	Main Channel Length (m)	20.000	Main Channel n	0.050

Inlets
1.10/BASIN

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	31.1	0.970	138.8	0.971	0.0

Node 1.11/FC/BASIN/TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	43.050
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	144.0	144.0	0.400	144.0	161.0	0.401	0.0	161.0

Node 1.10/BASIN Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	43.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	160

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	477.0	477.0	0.500	477.0	515.7

Node 4.4 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	45.350
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	163.0	163.0	0.500	163.0	185.6

Node 1.4 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	45.400
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	0

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	138.0	138.0	0.500	138.0	158.8

Node 1.7/FC Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	44.900
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	900

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	161.0	161.0	0.500	161.0	183.5

Node 1.5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	44.950
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	690

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	200.0	200.0	0.500	200.0	225.1

Node 4.1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	47.250
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	30

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	290.0	290.0	0.500	290.0	320.2

Node 1.0 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	47.100
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	39

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	244.0	244.0	0.500	244.0	271.7

Results for 2 year +10% A Critical Storm Duration. Lowest mass balance: 98.38%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	1.0	21	45.684	1.494	13.1	3.2859	0.0000	SURCHARGED
30 minute summer	1.1	22	44.235	0.059	6.2	0.1049	0.0000	OK
1440 minute winter	1.2	1410	43.859	0.298	0.9	1.0313	0.0000	OK
1440 minute winter	1.3	1410	43.859	0.355	1.7	1.4190	0.0000	OK
15 minute summer	2.0	10	44.133	0.063	7.1	0.1353	0.0000	OK
1440 minute winter	1.4	1410	43.859	0.411	2.7	1.6623	0.0000	OK
1440 minute winter	3.0	1410	43.859	0.399	1.2	1.7253	0.0000	OK
1440 minute winter	1.5	1410	43.859	0.448	3.4	1.5510	0.0000	OK
120 minute summer	4.0	74	44.859	0.699	8.2	1.5395	0.0000	SURCHARGED
120 minute summer	4.1	74	44.859	0.715	5.7	1.2636	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	1.0	1.000	1.1	6.2	0.422	0.020	0.1045	
30 minute summer	1.1	1.001	1.2	6.2	0.502	0.020	0.0952	
1440 minute winter	1.2	1.002	1.3	0.8	0.146	0.000	7.0573	
1440 minute winter	1.3	1.003	1.4	1.4	0.173	0.001	8.6424	
15 minute summer	2.0	2.000	1.4	7.0	0.507	0.023	0.1256	
1440 minute winter	1.4	1.004	1.5	2.4	0.215	0.001	5.6984	
1440 minute winter	3.0	3.000	1.5	1.0	0.089	0.001	8.6278	
1440 minute winter	1.5	1.005	1.6/TANK	2.9	0.108	0.002	13.9534	
120 minute summer	4.0	4.000	4.1	5.7	0.316	0.019	2.2382	
120 minute summer	4.1	4.001	4.2	4.3	0.467	0.014	0.0577	

Results for 2 year +10% A Critical Storm Duration. Lowest mass balance: 98.38%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	4.2	1410	43.859	0.328	1.0	1.1352	0.0000	OK
1440 minute winter	4.3	1410	43.859	0.392	2.1	1.6210	0.0000	OK
15 minute summer	5.0	10	44.532	0.072	9.5	0.1716	0.0000	OK
1440 minute winter	4.4	1410	43.859	0.455	2.2	1.5752	0.0000	OK
1440 minute winter	4.5	1410	43.859	0.478	3.0	2.0433	0.0000	OK
1440 minute winter	4.6	1410	43.859	0.493	2.8	1.7068	0.0000	OK
1440 minute winter	1.6/TANK	1410	43.859	0.514	6.2	178.6811	0.0000	OK
1440 minute winter	1.7/FC	1410	43.859	0.570	1.3	2.4954	0.0000	SURCHARGED
15 minute summer	1.8	11	43.278	0.104	2.2	0.1175	0.0000	OK
15 minute summer	1.9	11	43.278	0.129	24.3	0.4093	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	4.2	4.002	4.3	0.8	0.131	0.000	9.0973	
1440 minute winter	4.3	4.003	4.4	1.6	0.159	0.001	11.1932	
15 minute summer	5.0	5.000	4.4	9.4	0.565	0.031	0.1304	
1440 minute winter	4.4	4.004	4.5	1.9	0.143	0.001	4.6137	
1440 minute winter	4.5	4.005	4.6	2.8	0.190	0.001	3.2345	
1440 minute winter	4.6	4.006	1.6/TANK	2.6	0.120	0.001	4.4732	
1440 minute winter	1.6/TANK	1.006	1.7/FC	0.9	0.092	0.000	13.9476	
1440 minute winter	1.7/FC	1.007	1.8	0.9	0.356	0.013	0.0933	
15 minute summer	1.8	1.008	1.9	2.9	0.372	0.041	0.1507	
15 minute summer	1.9	1.009	1.10/BASIN	24.1	0.926	0.280	0.2598	

Results for 2 year +10% A Critical Storm Duration. Lowest mass balance: 98.38%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	6.0	10	43.361	0.101	16.6	0.3037	0.0000	OK
15 minute summer	TANK	13	43.303	0.003	2.5	0.5163	0.0000	OK
15 minute summer	6.1	10	43.323	0.123	25.9	0.2572	0.0000	OK
480 minute summer	1.10/BASIN	344	43.259	0.160	13.5	0.2977	0.0000	OK
480 minute summer	1.11/FC/BASIN/TANK	344	43.259	0.259	12.6	59.2540	0.0000	SURCHARGED
480 minute summer	Outfall	344	42.985	0.035	3.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	6.0	6.000	6.1	16.4	0.686	0.204	0.2742	
15 minute summer	TANK	TANK	6.1	-2.5	-0.237	-0.023	0.1498	
15 minute summer	6.1	6.001	1.10/BASIN	23.2	0.833	0.324	0.7069	
480 minute summer	1.10/BASIN	Pond	1.11/FC/BASIN/TANK	12.6	0.076	0.005		
480 minute summer	1.11/FC/BASIN/TANK	1.011	Outfall	3.0	0.899	0.122	0.0089	185.5

Results for 30 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	1.0	25	47.271	3.081	48.6	19.3604	0.0000	SURCHARGED
1440 minute winter	1.1	1440	44.660	0.484	2.4	0.8544	0.0000	OK
1440 minute winter	1.2	1440	44.660	1.099	2.4	3.8053	0.0000	OK
1440 minute winter	1.3	1440	44.660	1.156	4.3	4.6221	0.0000	OK
1440 minute winter	2.0	1440	44.660	0.590	1.2	1.2634	0.0000	OK
1440 minute winter	1.4	1440	44.660	1.212	6.5	4.9031	0.0000	SURCHARGED
1440 minute winter	3.0	1440	44.660	1.200	3.0	5.1904	0.0000	OK
1440 minute winter	1.5	1440	44.660	1.249	7.8	4.3249	0.0000	SURCHARGED
60 minute summer	4.0	44	47.350	3.190	39.5	7.0243	0.0000	SURCHARGED
60 minute summer	4.1	43	47.350	3.206	42.6	14.3891	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	1.0	1.000	1.1	9.1	0.468	0.030	0.1361	
1440 minute winter	1.1	1.001	1.2	2.4	0.382	0.008	1.8781	
1440 minute winter	1.2	1.002	1.3	1.7	0.144	0.001	31.2418	
1440 minute winter	1.3	1.003	1.4	3.0	0.187	0.002	31.2741	
1440 minute winter	2.0	2.000	1.4	1.2	0.357	0.004	2.5674	
1440 minute winter	1.4	1.004	1.5	5.4	0.267	0.003	17.8773	
1440 minute winter	3.0	3.000	1.5	2.3	0.112	0.001	27.3606	
1440 minute winter	1.5	1.005	1.6/TANK	6.1	0.138	0.003	37.2648	
60 minute summer	4.0	4.000	4.1	42.6	0.435	0.139	2.2382	
60 minute summer	4.1	4.001	4.2	9.2	0.566	0.030	0.1037	

Results for 30 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	4.2	1440	44.660	1.129	2.6	3.9092	0.0000	OK
1440 minute winter	4.3	1440	44.660	1.193	5.1	4.9347	0.0000	OK
1440 minute winter	5.0	1440	44.660	0.200	1.6	0.4781	0.0000	OK
1440 minute winter	4.4	1440	44.660	1.256	5.2	4.3492	0.0000	SURCHARGED
1440 minute winter	4.5	1440	44.660	1.279	7.1	5.4683	0.0000	SURCHARGED
1440 minute winter	4.6	1440	44.660	1.294	6.5	4.4808	0.0000	SURCHARGED
1440 minute winter	1.6/TANK	1440	44.660	1.315	15.1	489.8903	0.0000	SURCHARGED
1440 minute winter	1.7/FC	1440	44.660	1.371	3.2	6.0029	0.0000	SURCHARGED
360 minute winter	1.8	344	43.575	0.401	1.1	0.4539	0.0000	SURCHARGED
360 minute winter	1.9	344	43.575	0.426	12.9	1.3570	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	4.2	4.002	4.3	1.8	0.138	0.001	35.6204	
1440 minute winter	4.3	4.003	4.4	3.6	0.205	0.002	35.4780	
1440 minute winter	5.0	5.000	4.4	1.6	0.363	0.005	0.6757	
1440 minute winter	4.4	4.004	4.5	4.2	0.189	0.002	12.8445	
1440 minute winter	4.5	4.005	4.6	6.5	0.223	0.003	8.5359	
1440 minute winter	4.6	4.006	1.6/TANK	6.0	0.137	0.003	11.2603	
1440 minute winter	1.6/TANK	1.006	1.7/FC	-1.5	0.038	-0.001	31.8183	
1440 minute winter	1.7/FC	1.007	1.8	1.2	0.384	0.017	1.8337	
360 minute winter	1.8	1.008	1.9	1.2	0.307	0.017	0.4205	
360 minute winter	1.9	1.009	1.10/BASIN	12.6	0.601	0.146	0.5812	

Results for 30 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	6.0	344	43.575	0.315	8.6	0.9501	0.0000	SURCHARGED
360 minute winter	TANK	344	43.575	0.275	11.3	40.8046	0.0000	OK
360 minute winter	6.1	344	43.575	0.375	13.3	0.7878	0.0000	SURCHARGED
360 minute winter	1.10/BASIN	344	43.575	0.476	24.5	11.7262	0.0000	OK
360 minute winter	1.11/FC/BASIN/TANK	344	43.575	0.575	22.4	142.1559	0.0000	SURCHARGED
360 minute winter	Outfall	344	42.997	0.047	5.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	6.0	6.000	6.1	8.4	0.554	0.105	0.8076	
360 minute winter	TANK	TANK	6.1	-11.3	-0.391	-0.107	0.7639	
360 minute winter	6.1	6.001	1.10/BASIN	11.0	0.502	0.154	1.6580	
360 minute winter	1.10/BASIN	Pond	1.11/FC/BASIN/TANK	22.4	0.115	0.009		
360 minute winter	1.11/FC/BASIN/TANK	1.011	Outfall	5.1	1.043	0.213	0.0134	328.0

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	1.0	45	47.393	3.203	48.5	28.5128	0.0000	FLOOD RISK
1440 minute winter	1.1	1440	45.437	1.261	3.0	2.2288	0.0000	SURCHARGED
1440 minute winter	1.2	1440	45.437	1.876	3.0	6.4997	0.0000	SURCHARGED
1440 minute winter	1.3	1440	45.437	1.933	5.4	7.7334	0.0000	SURCHARGED
1440 minute winter	2.0	1440	45.437	1.367	1.5	2.9302	0.0000	SURCHARGED
1440 minute winter	1.4	1440	45.437	1.989	8.0	9.6182	0.0000	SURCHARGED
1440 minute winter	3.0	1440	45.437	1.977	3.8	8.5560	0.0000	FLOOD RISK
1440 minute winter	1.5	1440	45.437	2.026	9.5	36.2906	0.0000	FLOOD RISK
60 minute summer	4.0	46	47.463	3.303	52.1	7.2727	0.0000	SURCHARGED
60 minute summer	4.1	46	47.463	3.319	53.2	24.4123	0.0000	FLOOD RISK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	1.0	1.000	1.1	9.2	0.471	0.030	0.1379	
1440 minute winter	1.1	1.001	1.2	3.0	0.419	0.010	2.1433	
1440 minute winter	1.2	1.002	1.3	2.1	0.151	0.001	32.0752	
1440 minute winter	1.3	1.003	1.4	3.7	0.198	0.002	31.4600	
1440 minute winter	2.0	2.000	1.4	1.5	0.357	0.005	2.5726	
1440 minute winter	1.4	1.004	1.5	6.6	0.274	0.003	17.8786	
1440 minute winter	3.0	3.000	1.5	3.0	0.119	0.002	27.3711	
1440 minute winter	1.5	1.005	1.6/TANK	7.5	0.130	0.004	37.2648	
60 minute summer	4.0	4.000	4.1	53.2	0.473	0.174	2.2382	
60 minute summer	4.1	4.001	4.2	9.4	0.569	0.031	0.1967	

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	4.2	1440	45.437	1.906	3.1	6.6036	0.0000	SURCHARGED
1440 minute winter	4.3	1440	45.437	1.970	6.4	8.1533	0.0000	SURCHARGED
1440 minute winter	5.0	1440	45.437	0.977	2.0	2.3417	0.0000	SURCHARGED
1440 minute winter	4.4	1440	45.437	2.033	6.5	11.3395	0.0000	SURCHARGED
1440 minute winter	4.5	1440	45.437	2.056	9.0	8.7950	0.0000	FLOOD RISK
1440 minute winter	4.6	1440	45.437	2.071	8.3	7.1752	0.0000	FLOOD RISK
1440 minute winter	1.6/TANK	1440	45.437	2.092	19.3	624.0884	0.0000	FLOOD RISK
1440 minute winter	1.7/FC	1440	45.437	2.148	4.1	35.3880	0.0000	FLOOD RISK
360 minute winter	1.8	344	43.706	0.532	1.3	0.6022	0.0000	SURCHARGED
360 minute winter	1.9	344	43.706	0.557	16.3	1.7744	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	4.2	4.002	4.3	2.1	0.145	0.001	36.0705	
1440 minute winter	4.3	4.003	4.4	4.5	0.216	0.002	35.4981	
1440 minute winter	5.0	5.000	4.4	2.0	0.363	0.007	2.2019	
1440 minute winter	4.4	4.004	4.5	5.2	0.193	0.003	12.8445	
1440 minute winter	4.5	4.005	4.6	8.3	0.196	0.004	8.5359	
1440 minute winter	4.6	4.006	1.6/TANK	7.7	0.091	0.004	11.2603	
1440 minute winter	1.6/TANK	1.006	1.7/FC	2.7	0.037	0.001	31.8183	
1440 minute winter	1.7/FC	1.007	1.8	1.5	0.356	0.021	1.9386	
360 minute winter	1.8	1.008	1.9	1.3	0.220	0.019	0.4205	
360 minute winter	1.9	1.009	1.10/BASIN	16.0	0.612	0.186	0.5812	

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	6.0	344	43.707	0.447	10.9	1.3459	0.0000	SURCHARGED
360 minute winter	TANK	344	43.706	0.406	13.6	59.3541	0.0000	SURCHARGED
360 minute winter	6.1	344	43.707	0.507	16.8	1.0632	0.0000	SURCHARGED
360 minute winter	1.10/BASIN	344	43.706	0.607	25.6	30.7283	0.0000	OK
360 minute winter	1.11/FC/BASIN/TANK	344	43.706	0.706	23.3	154.6254	0.0000	FLOOD RISK
180 minute winter	Outfall	256	43.002	0.052	6.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	6.0	6.000	6.1	10.6	0.552	0.133	0.8076	
360 minute winter	TANK	TANK	6.1	-13.6	-0.423	-0.129	0.7789	
360 minute winter	6.1	6.001	1.10/BASIN	11.1	0.513	0.156	1.6580	
360 minute winter	1.10/BASIN	Pond	1.11/FC/BASIN/TANK	23.3	0.121	0.009		
360 minute winter	1.11/FC/BASIN/TANK	1.011	Outfall	6.3	1.099	0.259	0.0155	378.6

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