Flood Risk Assessment

Interbridge Site, Emsworth

On behalf of: PNH Properties

Bellamy Roberts

Document Control Sheet

PNH Properties
Unit 5, Passfield Business Centre
Lynchborough Road
Liphook
Hampshire GU30 7SB

Bellamy Roberts
Suite 5, Brightwater House
Market Place
Ringwood
Hants BH24 1AP
www.bellamyroberts.com

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Contents

Sections

1	INTRODUCTION	1
2	SOURCES OF FLOODING	6
3	SURFACE & FOUL WATER DRAINAGE STRATEGY	10
4	MAINTENANCE & MANAGEMENT	13
5	SUMMARY & CONCLUSIONS	15

Appendices

Appendix 1	EA Consultation Comments (10th April 2025 & 15th July 2026)
Appendix 2	Site Location Plan (6096/301)
Appendix 3	Topographical Survey
Appendix 4	Southern Water Asset Plan
Appendix 5	Ashdown SI Assessment (relevant extracts)
Appendix 6	Greenfield Runoff Rates
Appendix 7	EA Flood Map for Planning
Appendix 8	Groundwater Monitoring Results (Soils Ltd)
Appendix 9	Surface & Foul Water Drainage Strategy (6096/101 Rev. E)
Appendix 10	Infodrainage Network Model

1 Introduction

1.1 Bellamy Roberts has been instructed by PNH Properties to prepare a Flood Risk Assessment in support of a planning application for proposed employment development, with associated access, parking, yards, landscaping and substation at Emsworth Business Park, New Brighton Road, Emsworth.

1.2 The application was submitted in December 2024 and consultation comments have been received from the Environment Agency (dated 10th April 2025 and 15th July 2026). The Environment Agency's (EA) comments are presented at **Appendix 1** however in summary, the EA has objected to the proposal and stated that the FRA does not comply with the requirements for site-specific flood risk assessments, as set out in planning practice guidance. The FRA has been updated to address the EA comments.

1.3 The applicant has commissioned Aegaea to undertake detailed hydraulic flood modelling which focuses on the fluvial flood risk identified on the EA's flood map for planning. The hydraulic model has been developed to quantify the baseline fluvial flood risk for the site by modelling watercourse capacity and exceedance flow paths. The Aegaea Fluvial Hydraulic Model Report is submitted as a standalone document which outlines the hydrological assessment and hydraulic modelling methodology, presents the baseline simulation results, and details key assumptions and limitations of the model.

1.4 The Environment Agency has accepted the model as being suitable for use and has requested that the FRA be updated to reflect these outputs.

1.5 The site is allocated for employment use under Policy BD39 of the Havant Local Plan (2014). The stated site specific development requirements are as follows:

- Access to be provided from North Street to the satisfaction of the Highway Authority.
- Employment and Skills Plan to support planning application.
- Flood Risk Assessment to support planning application .
- Development outside of Flood Zone 1 will need to provide compensatory floodplain.

- Reduce green field runoff rates, on-site SUDS and a possible contribution to the Emsworth Flood Alleviation Scheme (Policy DM25).
- An Ecological Assessment may be required to assess the impact on Local Nature Reserve.

1.6 The site is also allocated for commercial development within the Draft Havant Local Plan under Allocation 32.

1.7 It is recognised that developments that are designed without regard to flood risk may endanger lives, damage property, cause disruption to the wider community, damage the environment, be difficult to insure and require additional expense on remedial works. Current guidance on development and flood risk identifies several key aims for a development to ensure that it is sustainable in flood risk terms. These aims are as follows:

- the development should not be exposed to flood risk such that the health, safety, and welfare of the users of the development, or the population elsewhere, are threatened;
- the development should not be at a significant risk of flooding and should not be susceptible to damage due to flooding;
- safe access to and from the development should be possible during flood events;
- the development should not increase flood risk elsewhere;
- the development should not prevent safe maintenance of watercourses or maintenance and operation of flood defences;
- the development should not be associated with an onerous or difficult operation and maintenance regime to manage flood risk. The responsibility for any operation and maintenance required should be clearly defined;
- future users of the development should be made aware of any flood risk issues relating to the development;
- the development design should be such that future users will not have difficulty obtaining insurance or mortgage finance, or in selling all or part of the development, because of flood risk issues;
- the development should not lead to degradation of the environment, and

- the development should meet all the above criteria for its entire lifetime, including consideration of the potential effects of climate change.

1.8 This assessment has been prepared with due consideration of these sustainability aims.

1.9 In accordance with paragraph 173 of the NPPF (December 2023), it will be ensured that:

- the most vulnerable development is located in areas of lowest flood risk;
- the development is appropriately flood resistant and resilient;
- it incorporates sustainable drainage systems;
- Any residual risk can be safely arranged; and
- safe access and escape routes are included.

Site Location & Topography

1.10 The site is located on land to the east of the B2148 North Street. The grid reference for the centre of the site is SU 74971 06344 and for clarity, a site location plan is provided at **Appendix 2**, an extract of which is at Figure 1.

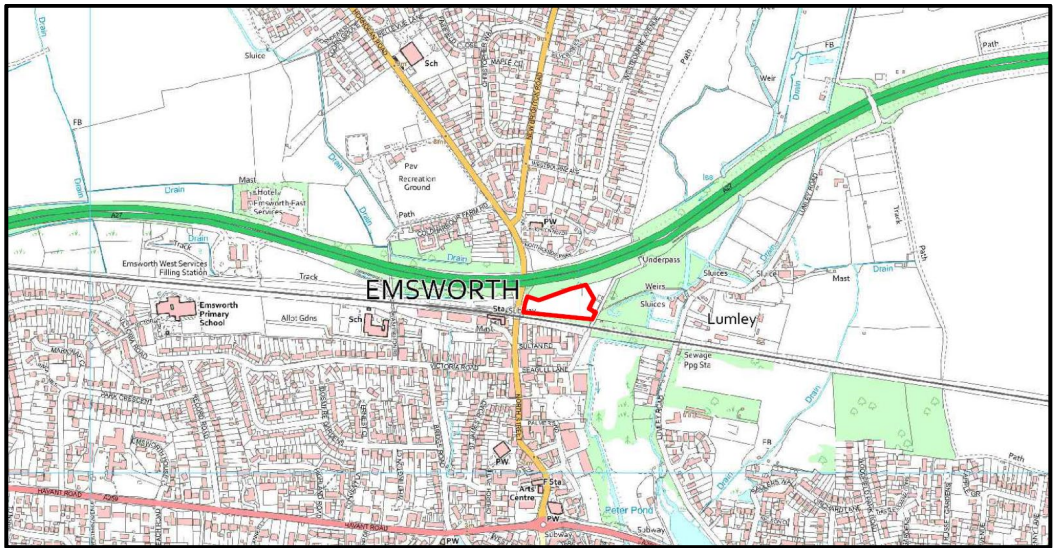


Figure 1: Site Location Plan

1.11 A topographical survey has been undertaken which shows the site generally falls towards its eastern boundary. There is a level difference of approximately

2.5m across the site, west to east. For reference, the topographical survey is provided at **Appendix 3**. The total site area is 6,750m^2.

Existing Watercourse

1.12 There are no watercourses within the boundary of the site.

Historic Flooding

1.13 There have been no recorded instances of historic flooding at the site.

Existing Sewerage Network

1.14 A plan of the existing surface and foul water sewers in the vicinity of the site has been obtained from Southern Water and is provided at **Appendix 4**. This shows the presence of a surface water sewer in North Road and that two foul sewers cross the application site.

1.15 The proposed site layout has been designed to accommodate the existing foul sewers and the required easements, including an additional 1m buffer.

1.16 In additional to the foul sewers, Network Rail has an easement along the southern boundary of the site and a gas main bisects the site west to east.

Ground Conditions

1.17 A ground condition assessment was carried out in April 2024 by Ashdown Site Investigation. The intrusive works comprised the drilling of a series of boreholes and trial pits, together with in-situ testing.

1.18 Infiltration testing was undertaken in boreholes WS02, WS05, WS06 and WS08, at a depth of 3m below ground level. Three consecutive tests was only possible in WS05 and an infiltration rate of 9.89 x 10^{-5}m/s was recorded within the river terrace deposits. However, groundwater was recorded at a depth of 1.33m.

1.19 Despite favourable infiltration rates being achieved in WS05, the high groundwater level will not allow a minimum freeboard of 1m to be achieved between the base of the infiltration feature and groundwater level. Infiltration

therefore will not represent a viable means of disposing of surface water from the site.

1.20 Relevant extracts from the Ashdown Site Investigation assessment is presented at **Appendix 5**.

Greenfield Run-off Rates

1.21 The greenfield run-off rates for site are provided in Table 1. These rates have been calculated using the Microdrainage software and are presented at **Appendix 6**.

Table 1: Greenfield Runoff Rates

Rainfall Event	Greenfield Runoff Rate
Qbar	1.5 l/s
1 in 1 year	1.3 l/s
1 in 30 years	3.5 l/s
1 in 100 years	4.9 l/s

2 Sources of Flooding

River/Sea Flooding

2.1 Environment Agency mapping reveals the majority of the application site is located in flood zone 1, albeit some land in the eastern and south-eastern part of the site is within food zone 2, with a very small area of flood zone 3. This is based on the updated flood map for planning, published in March 2025.

2.2 The Environment Agency's flood map for planning is presented at **Appendix 7** and an extract of this is provided at Figure 2 for reference.

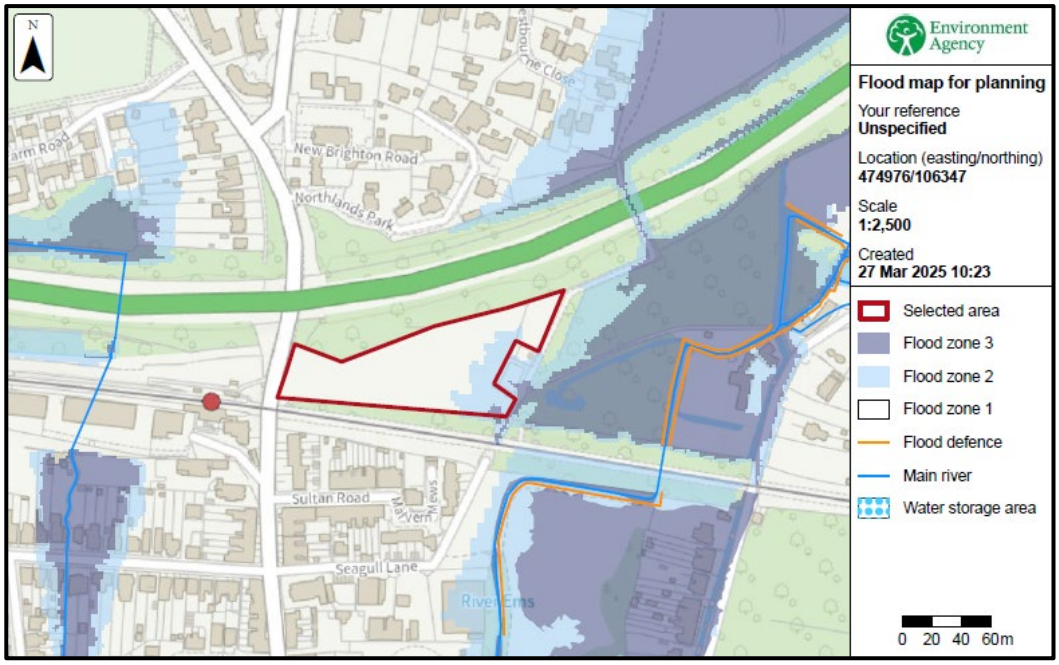


Figure 2: Flood Map for Planning (Source: EA)

2.3 When the impact of climate change is considered (rivers 1 in 100), there is a slight increase in the area of the site that is at risk of flooding from this source. As per the flood map for planning, the climate change allowance for river flooding uses the 'central' allowance, based on the 50th percentile for the 2080s epoch. The extent of flooding is shown in Figure 3.

Figure 3: Flood Map for Planning – Climate Change (Source: EA)

2.4 The application site is allocated for commercial development in both the adopted Local Plan and emerging Draft Local Plan. Therefore, in accordance with planning practice guidance, the sequential test will not be required where the site has been allocated for development, as is the case in this instance.

2.5 The applicant has commissioned Aegaea to undertake detailed hydraulic flood modelling which focuses on the fluvial flood risk identified on the EA's flood map for planning. The hydraulic model has been developed to quantify the baseline fluvial flood risk for the site by modelling watercourse capacity and exceedance flow paths.

2.6 The Aegaea Fluvial Hydraulic Model Report is submitted as a standalone document which outlines the hydrological assessment and hydraulic modelling methodology, presents the baseline simulation results, and details key assumptions and limitations of the model.

2.7 In summary, the hydraulic model outputs show that the site remains largely outside the extent of all simulated rainfall events.

2.8 The site is identified as being outside the 1% AEP maximum flood extent which is analogous to Flood Zone 3 in lieu of historic or tidal flood extents. Minor encroachments to the site boundary are noted for the 1% AEP + 25% climate change, 1% AEP + 36% climate change and 0.1% AEP events, however the

flooding is confined to the lowest ground elevations on site in the very southeast corner of the site.

2.9 Figure 3 shows the baseline maximum modelled flood extents.

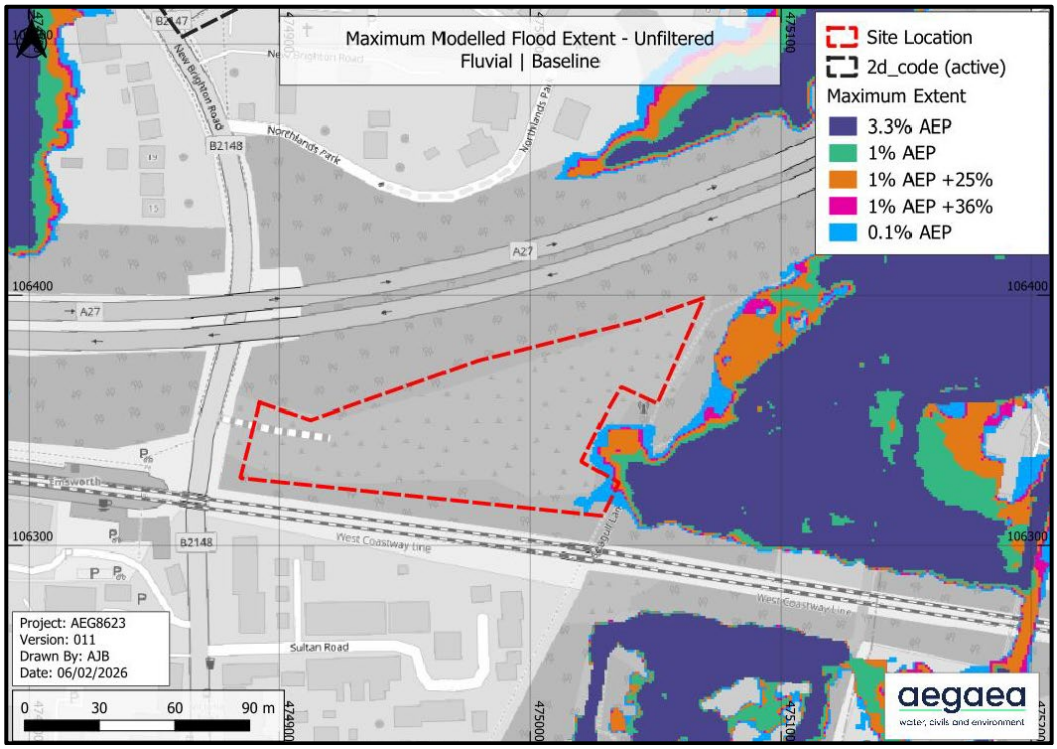


Figure 3: Baseline Modelled Flood Extents (Source: Aegaea)

2.10 The Aegaea modelling results demonstrate that the only area of the site affected by future flood risk is the south-eastern corner of Yard B and this is only during the 0.1% AEP event. No other areas of the site are located in areas at risk of flooding.

2.11 The depth of flooding in this part of the site is primarily less than 100mm. The proposed development will therefore be safe for its lifetime.

Surface Water Flooding

2.12 In addition to fluvial flooding, surface water flooding must also be considered. This often occurs when intense, often short duration rainfall is unable to soak into the ground or enter the local drainage system. It is made worse when soils are saturated so that they cannot accept any more water. This type of flooding is usually short lived, localised and associated with heavy downpours of rain,

and often has very little warning before it occurs. The amount of runoff is also a function of geology, slope, climate, rainfall, saturation, soil type, urbanisation and vegetation.

2.13 Environment Agency mapping reveals the site is not at risk from this source of flooding.

Reservoir Flooding

2.14 Information from the gov.uk website advises that flooding from reservoirs is unlikely in this area.

Groundwater Flooding

2.15 Information from the gov.uk website advises that groundwater flooding is unlikely in this area.

2.16 Soils Ltd has been instructed to undertake groundwater monitoring at the site. The scope of this monitoring has been agreed with the LLFA and comprises two monitoring locations, with monthly recording between the start of October 2025 and end of April 2026.

2.17 The monitoring results are presented at **Appendix 9**and a summary of the results to date is provided below:

- October 2025 - WS1: 3.45m bgl & WS2: 4.60m bgl
- November 2025 - WS1: 2.18m bgl & WS2: 0.54m bgl
- December 2025 - WS1: 4.57m bgl & WS2: 0.47m bgl
- January 2026 - WS1: 4.10m bgl & WS2: 0.17m bgl
- February 2026 - WS1: 3.77m bgl & WS2: 0.36m bgl
- March 2026 - WS1: 2.73m bgl & WS2: 0.57m bgl
- April 2026 - WS1: 3.21m bgl & WS2: 1.00m bgl

2.18 Groundwater levels vary significantly across the site and are at their shallowest in the eastern half of the site. No groundwater breaches have been recorded.

3 Surface & Foul Water Drainage Strategy

Surface Water

3.1 In order to properly mitigate flood risk post-development, it is important that adequate measures are considered to ensure surface water run-off is dealt with, ensuring flood risk is not increased either on or off-site.

3.2 Surface water drainage at the site will be based on SuDS principles and in this regard, the aim will be to discharge the surface water run-off as high up the following hierarchy of drainage options as possible:

- Infiltration into the ground;
- To a surface water body, such as a river, ditch, pond or stream;
- To a surface water sewer; and
- To a combined sewer.

3.3 The Ashdown SI Combined Geotechnical Ground Contamination Risk Assessment (available on the Planning Portal) recorded favourable infiltration rates within WS05, located in the north-eastern corner of the site. Elsewhere across the site, the recorded infiltration rates were below 1 x 10^{-6} m/s and therefore unsuitable for infiltration based drainage.

3.4 Whilst the rates recorded in WS05 were favourable, the high groundwater level in this part of the site (as recorded by Soils Ltd) rules out the use of infiltration as a viable means of draining the site. In accordance with the SuDS hierarchy, and given there are no watercourses within the application site that could be connected to, surface water will be attenuated and discharged to the public surface water sewer.

3.5 The attenuation crates (located in the eastern half of the site) will be wrapped in an impermeable membrane to ensure groundwater does not enter the surface water drainage network.

3.6 The proposed surface water drainage strategy has been amended to address consultation comments from the LLFA. In summary, the following changes have been made:

- Access road drainage has been included. Gullies are shown on the drainage strategy.
- A proprietary treatment manhole is shown at manhole MH06.
- The surface water pumping station is not part of the accompanying Infodrainage calculations and has been modelled separately to the proposed hydrobrake.
- 95% porosity has been used for the attenuation storage crates.
- Indicative FFLs have been shown.

3.7 The pollution mitigation indices for the proposed treatment manhole are as follows:

- Total Suspended Solids - 0.8
- Total Metals - 0.8
- Hydrocarbons - 0.7

3.8 The treatment manhole will therefore provide adequate levels of surface water treatment, prior to discharge to the public sewer.

3.9 The surface water drainage strategy is presented at **Appendix 9**, and includes cover/invert levels, pipe sizes and gradients.

3.10 A network model has been prepared using the Infodrainage software and this is presented at **Appendix 10**. The volume of storage required within the attenuation storage crates has been calculated using this software to accommodate the runoff from the 1 in 100-year + 45% climate change. In addition, modelling has also been undertaken for the 1 in 1-year, 1 in 10-year and 1 in 30-year + 35% climate change rainfall events. During each modelled storm event, the analysis demonstrates that no flooding occurs.

Flood Exceedance

3.11 Flow routes during an exceedance event have been shown on the surface water drainage strategy at Appendix 9. This demonstrates that during an exceedance event, surface water flows will be directed along the carriageway network and towards the river/attenuation basin and away from the proposed dwellings.

Water Quality

3.12 Water quality has been assessed through the simple index approach as set out in Chapter 26 of the CIRIA SuDS Manual. Based on the guidance in Table 26.2 of the SuDS Manual, the land use classification for the site will be *commercial yard and delivery areas*. The pollution hazard indices for these land uses are as summarised in Table 3.

Table 3: Pollution Hazard Indices

Land Use	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Commercial yard and delivery areas	Medium	0.7	0.6	0.7

3.13 With reference to Table 26.3 of the SuDS Manual, the mitigation indices for the SuDS elements proposed are set out in Table 4.

Table 4: Mitigation Indices

Type of SuDS Component	Total Suspended Solids	Metals	Hydrocarbons
Permeable Pavement	0.7	0.6	0.6

3.14 Sufficient treatment will be provided to the run-off from the site.

Foul Water

3.15 Foul water from the application site will discharge to the existing Southern Water foul sewer. The proposed connection is shown on the plan presented at Appendix 9.

4 Maintenance & Management

Maintenance and Management

4.1 Maintenance of the proposed drainage system will be undertaken in accordance with the guidance set out in the CIRIA SuDS Manual 2015. Details have been provided for essential maintenance activities and the frequency of maintenance.

4.2 Maintenance of all drainage features within the site will be the responsibility of the site management company.

4.3 The maintenance schedule and frequencies for the various proposed SuDS components are summarised in Table 5.

Table 5: Maintenance Regime (Permeable Pavements)

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using 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

Table 5 Continued

	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three monthly, 48 hrs after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

5 Summary & Conclusions

Summary

5.1 Bellamy Roberts has been instructed by PNH Properties to prepare a Flood Risk Assessment in support of a planning application for the erection of a mixed use commercial development comprising 1 class E commercial units and two open storge areas. The site is allocated for employment use under Policy BD39 of the Havant Local Plan (2014).

5.2 The FRA has been updated to address the matters raised by the Environment Agency.

5.3 Environment Agency mapping reveals the majority of the application site is located in flood zone 1, albeit part of the site is within flood zone 2 and at risk from future flooding.

5.4 The applicant has commissioned site-specific modelling which demonstrates that only a small part of the site is at risk of flooding from this source. This is the south-eastern corner of Yard B and only during the 0.1% AEP event. No other areas of the site are located in areas at risk of flooding

5.5 The site is not at risk from surface water flooding.

5.6 Site specific ground investigation has revealed infiltration does not represent a viable means of disposing of surface water. In accordance with the SuDS hierarchy, surface water will be attenuated on site and discharged at a rate no greater than the existing greenfield run-off rate into the existing Southern Water surface water sewer.

Conclusions

5.7 The proposed development accords with the guidance set out at paragraph 173 of the NPPF, in that:

- the most vulnerable development is located in areas of lowest flood risk;
- the development is appropriately flood resistant and resilient;

- it incorporates sustainable drainage systems; and
- safe access and escape routes are included.

5.8 The proposed development accords with the guidance set out in the NPPF, in that the scheme incorporates sustainable drainage systems, has maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development and the scheme provides multifunctional benefits. The scheme therefore accords with all relevant policies within the NPPF and is acceptable in flooding and drainage terms.

APPENDICES

APPENDIX 1

EA Consultation Comments

Our ref:	HA/2025/126656/01-L01
Your ref:	APP/24/01010
Date:	10 April 2025

Havant Borough Council
Development Control
Civic Offices Civic Centre Road
Havant
Hampshire
PO9 2AX

Dear Sir/Madam

PROPOSED EMPLOYMENT DEVELOPMENT, WITH ASSOCIATED ACCESS, PARKING, YARDS AND LANDSCAPING CLASSES B2 (GENERAL INDUSTRY), B8 (STORAGE & DISTRIBUTION) AND CLASS EC-G.

INTERBRIDGES SITE, NEW BRIGHTON ROAD, EMSWORTH

Thank you for the consultation on the above application, please quote our reference on all correspondence.

Environment Agency position

In the absence of an acceptable flood risk assessment (FRA) we **object** to this application and recommend that planning permission is refused.

Reason(s)

The submitted FRA does not comply with the requirements for site-specific flood risk assessments, as set out in paragraphs 20 to 21 of the Flood Risk and Coastal Change planning practice guidance and its site-specific flood risk assessment checklist. The FRA does not therefore adequately assess the flood risks posed by the development. In particular, the FRA fails to:

- **consider how a range of flooding events (including extreme events) will affect people and property. Section 2.5 of the submitted FRA suggests the published Flood Map for Planning is incorrect but does not provide evidence of alternative evidence such as site specific modelling.**
- **take the impacts of climate change into account**
    - **There is no assessment of the impact of climate change using appropriate climate change allowances. The latest climate change allowances are available at 'Flood risk assessments: climate change**

allowances' and will be need to be based on the lifetime of the proposed development.

Overcoming our objection

To overcome our objection, the applicant should submit a revised FRA which addresses the points highlighted above.

If this cannot be achieved, we are likely to maintain our objection. Please re-consult us on any revised FRA submitted and we'll respond within 21 days of receiving it.

If you are minded to approve the application contrary to our objection, we would be grateful if you could re-notify us to explain why material considerations outweigh our objection, and to give us the opportunity to make further representations. Should our objection detailed above be removed, it is likely we will recommend planning conditions to be included on any subsequent approval.

Yours faithfully

Miss Suz Greenwood
Planning Advisor, Environment Agency

Direct dial 02084745098
Direct fax
Direct e-mail suz.greenwood@environment-agency.gov.uk

End

creating a better place
for people and wildlife

Environment Agency

Havant Borough Council - Development Control
Civic Centre Road, Havant, PO9 2AX

Reference: PA-0002695/02
Customer reference: APP/24/01010
15 July 2026

Proposed employment development, with associated access, parking, yards and landscaping Classes B2 (General Industry), B8 (storage & distribution) and Class Ec-g.

Interbridges Site, New Brighton Road, Emsworth, Havant Borough PO10 7QP

Dear Planning Officer,

Thank you for re-consulting us on the above application, following the submission of

Environment Agency position
Thank you for providing the model report and files. It has been determined that the model is suitable for use in the flood risk assessment (FRA). The FRA should be updated to reflect these outputs.

Therefore, in the absence of an adequate flood risk assessment, we **object** to this application and recommend that planning permission is refused.

Reasons
The submitted FRA does not comply with the requirements for site-specific flood risk assessments, as set out in paragraphs 20 to 21 of the Flood Risk and Coastal Change Planning Practice Guidance and its site-specific flood risk assessment checklist. The FRA does not therefore adequately assess whether the development will increase flood risk elsewhere.

In particular, the FRA fails to utilise the bespoke site-specific flood model to demonstrate that the site is not at risk. Throughout the FRA, references are made to the Environment Agency's modelling and not the applicants model and outputs.

Overcoming our objection
To overcome our objection, the applicant should submit a revised FRA, or technical note/addendum, which addresses the points highlighted above. The FRA should be

updated to refer to the applicant's commissioned flood model and demonstrate that the site is outside of the design flood extent.

If this cannot be achieved, we are likely to maintain our objection. Please re-consult us if a revised FRA is submitted and we will respond within 21 days of re-consultation.

Final Comments
Should you require any additional information, or wish to discuss these matters further, please do not hesitate to contact me using the email address below.

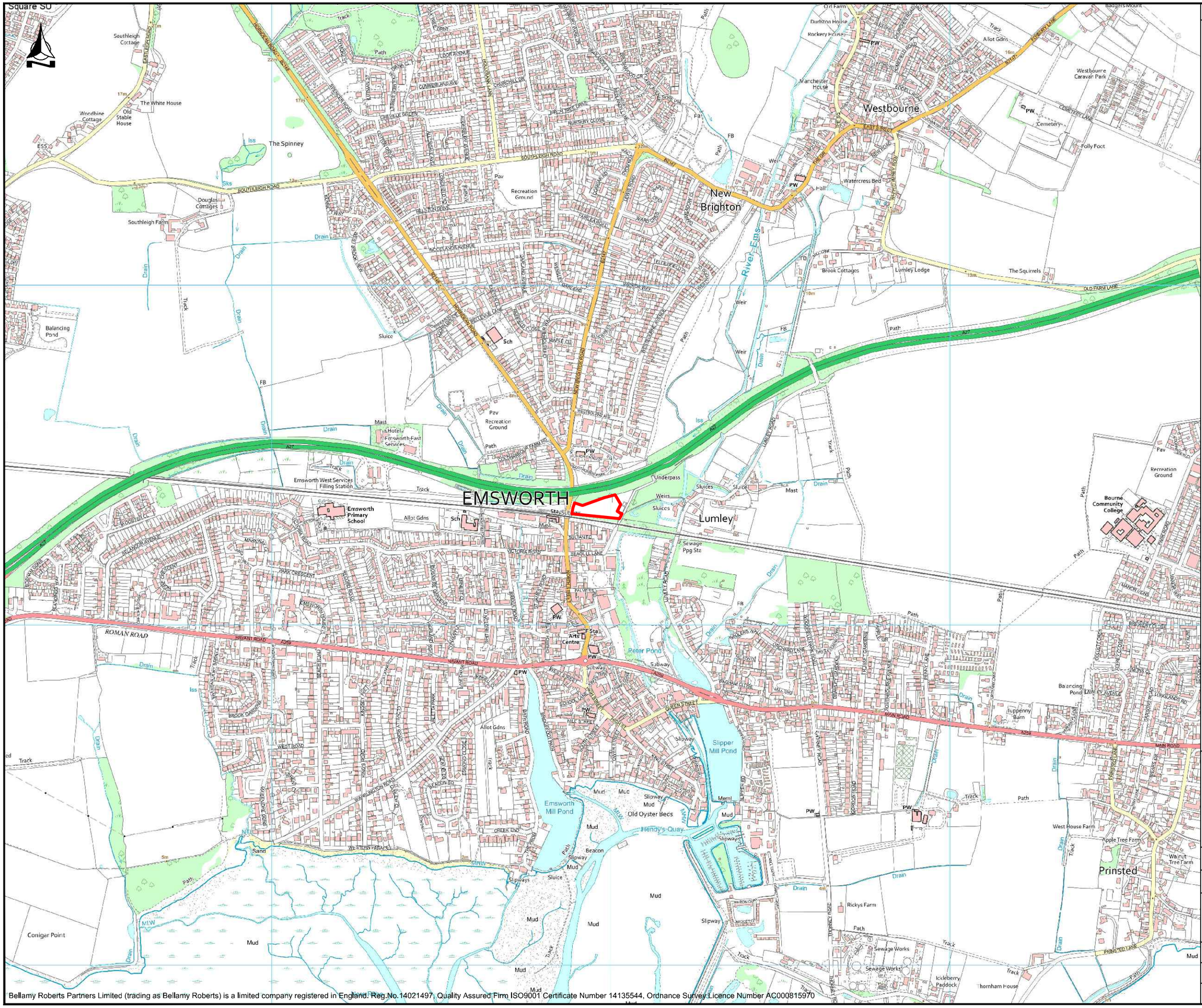
Please re-consult us if further relevant information is submitted. We will aim to provide comments within 21 days of re-consultation.

Yours sincerely,

Jo Purvis,
National Contact Centre: 03708 506 506
planningssd@environment-agency.gov.uk
Romsey Depot, The Gables, Canal Walk, Romsey, Hampshire, SO51 7LP

APPENDIX 2

Site Location Plan



Bellamy Roberts
Clover House
Western Lane
Odiham
Hampshire, RG29 1TU
Tel: 01256 703355
Email: info@bellamyroberts.co.uk

CLIENT	PNH Properties
PROJECT	Interbridges Site, Emsworth
TITLE	Site Location Plan

DRAWN BY	DESIGN BY	CHK BY
MB	-	MT
DATE 23/05/24	DRAWING No. 6096 / 301	REV No.
SCALE NTS @ A3		

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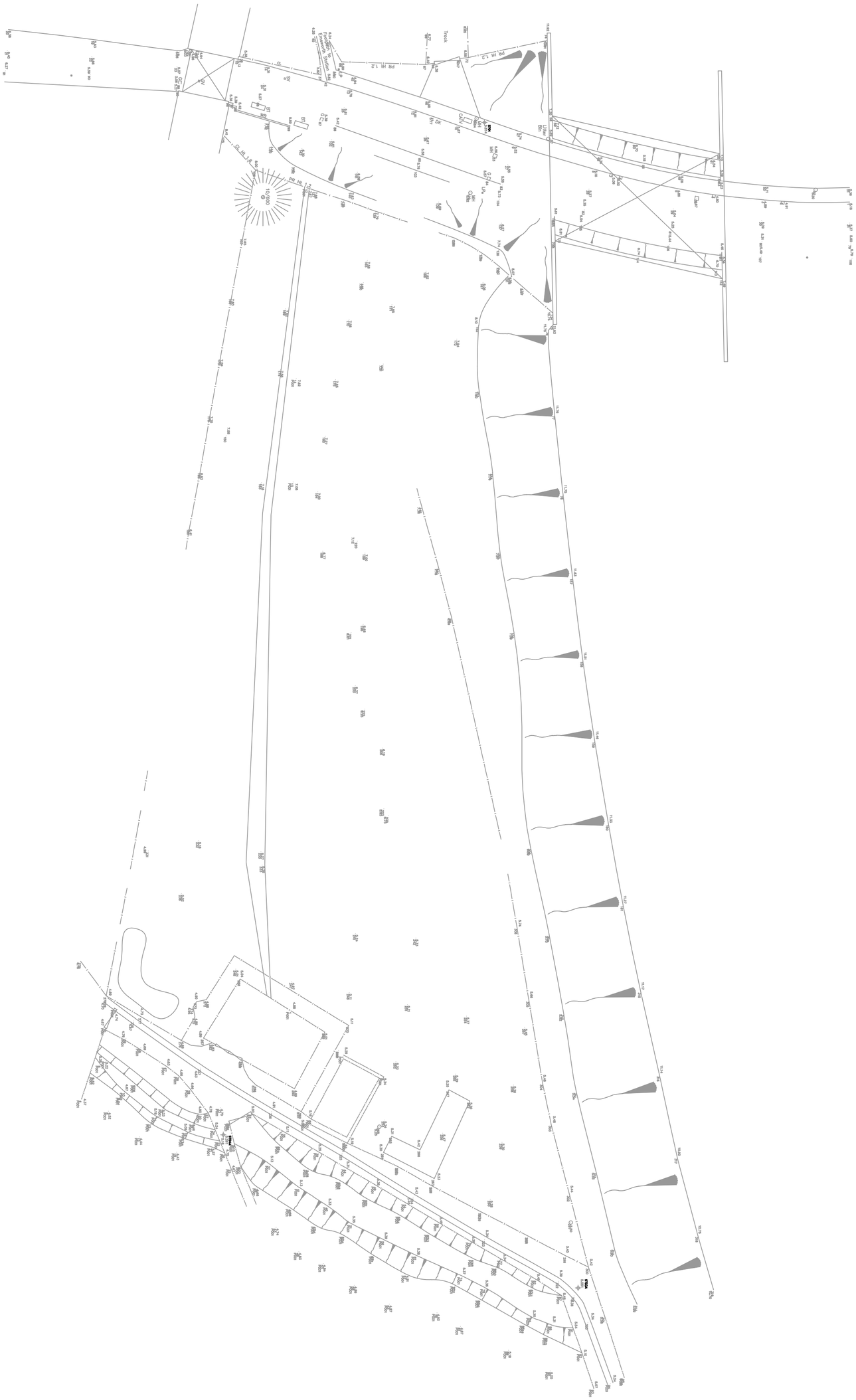
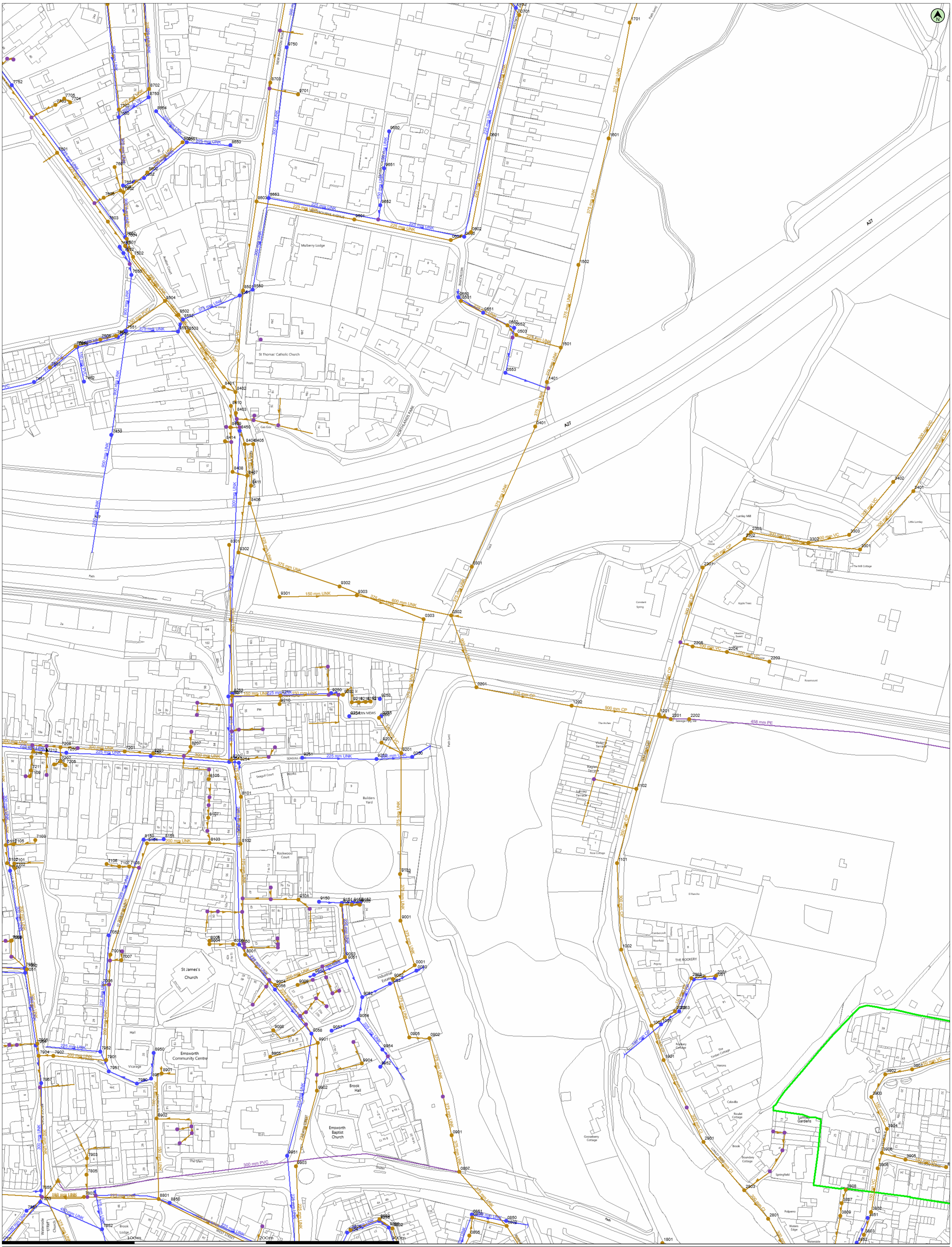
APPENDIX 3

Topographical Survey



APPENDIX 4

Southern Water Asset Plan



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Data updated: 24/09/24

Scale: 1:1250

Map Centre: 475054,106312

Date: 09/10/24

Our Ref: 1589491 - 1

Wastewater Plan A1

Powered by digdat

Foul Gravity Sewer
Combined Gravity Sewer
Culverted Water Course or Treated Effluent
Surface Water Gravity Sewer
Rising Main, Vacuum or Syphon
Combined Outfall
Surface Water Outfall
Foul Outfall
Surface Water Inlet
Combined Pumping Station
Surface Water Pumping Station
Foul Pumping Station
Water Treatment Works
Section 104 Area
Building Over Agreement Area
Foul Manhole
Combined Manhole
Surface Water Manhole
Side Entry Manhole, Demarcation Chamber, Dummy Manhole or Surface Water Soakaway

matttwinberrow@bellamyroberts.co.uk

Interbridges

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 2024 Ordnance Survey AC0000808122 .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.

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
0001	F	4.82	1.73	
0201	F	3.82	0.36	
0301	F	5.22	2.82	
0302	F	4.71	0.00	
0303	F	4.85	2.81	
0401	F	5.70	3.44	
0501	F	7.92	6.15	
0502	F	7.07	5.80	
0503	F	7.00	5.57	
0601	F	8.62	5.96	
0602	F	8.38	5.69	
0603	F	8.41	5.64	
0701	F	9.04	0.00	
0802	F	5.90	0.91	
0805	F	6.15	3.96	
0806	F	6.10	3.72	
0807	F	4.48	0.98	
0901	F	5.12	0.00	
0902	F	4.92	1.42	
0905	F	4.92	1.57	
1001	F	4.13	1.47	
1002	F	4.01	1.61	
1101	F	3.64	1.84	
1102	F	3.77	2.04	
1201	F	4.22	0.00	
1202	F	4.15	0.15	
1401	F	5.57	3.57	
1501	F	5.70	0.00	
1502	F	6.10	3.89	
1601	F	6.39	4.31	
1701	F	6.90	4.74	
1801	F	2.83	1.46	
1901	F	3.61	1.37	
2001	F	6.17	4.65	
2002	F	5.66	4.28	
2003	F	4.80	3.64	
2201	F	7.26	0.00	
2202	F	7.89	0.00	
2203	F	0.00	0.00	
2204	F	0.00	0.00	
2205	F	0.00	0.00	
2301	F	4.94	0.00	
2302	F	6.09	4.39	
2303	F	6.53	4.46	
2801	F	2.61	0.00	
2803	F	0.00	0.00	
2901	F	2.56	0.00	
3301	F	9.74	6.64	
3302	F	8.82	4.65	
3303	F	8.86	4.78	
3401	F	9.59	6.75	
3402	F	9.63	4.96	
3802	F	4.49	1.72	
3803	F	0.00	0.00	
3806	F	5.14	3.30	
3807	F	0.00	0.00	
3808	F	0.00	0.00	
3809	F	0.00	0.00	
3901	F	6.70	5.05	
3902	F	6.39	3.93	
3903	F	6.15	3.74	
3904	F	5.74	3.53	
3905	F	5.80	4.19	
3906	F	5.40	3.38	
4904	F	6.49	4.86	
6102	F	3.78	1.48	
6103	F	0.00	0.00	
7001	F	5.93	3.67	
7002	F	3.22	0.00	
7006	F	0.00	0.00	
7007	F	0.00	0.00	
7008	F	0.00	0.00	
7009	F	0.00	0.00	
7101	F	3.57	1.67	
7102	F	3.62	1.42	
7103	F	0.00	0.00	
7105	F	0.00	0.00	
7106	F	0.00	0.00	
7107	F	0.00	0.00	
7108	F	0.00	0.00	
7109	F	0.00	0.00	
7201	F	4.73	0.00	
7205	F	0.00	0.00	
7206	F	0.00	0.00	
7207	F	0.00	0.00	
7208	F	0.00	0.00	
7210	F	0.00	0.00	
7211	F	0.00	0.00	
7212	F	3.94	0.00	
7501	F	6.31	4.65	
7502	F	6.30	0.00	
7503	F	6.65	5.34	
7504	F	6.14	5.18	
7505	F	6.00	5.04	
7506	F	5.90	4.96	
7601	F	7.50	4.90	
7602	F	6.67	0.00	
7603	F	6.42	4.69	
7604	F	6.31	4.73	
7605	F	0.00	0.00	
7606	F	0.00	0.00	
7607	F	0.00	0.00	
7701	F	0.00	0.00	
7702	F	6.63	0.00	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
7704	F	0.00	0.00	
7705	F	0.00	0.00	
7803	F	0.00	0.00	
7805	F	0.00	0.00	
7901	F	4.35	2.00	
7902	F	3.09	1.34	
7903	F	0.00	0.00	
7904	F	2.80	1.18	
7905	F	2.79	1.21	
8001	F	8.83	0.00	
8004	F	0.00	0.00	
8005	F	0.00	0.00	
8006	F	0.00	0.00	
8101	F	6.94	4.94	
8102	F	6.99	0.00	
8103	F	7.01	5.87	
8104	F	6.65	0.00	
8105	F	0.00	0.00	
8107	F	0.00	0.00	
8201	F	7.08	3.04	
8202	F	6.98	0.00	
8203	F	5.91	2.51	
8207	F	0.00	0.00	
8301	F	7.25	3.52	
8302	F	8.13	0.00	
8401	F	7.21	4.04	
8402	F	7.43	0.00	
8403	F	7.46	3.92	
8404	F	8.36	3.83	
8405	F	8.12	1.96	
8406	F	8.08	1.68	
8407	F	0.00	0.00	
8408	F	0.00	0.00	
8409	F	0.00	0.00	
8410	F	0.00	0.00	
8411	F	8.15	1.77	
8414	F	0.00	0.00	
8501	F	7.69	4.61	
8502	F	6.30	4.30	
8503	F	6.42	4.22	
8504	F	6.00	4.67	
8601	F	7.87	6.45	
8602	F	6.80	5.45	
8603	F	8.22	5.18	
8702	F	7.75	5.06	
8703	F	8.82	5.74	
8801	F	4.38	2.27	
8901	F	5.93	4.76	
8902	F	5.50	3.50	
8905	F	0.00	0.00	
9001	F	4.78	1.87	
9002	F	4.95	1.66	
9003	F	6.48	5.24	
9004	F	6.57	0.00	
9005	F	0.00	0.00	
9006	F	0.00	0.00	
9007	F	6.48	5.28	
9008	F	0.00	0.00	
9009	F	0.00	0.00	
9101	F	6.73	5.67	
9103	F	5.47	1.99	
9201	F	4.48	2.30	
9202	F	6.21	4.33	
9206	F	5.20	4.18	
9207	F	5.45	4.07	
9210	F	0.00	0.00	
9211	F	0.00	0.00	
9212	F	0.00	0.00	
9213	F	0.00	0.00	
9214	F	0.00	0.00	
9215	F	0.00	0.00	
9301	F	7.75	1.45	
9302	F	6.68	3.09	
9303	F	6.23	1.13	
9601	F	8.49	5.40	
9701	F	0.00	0.00	
9802	F	7.01	5.81	
9803	F	7.01	6.01	
9806	F	7.09	6.40	
9901	F	6.51	3.79	
9902	F	6.62	3.70	
9903	F	7.01	3.53	
9904	F	0.00	0.00	
0050	S	4.82	3.21	
0250	S	4.46	4.08	
0550	S	8.02	0.00	
0551	S	7.52	6.60	
0552	S	7.30	6.01	
0553	S	0.00	0.00	
0650	S	8.43	7.34	
0752	S	9.06	0.00	
0850	S	5.90	4.64	
0851	S	6.10	4.81	
1051	S	4.37	3.54	
2051	S	6.12	5.31	
2052	S	5.71	4.76	
2053	S	4.97	4.20	
3851	S	0.00	0.00	
3852	S	0.00	0.00	
7050	S	3.17	1.62	
7051	S	3.15	0.00	
7052	S	6.06	4.67	
7150	S	3.56	1.82	
7250	S	4.02	3.07	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
7451	S	6.86	5.05	
7452	S	5.83	5.02	
7550	S	5.74	4.24	
7551	S	5.90	0.00	
7552	S	6.37	5.12	
7553	S	6.34	5.37	
7554	S	6.14	0.00	
7555	S	5.90	4.68	
7650	S	6.83	0.00	
7651	S	6.65	4.86	
7652	S	6.31	0.00	
7752	S	8.64	8.06	
7851	S	3.07	2.17	
7852	S	2.97	0.00	
7853	S	3.37	0.00	
7855	S	0.00	0.00	
7950	S	5.66	4.30	
7951	S	4.79	3.62	
7952	S	4.38	2.93	
7954	S	2.84	1.48	
7957	S	0.00	0.00	
8050	S	6.74	5.09	
8150	S	6.79	5.46	
8151	S	6.71	5.96	
8250	S	5.79	4.29	
8251	S	6.98	0.00	
8252	S	7.12	4.59	
8253	S	7.11	5.83	
8254	S	6.89	6.09	
8450	S	7.58	4.83	
8550	S	7.66	6.27	
8551	S	7.60	5.90	
8552	S	6.41	4.97	
8553	S	6.23	0.00	
8650	S	8.18	6.73	
8651	S	7.84	0.00	
8652	S	6.79	5.64	
8653	S	8.13	0.00	
8654	S	7.59	6.44	
8750	S	7.67	0.00	
8850	S	4.79	3.98	
8950	S	6.16	5.10	
8951	S	5.92	4.68	
9050	S	6.20	4.90	
9051	S	5.55	0.00	
9052	S	5.09	0.00	
9053	S	4.91	3.21	
9054	S	5.28	3.48	
9056	S	6.64	4.90	
9057	S	6.19	3.79	
9058	S	6.55	4.83	
9150	S	6.13	4.90	
9151	S	5.45	4.75	
9152	S	0.00	0.00	
9153	S	0.00	0.00	
9250	S	6.38	4.83	
9251	S	6.25	5.02	
9252	S	4.97	4.43	
9253	S	5.47	4.51	
9254	S	5.72	4.77	
9255	S	5.20	0.00	
9650	S	8.53	7.60	
9651	S	8.54	7.46	
9652	S	8.42	7.37	
9750	S	8.88	7.11	
9854	S	7.06	5.90	
9855	S	7.03	5.72	
9856	S	7.01	5.66	
9951	S	7.26	4.55	
9952	S	0.00	0.00	
9954	S	4.87	0.00	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

7703	F	0.00	0.00	

7450	S	5.30	3.48	

APPENDIX 5

Ashdown SI Assessment

Interbridges
New Brighton Road
Emsworth
Hampshire

Combined Geotechnical and Ground Contamination Risk Assessment

Report Beneficiary:
PNH Properties Ltd
Unit 5 Passfield Business Centre
Lynchborough Road
Liphook
Hampshire
GU30 7SB

Project Reference: P16578

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Report Section	Prepared By	Approved By
Preliminary Ground Contamination Risk Assessment	Adam Cormack HNC FGS	Steven McSwiney BA mod Geol MSc FGS
Factual Section	Georgia Roper-Doherty BSc MRes	Steven McSwiney BA mod Geol MSc FGS
Geotechnical Assessment	Adam Cormack HNC FGS	Steven McSwiney BA mod Geol MSc FGS
Quantitative Ground Contamination Risk Assessment	Adam Cormack HNC FGS	Steven McSwiney BA mod Geol MSc FGS

Head Office
Unit 3
The Old Grain Store
Ditchling Common Business Park
Ditchling
East Sussex
BN6 8SG
Tel: 01273 483119
www.ashdownsi.co.uk

Limitations

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This report is not intended to be either an ecological, archaeological or flood risk assessment. An appropriate specialist should be consulted about any concerns that may arise in this regard.

EXECUTIVE SUMMARY

The following presents a summary of the main findings of the report. It is emphasised that no reliance should be placed on any individual point until the whole of the report has been read as other sections of the report may put into context the information contained herein.

It is understood that the site at New Brighton Road, Emsworth is to be developed into a series of commercial units with a new access road, parking, and limited areas of soft landscaping.

The site currently comprises a hummocky vacant parcel of land with several mounds along the northern and southern boundaries.

The site comprised part of an agricultural field from the time of the earliest map, dated 1869, with the southern extent part of a residential garden since circa 1897. The site was later confined between the A27 and a railway line following the construction of the road, and demolition of the associated dwelling in the late 1980s, and has remained vacant since.

Reference to geological datasets indicates that the site is expected to be underlain by the River Terrace Deposits in the west and Head Deposits in the east, overlying the London Clay Formation. The ground investigation confirmed the underlying soils to comprise a variable thickness of made ground, overlying River Terrace Deposits and, in turn, London Clay deposits. Both the River Terrace Deposits and Head are classed as Secondary A Aquifers, whilst the underlying London Clay Formation is an Unproductive Stratum. The site does not lie within a SPZ.

The geoenvironmental data identifies that the site is located within an area where between 5% and 10% of properties are above the action level requiring radon gas protection measures to be installed in new buildings.

Groundwater was recorded within two of the boreholes on completion of drilling, at depths of 1.33m and 1.30m. All other boreholes remained dry during drilling. Monitoring of stand-pipes installed at the site recorded groundwater levels to gradually rise during the three-week monitoring period to depths of between 3.60m and 3.15m. However, the data indicates that groundwater levels within the standpipes had not fully equilibrated over the monitoring period.

It is recommended that the design of precautions against shrinkage and heave for any new foundation system should assume a high volume change potential for the fine-grained River Terrace Deposits and London Clay Formation

A net allowable bearing capacity of 100kN/m^2 may be assumed for spread (pad or strip) foundations up to 2.00m across bearing within the River Terrace Deposits of at least firm consistency. Where foundations are constructed onto London Clay Formation soils of at least stiff consistency, an increased bearing capacity of 150kN/m^2 may be adopted for similarly dimensioned foundations.

A DS-2 Design Sulfate Class and an AC-2 ACEC classification should be assumed as a minimum for the design of concrete in contact with the ground where the ground will not be significantly disturbed. Where the ground will be disturbed during construction activities, a higher DS-3 and AC-3 classification should be assumed.

Ground floors should be suspended unless the conditions set out within this report can be met.

Design equilibrium California bearing ratios and moduli of subgrade reaction are presented in the report. The subgrade is not likely to be susceptible to frost heave.

Retaining structures and slopes should be designed using effective shear strength parameters. Recommended values for key parameters are presented in the report.

Infiltration testing within the River Terrace Deposits soils recorded infiltration rates ranging between 2.33×10^{-4}m/sec and 3.79×10^{-6}m/sec, whilst the London Clay Formation possesses negligible infiltration characteristics.

The preliminary contamination risk assessment identified potential pollutant linkages with regard to proposed end users of the site associated with potential for made ground to be present on the site and the radon risk identified by the geoenvironmental data.

The ground investigation did not identify any of the potential contaminants to be present at concentrations considered to pose an unacceptable risk to either end users of the site. However, a radon risk has been identified which may require radon protection measures to be installed at the site. A detailed assessment of the risk posed by radon could be undertaken which may mitigate the requirement for radon protection measures. Consultation with regulators in this regard is recommended.

TABLE OF CONTENTS

1.	**INTRODUCTION**	**1**
2.	**SITE CONTEXT**	**2**
2.1	Walkover Survey	2
2.2	Geological Data Review	2
2.3	Hydrogeological and Hydrological Data	5
3.	**GEO-ENVIRONMENTAL DATA**	**6**
3.1	Historical Industrial Sites	6
3.2	Landfill and Other Waste Sites	6
3.3	Current Industrial Land Use	7
3.4	Sensitive Land Use	8
3.5	Railway Infrastructure and Projects	8
4.	**HISTORICAL MAP AND IMAGERY REVIEW**	**8**
5.	**PRELIMINARY CONTAMINATION RISK ASSESSMENT**	**9**
5.1	Introduction	9
5.2	Contaminant Pathways Identified	9
5.3	Potential Contamination Source Identified	10
5.4	Preliminary Conceptual Model	10
6.	**SITE WORKS**	**11**
6.1	Introduction	11
6.2	Exploratory Holes	11
6.3	Sampling	11
6.4	In Situ Strength Testing	12
6.5	In Situ Infiltration Testing	12
6.6	Installations	12
6.7	Laboratory Testing	12
7.	**GROUND CONDITIONS**	**13**
7.1	Stratigraphy	13
7.2	Stability	13
7.3	Groundwater Conditions	14
8.	**GEOTECHNICAL ASSESSMENT**	**15**
8.1	Foundations	15
8.2	Ground Floors	17
8.3	Groundwater	18
8.4	Stability of Excavations	18
8.5	Aggressivity to Concrete	19
8.6	Pavement Design	20
8.7	Stormwater Infiltration Systems	21
8.8	Retaining Structures and Slopes	22
9.	**QUANTITATIVE CONTAMINATION ASSESSMENT**	**23**
9.1	Assessment Strategy	23
9.2	Analysis of Contamination Test Results	23
9.3	Quantitative Contamination Risk Assessment	25

9.4	Risks to Other Potential Receptors	25
9.5	Recommendations	25
9.6	Discovery Strategy	26

FIGURES AND APPENDICES

FIGURES

Figure 1 Site Location Plan
Figure 2 Site Plan

APPENDIX A

Proposed Development Layout

APPENDIX B

Explanatory Notes
Exploratory Hole Records
DPSH-B Dynamic Probe Records
In-situ TRL Cone Penetrometer (CBR) Test Results
Borehole In Situ Infiltration Test Results
Groundwater Monitoring Results

APPENDIX C

Geotechnical Laboratory Test Results
Contamination Laboratory Test Results

APPENDIX D

Summary of In Situ CBR Test Results
Graph of Subgrade Surface Modulus vs Depth
Graph of CBR vs Depth

APPENDIX E

Classification of Probability, Consequence and Risk

APPENDIX F

Preliminary Conceptual Model

APPENDIX G

Quantitative Conceptual Model

APPENDIX H

BGS Borehole Records

APPENDIX I

Groundsure Enviro+Geo Insight Report
Historical Maps

7. GROUND CONDITIONS

7.1 Stratigraphy

7.1.1 Surface Covering

Trial pits TP01, TP03 and TP04, and boreholes WS01, WS03, WS04 and WS06 were excavated through a surface cover of topsoil some 100mm to 300mm in thickness.

7.1.2 Made Ground

Made ground or reworked soils, generally comprising slightly gravelly and gravelly clay were recorded within exploratory holes TP02, TP05, and WS02 to WS09. The gravel fraction comprised variable quantities of flint, brick, charcoal-like material, clinker-like material, plastic, metal, sandstone and chalk. The made ground at these positions generally extended to depths of between 0.20m and 0.90m below ground level but was found to extend considerably deeper (to 2.00m below ground level) within borehole WS09. This deeper made ground included a layer of chalk fill between depths of 1.30m and 2.00m.

7.1.3 River Terrace Deposits

Underlying the made ground/surfacing, the exploratory holes, with the single exception of borehole WS09, progressed into undisturbed generally firm (and locally stiff) slightly gravelly/sandy clay deposits. The gravel fraction comprised flint and occasional chalk. Additionally, within the soils encountered within borehole WS05, strata of clayey gravel were recorded between depths of 0.20m and 0.85m, and 2.00m and 2.50m.

These deposits are considered to represent the River Terrace Deposits indicated to underlie the site on BGS geological maps.

The base of the River Terrace Deposits was generally encountered within the boreholes at depths of between 0.70m and 2.30m below ground level, but at the location of borehole WS08 these soils extended to the full depth of the borehole at 3.00m below ground level. All of the shallow trial pit holes were terminated at a depth of 1.0m below ground level within the River Terrace Deposits.

7.1.4 London Clay Formation

Beneath the River Terrace Deposits, where penetrated, the dynamic sampler boreholes encountered generally stiff clay deposits (locally becoming very stiff), within which bands of mudstone and sandstone were occasionally recorded.

These deposits continued to the full depth of investigation and are considered to represent the London Clay Formation indicated to underlie the River Terrace Deposits on BGS geological maps.

7.2 Stability

Boreholes WS05, WS08 and WS09 collapsed to depths of between 2.38m and 2.90m below ground level on completion of drilling. The remaining exploratory holes were recorded to remain stable during excavation/drilling.

7.3 Groundwater Conditions

Groundwater was recorded at depths of 1.33m and 1.30 during the drilling of boreholes WS05 and WS09, respectively. All other exploratory holes remained dry during drilling/excavation.

Monitoring of groundwater levels within the standpipes installed in boreholes WS01, WS04, and WS07 was undertaken over a period of approximately three weeks.

Borehole WS01 was recorded to remain dry during the monitoring period.

Groundwater within boreholes WS04 and WS07 was recorded to gradually rise to respective depths of 3.60m and 3.15m by the end of the monitoring period. However, the data indicates that groundwater levels within the standpipes had not fully equilibrated with the true groundwater levels by the time the dataloggers were collected.

undertaken to demonstrate, that close to the time of construction, no significant soil desiccation is present. If ground bearing floors are adopted it is recommended that the potential for differential movement, both between the floor slab and walls and across the floor slab itself, should be anticipated. Such floors should be fully debonded from walls. Formations should be adequately proof rolled and any excessively soft materials excavated and replaced with a suitable, well graded granular fill. The depth of any fill should be limited to a maximum of 600mm unless placed to an engineering specification designed to limit internal settlement of the fill materials to a tolerance to be advised by the designer.

Guidance on CBR values and a moduli of subgrade reaction are given in Section 8.6 of this report.

The detailing of services through, or under, ground-bearing floors should incorporate flexible connections and, where appropriate, enhanced falls.

8.3 Groundwater

Groundwater was recorded during the drilling of two of the boreholes at depths of 1.33m and 1.30. Groundwater levels were recorded to gradually rise within two of the stand-pipes installed at the site during the three-week monitoring period. At the end of the monitoring period groundwater had risen to depths of between 3.60m and 3.15m, however the data indicates that groundwater levels within the standpipes had not fully equilibrated over the monitoring period.

It is also noted that groundwater levels should be expected to fluctuate seasonally, especially during wetter seasons.

Where excavations are proposed to extend below the groundwater table, particularly within coarse-grained River Terrace Deposits, groundwater control will be required to maintain adequately dry working conditions and excavation stability. In such circumstances it is recommended that trial pumping from proposed excavation depths should be undertaken to fully ascertain requirements for groundwater control.

The potential for perched groundwater to be present above the groundwater table, for example within the made ground etc, should not be overlooked. It is also possible that heavy precipitation during construction could lead to the ingress of perched groundwater or surface water run-off into excavations. In such circumstances it would be expected that water entering excavations would be adequately managed by pumping from sumps or natural drainage into coarse grained River Terrace Deposits if present above the groundwater table.

8.4 Stability of Excavations

All made ground or coarse-grained natural soils exposed in excavations should be assumed to be unstable, even in the short term. Whilst fine-grained natural soils may remain stable for a short period of time if not subjected to surcharge loads (such as may be imposed by existing foundations, traffic or storage of materials), the stability of these deposits if left unsupported should be assumed to have the potential to deteriorate. Where stable excavations are required, excavations should either be suitably supported or, where space permits, side slopes could be battered back to a safe angle of repose.

All excavations requiring human entry must be shored or battered as necessary to conform to current best practice, as accepted by the Health and Safety Executive (HSE)[5]. Current legislation

[5] Relevant guidance is given on the HSE website, www.hse.gov.uk

* Thin pavement being 300mm sub-base, thick pavement being 1200mm sub-base. †Modulus based on average of all calculated moduli based on CBR values for thin sub-base.

The subgrade may be assumed not to be susceptible to frost heave.

If new roads are to be adopted the local highway authority should be consulted with reference to the acceptability of the proposed CBR figures prior to designs being finalised and construction undertaken.

8.7 Stormwater Infiltration Systems

In-situ infiltration testing[9] was undertaken in boreholes WS02, WS05, WS06, and WS08. From the test results, calculations were made to estimate the infiltration rate that could be expected for soakaways constructed to discharge into the underlying soils within the test zone.

The infiltration rates derived from the tests are summarised in the following table.

Table 19. Calculated Infiltration Rates

Exploratory Hole	Test Response Zone Depth (m)		Stratum	Infiltration Rate (f) (m/sec)	Driving Head of Water (m)
	Top	Bottom			
WS02	2.00	3.00	London Clay Formation	Negligible – no fall in water level in 67 minutes	
WS05 – Test 1	1.00	3.00*	River Terrace Deposits	1.07×10^{-4}	0.7
WS05 – Test 2	1.00	3.00*	River Terrace Deposits	1.05×10^{-4}	0.7
WS05 – Test 3	1.00	3.00*	River Terrace Deposits	9.89×10^{-5}	0.6
WS06	2.00	3.00*	London Clay Formation	1.16×10^{-7}	2.3
WS08	2.00	3.00*	River Terrace Deposits	9.03×10^{-7}	2.2

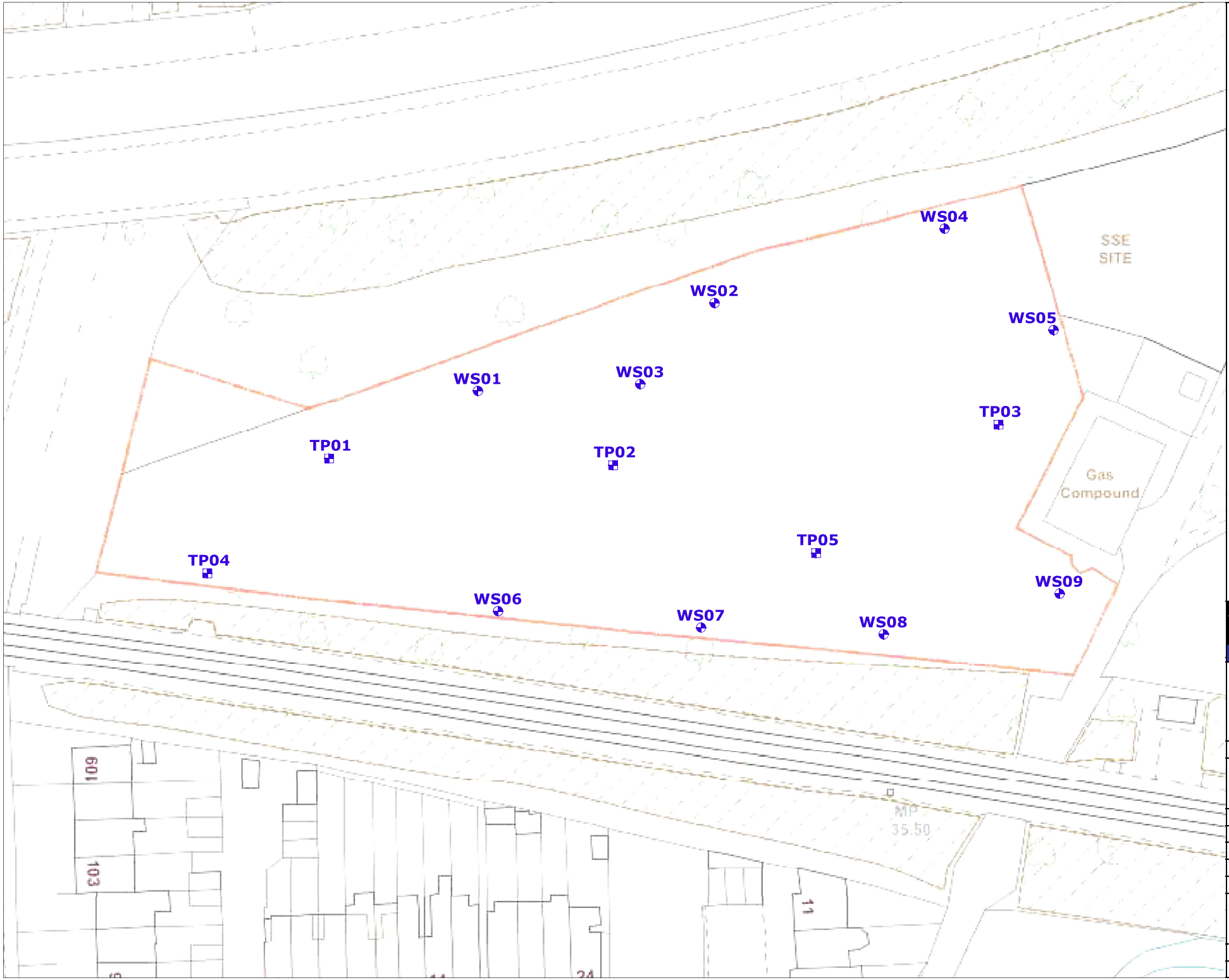
Notes: * Boreholes collapsed/unstable at base.

The value 'f' is equivalent to the soil infiltration coefficient 'q' quoted in the Construction Industry Research and Information Association (CIRIA) Report 156.

The results from the infiltration tests should be provided to engineers responsible for the design of the drainage system.

To comply with building regulations[10], point discharging infiltration systems (conventional ring or trench soakaways) are required to be constructed a minimum of 5.0m away from proposed or existing buildings.

[9] Conducted in accordance with The Soakaway Design Guide, published by Kent County Council, July 2000.
[10] The Building Regulations 2010; Part H; Drainage and Waste Disposal



N

ASHDOWN SITE INVESTIGATION
L•I•M•I•T•E•D

Unit 3
The Old Grain Store
Ditchling Common Business Park
Ditchling
East Sussex
BN6 8SG
01273 483119
contact@ashdownsi.co.uk

Site:	Interbridges New Brighton Road Emsworth Hampshire
Project Ref:	P16578
Figure No.	2
Drawing Title	Site Plan
Scale	NTS

APPENDIX 6

Greenfield Runoff Rates

Greenfield Runoff Volume

FSR Data

Return Period (years)	1
Storm Duration (mins)	360
Region	England and Wales
M5-60 (mm)	19.900
Ratio R	0.344
Areal Reduction Factor	1.00
Area (ha)	0.433
SAAR (mm)	794
CWI	45.000
Urban	0.000
SPR	37.000

Results

Percentage Runoff (%)	17.00
Greenfield Runoff Volume (m^3)	17.271

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Greenfield Runoff Volume

FSR Data

Return Period (years)	30
Storm Duration (mins)	360
Region	England and Wales
M5-60 (mm)	19.900
Ratio R	0.344
Areal Reduction Factor	1.00
Area (ha)	0.433
SAAR (mm)	794
CWI	45.000
Urban	0.000
SPR	37.000

Results

Percentage Runoff (%)	19.43
Greenfield Runoff Volume (m^3)	42.975

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Greenfield Runoff Volume

FSR Data

Return Period (years)	100
Storm Duration (mins)	360
Region	England and Wales
M5-60 (mm)	19.900
Ratio R	0.344
Areal Reduction Factor	1.00
Area (ha)	0.433
SAAR (mm)	794
CWI	45.000
Urban	0.000
SPR	37.000

Results

Percentage Runoff (%)	21.40
Greenfield Runoff Volume (m^3)	61.181

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APPENDIX 7

EA Flood Map for Planning

Flood map for planning

Your reference	Location (easting/northing)	Created
Unspecified	**474976/106348**	**5 August 2026 09:53**

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see https://www.gov.uk/guidance/flood-risk-assessment-standing-advice)

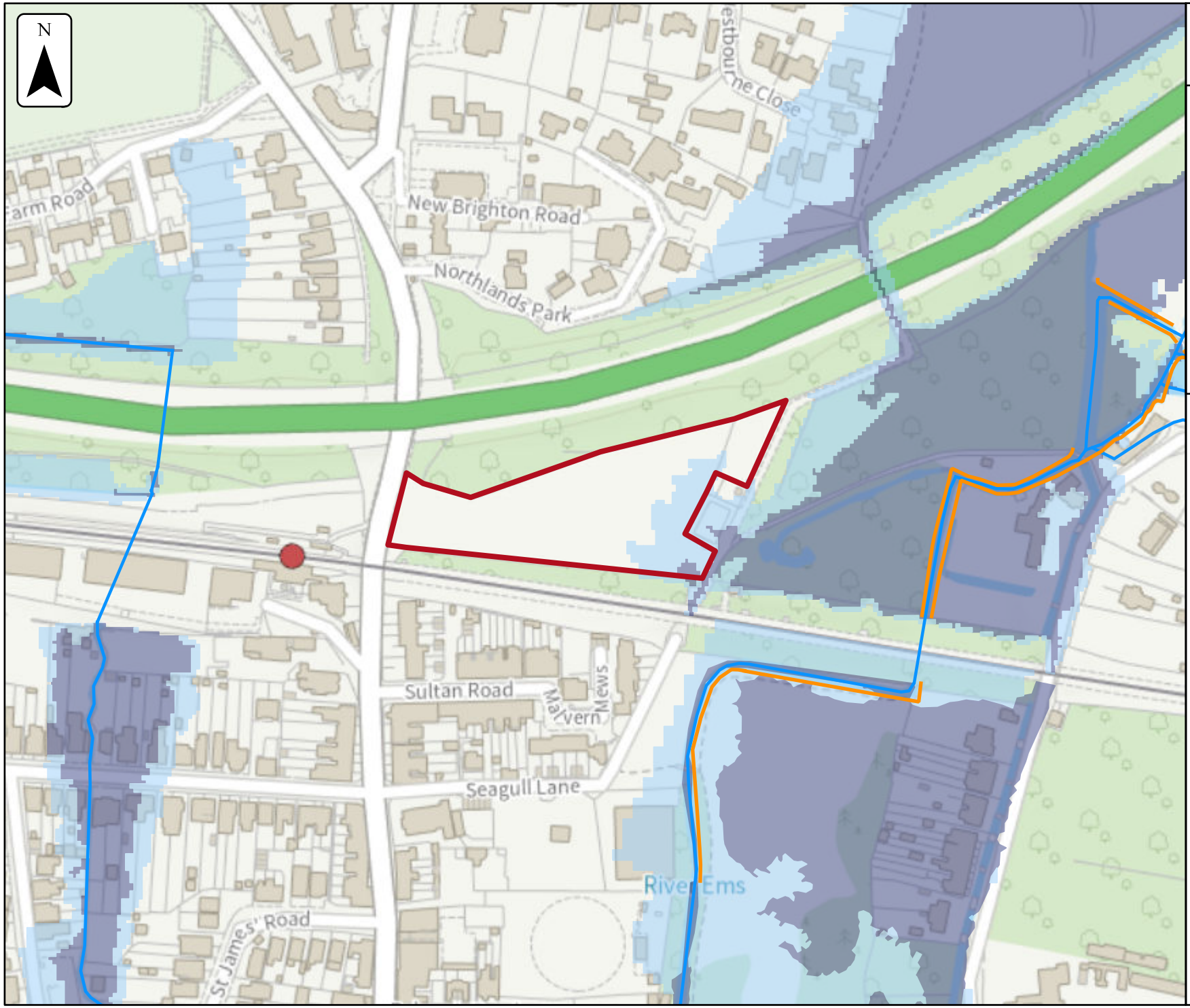
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2026 AC0000807064. https://flood-map-for-planning.service.gov.uk/os-terms



Environment Agency

Flood map for planning

Your reference
Unspecified

Location (easting/northing)
474976/106348

Scale
1:2,500

Created
5 Aug 2026 09:53

- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 20 40 60 m

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APPENDIX 8

Groundwater Monitoring Results (Soils Ltd)

soils LIMITED

Groundwater Monitoring Report

at
North Street, Emsworth, Hampshire PO10 7PP

for
Emsworth Business Park Ltd

Reference: 22138/GWMR Rev1.0
June 2026

Control Document

Project
North Street, Emsworth, Hampshire PO10 7PP

Document Type
Groundwater Monitoring Report

Document Reference
22138/GWMR Rev 1.0

Document Status
Final

Date
June 2026

Prepared by
Miguel Silvestre BSc
(ms@soilslimited.co.uk)

First check by
Eur Ing R B Higginson BSc, PGDip, CEng, MICE, FGS

Second check
S J Bevins BSc.(Hons) MSc. CEng CEnv MIMMM FGS MCorIE RoGEP

This is not a valid document for use in the design of the project unless it is titled Final in the document status box.

Current regulations and good practice were used in the preparation of this report. The recommendations given in this report must be reviewed by an appropriately qualified person at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

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BGA CORPORATE MEMBER 2026 www.britishgeotech.org
Quality Systems Certifications Ltd ISO 45001:2018
Quality Systems Certifications Ltd ISO 9001:2015

Commission

This document comprises the Groundwater Monitoring Report (GWMR) and incorporates the results to this intrusive works. General site data is recorded below:

Commission Record	
Client:	Emsworth Business Park Ltd
Site Name:	North Street, Emsworth, Hampshire PO10 7PP
Grid Reference:	SU 74898 06349
Soils Limited Quotation Ref:	Q30383, dated 1st September 2025
Clients Purchase Order:	EBP 000025, dated 18th September 2025

The record of revision to this document is presented below:

Record Of Revisions		
Revision	**Date**	**Reason**
Rev 1.0	June 2026	Original

Note(s): The latest revised document supersedes all previous revisions of the GWMR produced by Soils Limited.

Documents associated with this development that must be referred to are given below.

Record Of Associated Documents			
Reference	**Type**	**Date**	**Creator**
25324B	Topographic Land Survey	April 2025	J. Brotherton & Partners

Limitations and Disclaimers

The report was prepared solely for the brief described in Section 1.1 of this report.

The contents, recommendations and advice given in the report are subject to the Terms and Conditions given in Soils Limited's Quotation.

Soils Limited disclaims any responsibility to the Client and others in respect of any matters outside the scope of the above.

This report has been prepared by Soils Limited, with all reasonable skill, care and diligence within the terms of the Contract with the Client, incorporation of our General Conditions of Contract of Business and taking into account the resources devoted to us by agreement with the Client.

The report is personal and confidential to the Client and Soils Limited accept no responsibility of whatever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report wholly at its own risk.

The Client may not assign the benefit of the report or any part to any third party without the written consent of Soils Limited.

The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site,

and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

The investigation was prepared for the sole benefit of the Client in accordance with their brief. As such these do not necessarily address all aspects of ground behaviour at the site.

Current regulations and good practice were used in the preparation of this report.

If the term “competent person” is used in this report or any Soils Limited document, it means an engineering geologist or civil engineer with a minimum of three years post graduate experience in the understanding and application of the appropriate codes of practice.

Within the report reference to ground level relates to the site level at the time of the investigation, unless otherwise stated.

Exploratory hole is a generic term used to describe a method of direct investigation. The term trial pit, borehole or window sample borehole implies the specific technique used to produce an exploratory hole.

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Contents

Commission i
Limitations and Disclaimers i
Section 1 Introduction 1
1.1 Objective of Investigation 1
1.2 Site Description 1
1.3 Proposed Development 1
1.4 Anticipated Geology 1
1.4.1 Head Deposits 1
1.4.2 River Terrace Deposits (Undifferentiated) 2
1.4.3 London Clay Formation 2
Section 2 Site Works 3
2.1 Proposed Project Works 3
2.1.1 Actual Project Works 3
2.2 Service Clearance 3
2.3 Ground Conditions 3
Section 3 Groundwater Monitoring 5
3.1 Groundwater 5
3.1.1 Discussion on Groundwater Levels 5

List of Figures

Figure 1 – Site Location Map 8
Figure 2 – Aerial Photograph 9
Figure 3 – Exploratory Hole Plan 10

List of Tables

Table 2.1 Final Depth of Exploratory Holes 3
Table 2.2 Ground Conditions 4
Table 3.1 Groundwater Monitoring Records 5

List of Appendices

Appendix A Standards and Resources

Appendix B Site Works

Appendix B.1 Exploratory Hole Logs

Appendix C Groundwater Monitoring Data

Appendix D Proposed Development

Section 1 Introduction

1.1 Objective of Investigation

The Client commissioned Soils Limited to undertake an intrusive ground investigation and groundwater monitoring and to prepare a Groundwater Monitoring Report to supply the Client and their designers with information regarding ground and groundwater conditions, to inform development that was appropriate to the settings present on site.

The investigation was undertaken by the installation of monitoring wells and subsequent groundwater monitoring.

No preliminary investigation or interpretive reporting was commissioned as part of this investigation.

1.2 Site Description

The site comprised a polygonal-shaped grassed field, bounded by trees and bushes on all sides except for the west where it was bounded by a road. A soil mound was present near the northern border in the central section of the site.

To the north of the site (23m) there was a motorway and to the south (5m) a railroad. There was also a water course 15m to the east.

The overall topography of the area was mostly flat, with the site being slightly raised in the centre with a maximum slope of less than 2° to east.

The site location plan is given in Figure 1. An aerial photograph of the site and its close environs has been included in
Figure 2.

1.3 Proposed Development

At the time of writing this report (June 2026) no development plans were available. It is assumed to be a housing development.

1.4 Anticipated Geology

The 1:50,000 BGS map showed the site to be located upon the bedrock London Clay Formation with overlying superficial River Terrace Deposits to the west and Head Deposits to the east.

1.4.1 Head Deposits

Head Deposit are drifts produced by solifluxion, the downslope movement of debris outwash during the periglacial period, and characteristically comprise poorly sorted sands, gravels and chalk of local derivation.

1.4.2 River Terrace Deposits (Undifferentiated)

The rivers Test and Itchen have deposited extensive spreads of River Terrace Deposits in the Southampton area, representative of ancient floodplains. In total, eleven terraces have been recorded. The River Terrace Deposits consist predominantly of gravels made up of subangular to subrounded flints with a significant sand component locally with lenses of silt, clay or peat.

The five highest terraces have appreciable clay content. Poorly sorted, clayey and sandy silts and silty clays overlie the 1st, 3rd, 5th and 6th terraces and locally at above terrace gravels.

1.4.3 London Clay Formation

The London Clay Formation comprises stiff grey fissured clay, weathering to brown near surface. Concretions of argillaceous limestone in nodular form (Claystones) occur throughout the formation. Crystals of gypsum (Selenite) are often found within the weathered part of the London Clay, and precautions against sulphate attack to concrete are sometimes required.

Section 2 Site Works

2.1 Proposed Project Works

The proposed intrusive investigation was designed to provide information on the ground and groundwater conditions to aid the development of the site. The intended investigation was set out within Soils Limited quotation Q30383, dated 1st September 2025, and comprised:

- 2No. (up to) 5m deep windowless sampler boreholes and dynamic probes
- 2No. monitoring wells in boreholes
- 7No. groundwater monitoring visits (monthly between October-April)

2.1.1 Actual Project Works

The actual project works were undertaken on 20th October 2025, with subsequent sample logging, monitoring, and reporting. The actual works comprised:

- 2No. 5m deep windowless sampler boreholes and dynamic probes
- 2No. monitoring wells in boreholes
- 7No. groundwater monitoring visits (monthly between October-April)

Monitoring wells were installed in both boreholes to 5m bgl, comprising slotted HDPE with gravel pack from 5.00m to 1.00m bgl and 1.00m of plain HDPE pipe with a bentonite seal and flush well cap to the surface.

All exploratory hole locations are presented in Figure 3.

2.2 Service Clearance

Each exploratory hole location was service cleared using non-intrusive equipment including radio detection locators (CAT and Genny).

2.3 Ground Conditions

All exploratory holes were undertaken at locations agreed with the Client. The maximum depth of exploratory holes has been included in Table 2.1.

Table 2.1 Final Depth of Exploratory Holes

Exploratory Hole	Depth (m bgl)	Exploratory Hole	Depth (m bgl)
WS1	5.00	DP1	5.00
WS2	5.00	DP2	6.00

Note(s): The depths given were taken from the ground level adjacent to each exploratory hole at the time of investigation.

Soil conditions were logged and sampled as required, with depths measured from ground level. Soils with organic content or natural weathering were classified as Topsoil,

while those altered or placed by humans (with >5% non-natural material) were labelled Made Ground. Full details are given in Appendix B. For discussion, the soil conditions found in the exploratory holes, from top to bottom, are summarised as follows:

Topsoil (TS)
Head Deposits (HEAD)
River Terrace Deposits (Undifferentiated) (RTDU)
London Clay Formation (LC)

The ground conditions encountered are summarised in Table 2.2.

Table 2.2 Ground Conditions

Strata	Depth Encountered (m bgl)		Typical Thickness (m)	Typical Description
	Top	Bottom		
TS	0.00	0.20-0.30	0.20-0.30	Soft dark greyish brown slightly silty slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to coarse flint and calcareous fragments. Sand is fine to medium. Frequent live roots and rootlets.
HEAD[3]	0.30	1.35	1.05	Firm to stiff desiccated with depth greyish brown mottled brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to coarse flint. Sand is fine. Occasional live rootlets.
RTDU[4]	0.20	1.10	0.90	Firm greyish brown to orangish brown slightly silty slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse flint and calcareous fragments. Sand is fine. Occasional live rootlets.
LC	0.90-1.05	1.80-2.90	0.75-2.00	Stiff greyish brown mottled grey and orangish brown slightly silty slightly sandy CLAY. Sand is fine. Frequent rounded calcareous nodules. Occasional live and decayed rootlets.
LC	1.80-2.90	6.00[1,2]	Not proved[2]	Stiff greyish brown mottled grey slightly silty fissured CLAY. Sand is fine. Occasional decayed rootlets. Rare calcareous shell fragments and coarse sand sized selenite crystals.

Note(s): [1] Final depth of exploratory hole. [2] Base of strata not encountered. [3] Only encountered in WS2. [4] Only encountered in WS1. The depths given were taken from the ground level adjacent to each exploratory hole at the time of investigation.

For complete information on the ground conditions encountered see the exploratory hole logs presented in Appendix B.1.

Section 3 Groundwater Monitoring

3.1 Groundwater

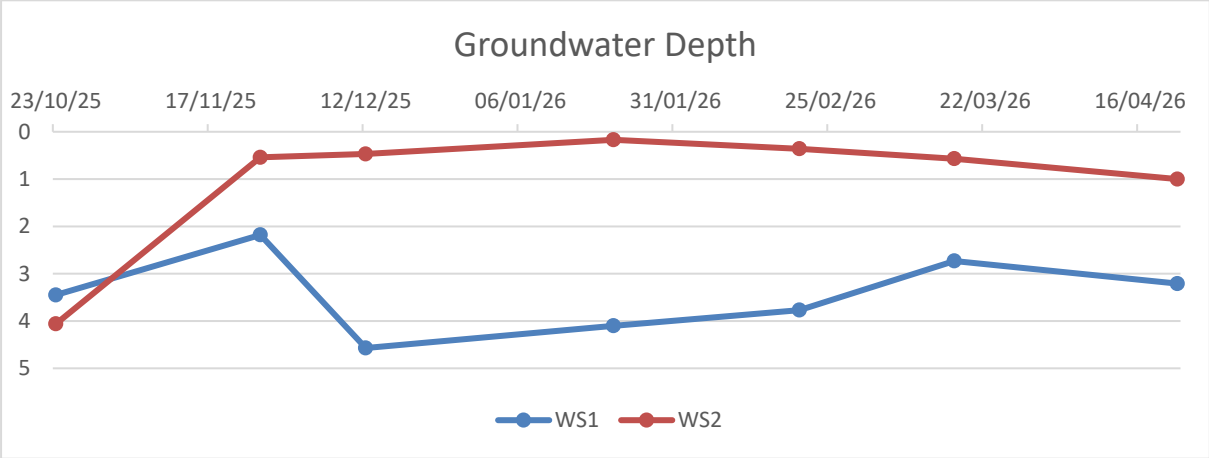
Groundwater was not observed within any of the exploratory holes during their drilling.

The investigation included seven monitoring visits with groundwater records presented in Table 3.1 and Chart 1.

Table 3.1 Groundwater Monitoring Records

Hole No.	Well Depth (m bgl)	Depth to Water (m bgl)						
		23/10/25	25/11/25	12/12/25	21/01/26	20/02/26	17/03/26	22/04/26
WS1	5.00	3.45	2.18	4.57	4.10	3.77	2.73	3.21
WS2	5.00	4.06	0.54	0.47	0.17	0.36	0.57	1.00

Chart 1 Groundwater Records



3.1.1 Discussion on Groundwater Levels

Changes in groundwater level occur for reasons including seasonal effects and variations in drainage. The groundwater monitoring was conducted between October 2025 and April 2026, a period when groundwater levels should be mostly rising until around March, before falling again.

Both boreholes were located at a similar elevation, so it is not obvious why there was such variability in groundwater level between the two boreholes across the monitoring period.

The peak noted in WS1 25th November 2025 coincided with a period of heavy rainfall. In WS2, a gradual rise in groundwater levels was evident through the winter, peaking between January and March, which was consistent with expected seasonal behaviour. It is noted that January and February 2026 recorded very high rainfall, which is reflected in the results for WS2.

The data collected throughout the monitoring period proved to be limited, as such further monitoring is recommended with the potential addition of new wells in order to provide a more reliable understanding.

The full groundwater monitoring data are presented in Appendix C.

List of Figures

Figure 1 – Site Location Map 8
Figure 2 – Aerial Photograph 9
Figure 3 – Exploratory Hole Plan 10

List of Appendices

Appendix A Standards and Resources
Appendix B Site Works
Appendix B.1 Exploratory Hole Logs
Appendix C Groundwater Monitoring Data
Appendix D Proposed Development

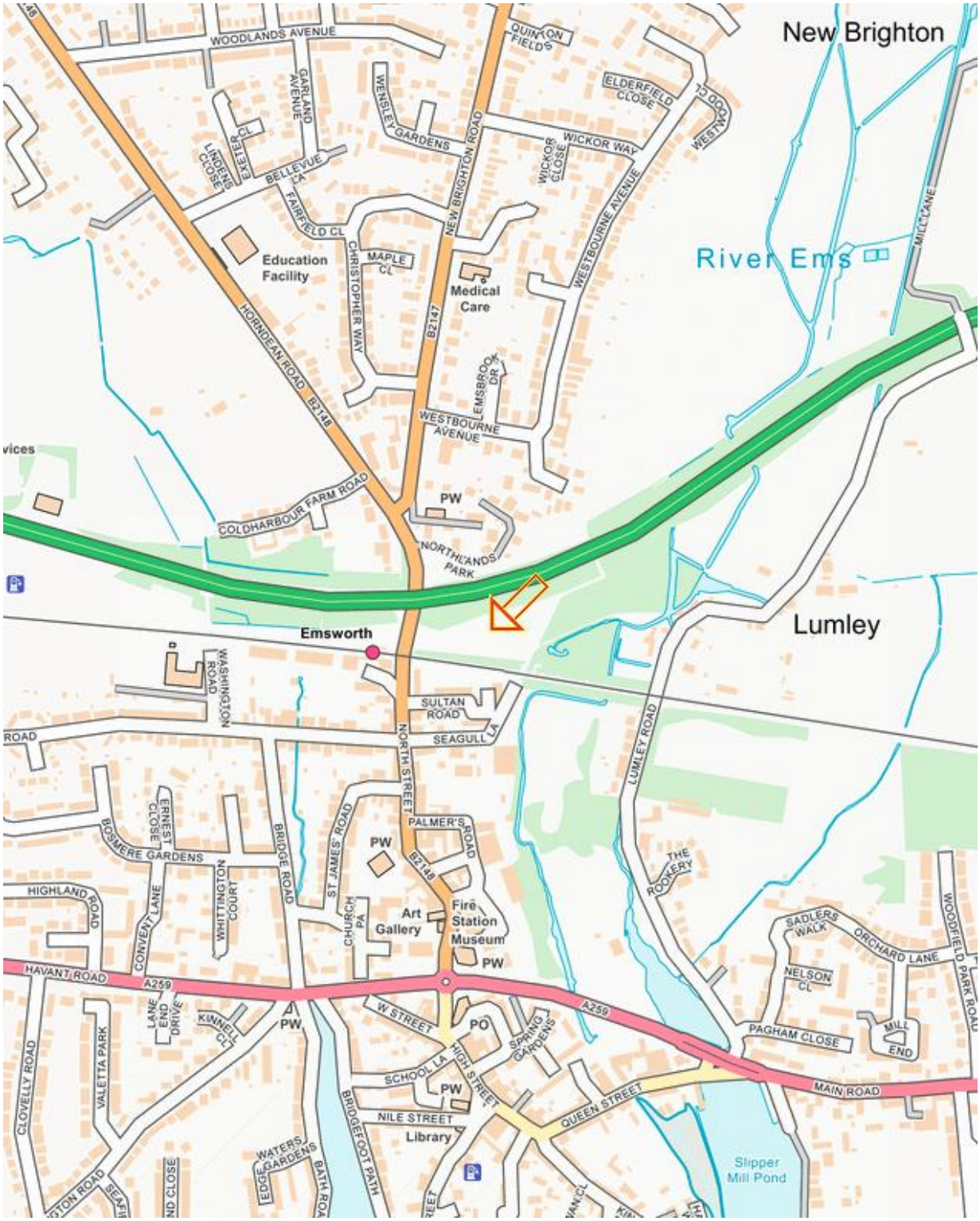


Figure 1 – Site Location Map

N

Job Number 22138	**Project** North Street, Emsworth, Hampshire PO10 7PP
Client Emsworth Business Park Ltd	**Date** June 2026

Figure 2 – Aerial Photograph

Job Number 22138	**Project** North Street, Emsworth, Hampshire, PO10 7PP
Client Emsworth Business Park Ltd	**Date** June 2026

Figure 3 – Exploratory Hole Plan

N

Job Number 22138	**Project** North Street, Emsworth, Hampshire, PO10 7PP
Client Emsworth Business Park Ltd	**Date** June 2026

Appendix A Standards and Resources

The site works, soil descriptions and monitoring were undertaken in accordance with the following standards where applicable:

- BS 5930:2015+A1:2020 and BS EN ISO 22476-2 2005+A1:2011
- BS EN ISO 14688-1:2018 - Geotechnical investigation and testing - Identification and description
- BS EN ISO 14688-2:2018 - Geotechnical investigation and testing - Principles for a classification
- Google Earth
- British Geological Survey Website & iGeology App

Appendix B Site Works

Appendix B.1 Exploratory Hole Logs

Window Sampler

WS1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS				1:50

Project Name	Project No.	Start Date	End Date
North Street	22138	20-10-2025	20-10-2025

Client	Consultant	Contractor
North Street, Emsworth Business Park Limited	MS	Soils Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.20) 0.20		Soft dark greyish brown slightly silty slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse flint and calcareous fragments. Sand is fine to medium. Frequent live roots and rootlets. [TOPSOIL]
						(0.40) 0.60		Firm greyish brown slightly silty slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse flint and calcareous fragments. Sand is fine. Occasional live rootlets. [RIVER TERRACE DEPOSITS]
						(0.50) 1.10		Firm brown mottled orangish brown slightly silty slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine calcareous nodules and flint. Sand is fine. Occasional live rootlets and fine lignite. [RIVER TERRACE DEPOSITS]
						(0.40) 1.50		Stiff greyish brown mottled grey and orangish brown slightly silty slightly sandy CLAY. Sand is fine. Frequent rounded calcareous nodules. Occasional live and decayed rootlets. [LONDON CLAY FORMATION]
						(1.40) 2.90		Stiff greyish brown mottled grey and orangish brown slightly silty slightly sandy CLAY. Sand is fine. Occasional decayed rootlets. [LONDON CLAY FORMATION]
						(1.40) 4.30		Stiff greyish brown mottled grey slightly silty slightly sandy CLAY. Sand is fine. Occasional decayed rootlets. Rare calcareous shell fragment and coarse sand sized selenite crystals. [LONDON CLAY FORMATION]
						(0.70) 5.00		Stiff dark greyish brown slightly silty slightly sandy CLAY. Sand is fine. Rare calcareous shell fragments. [LONDON CLAY FORMATION]

End of Borehole at 5.00m

Remarks
Rootlets observed to 4.30m bgl.

Method, Plant, Stability, Dimensions		Logger
0.00 - 5.00m	Premier 1	JM

Status: FINAL

Window Sampler

WS2

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS				1:50

Project Name	Project No.	Start Date	End Date
North Street	22138	20-10-2025	20-10-2025

Client	Consultant	Contractor
North Street, Emsworth Business Park Limited	MS	Soils Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.30) 0.30		Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to subangular, fine to medium flint. Occasional rootlets. [TOPSOIL]
						(0.40) 0.70		*Decomposing woody fragments (0.10 - 0.20m)*
						(0.65) 1.35		Firm greyish brown mottled brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse flint. Sand is fine. Occasional live rootlets. [HEAD DEPOSITS]
						(0.45) 1.80		Firm becoming very stiff and desiccated with depth, greyish brown mottled brown slightly sandy gravelly to very gravelly CLAY. Gravel is angular to subangular fine to coarse flint. [HEAD DEPOSITS]
						(1.90) 3.70		Stiff greyish brown mottled grey and orangish brown slightly silty slightly sandy fissured CLAY. Sand is fine. Occasional rootlets and decayed rootlets. Occasional subrounded medium calcareous nodules. Rare subangular fine flint gravel. [LONDON CLAY FORMATION]
						(1.30) 5.00		Stiff greyish brown mottled grey silty fissured CLAY. Occasional decayed rootlets. [LONDON CLAY FORMATION]
								Stiff dark greyish brown silty fissured CLAY. Rare calcareous shell fragments. Very rare rootlets. [LONDON CLAY FORMATION]
								End of Borehole at 5.00m

Remarks
Live rootlet observed at 3.50m bgl.

Method, Plant, Stability, Dimensions
0.00 - 5.00m Premier 1

Logger
DEE

Status: FINAL

Created using Pebble Geo

Dynamic Probe

DP1

Sheet 1 of 1

Probe Type	Easting	Northing	Ground Level (m)	Scale
DPSH				1:50

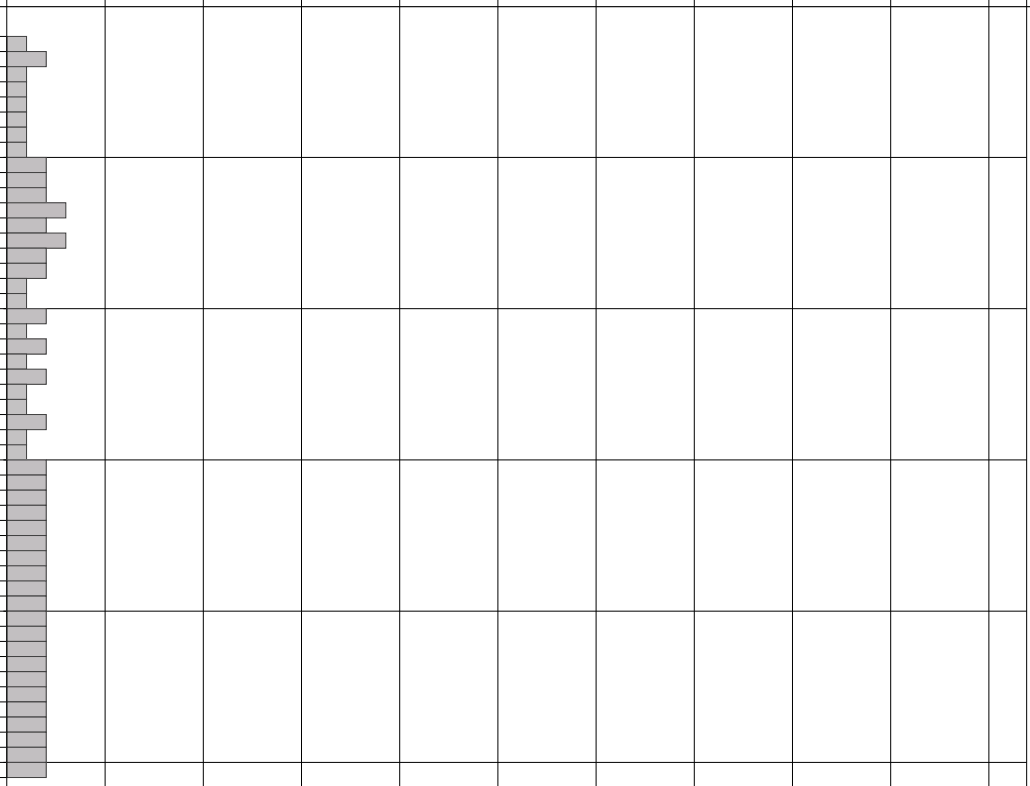
Project Name	Project No.	Start Date	End Date
North Street	22138	20-10-2025	20-10-2025

Client	Consultant	Contractor
North Street, Emsworth Business Park Limited	MS	Soils Limited

Readings (Blows/100mm)

Depth (m)	Readings (Blows/100mm)
0.0 – 0.5	0 1 2 1 1 1 1 1 1
0.5 – 1.0	2 2 2 3 2 3 2 2 1 1
1.0 – 1.5	2 1 2 1 2 1 1 2 1 1
1.5 – 2.0	2 2 2 2 2 2 2 2 2 2
2.0 – 2.5	2 2 2 2 2 2 2 2 2 2
2.5 – 3.0	2 2 2 2 2 2 2 2 2 2
3.0 – 3.5	2 2 2 2 2 2 2 2 2 2
3.5 – 4.0	2 2 2 2 2 2 2 2 2 2
4.0 – 4.5	2 2 2 2 2 2 2 2 2 2
4.5 – 5.0	2 2 2 2 2 2 2 2 2 2
5.0 – 5.5	2

Diagram (N100 Values)



Torque (Nm)

Depth (m)	Torque (Nm)
1.0 – 1.5	0
2.0 – 2.5	0
3.0 – 3.5	5
4.0 – 4.5	15
5.0 – 5.5	5

Remarks

Status: FINAL

Method, Plant

0.00 - 6.00m Premier 1

Logger SW

Hammer Weight (kg)	65.5
Hammer Drop (mm)	750
Cone Diameter (mm)	50
Cone Angle	90
Rod Diameter (mm)	35
Damper	None

Created using Pebble Geo

Dynamic Probe

DP2

Sheet 1 of 1

Probe Type	Easting	Northing	Ground Level (m)	Scale
DPSH				1:50

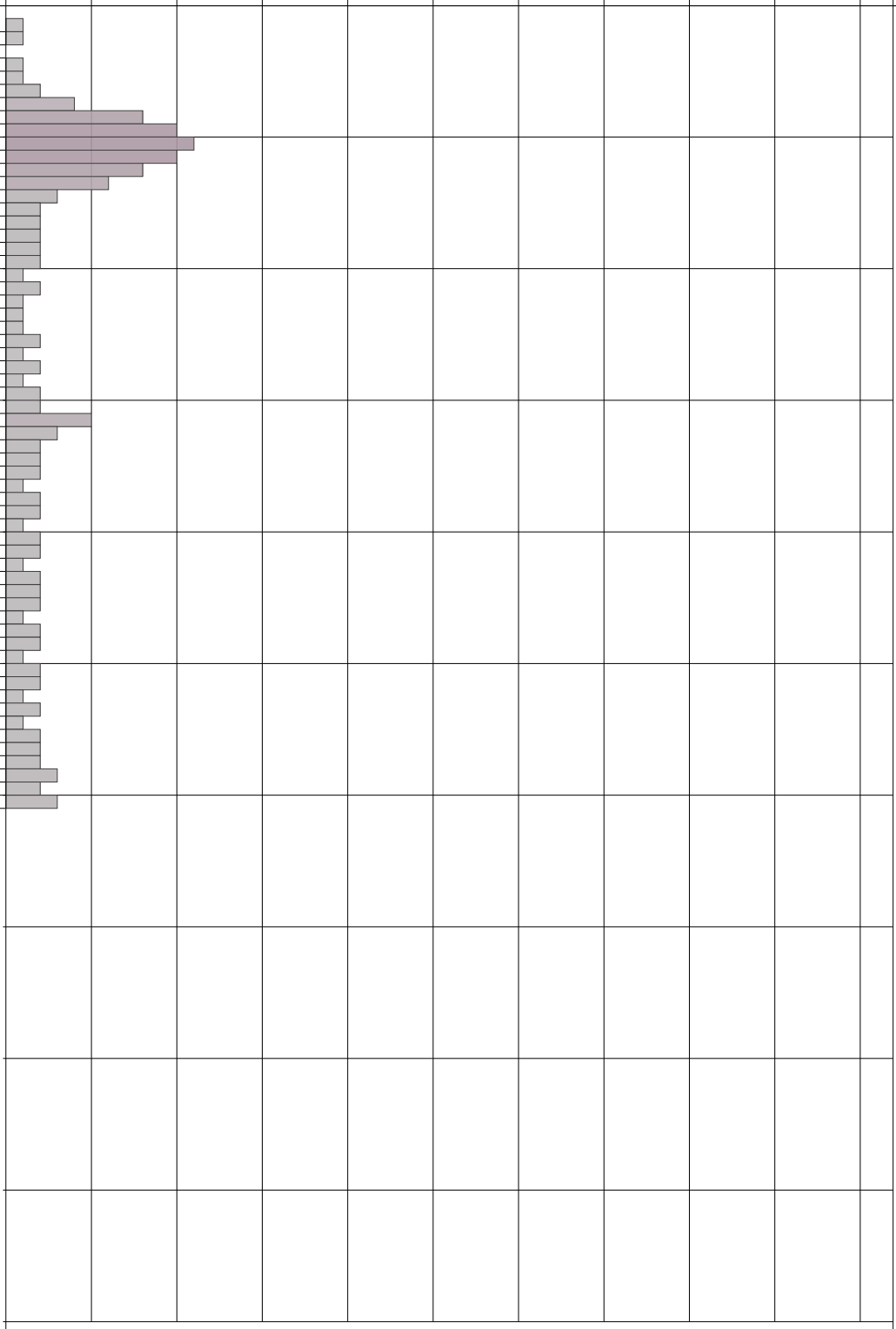
Project Name	Project No.	Start Date	End Date
North Street	22138	20-10-2025	20-10-2025

Client	Consultant	Contractor
North Street, Emsworth Business Park Limited	MS	Soils Limited

Readings (Blows/100mm)

Depth (m)	Readings (Blows/100mm)
0.0 – 0.5	1 1 0 1
0.5 – 1.0	1 2 4 8 10
1.0 – 1.5	11 10 8 6 3
1.5 – 2.0	2 2 2 2 2
2.0 – 2.5	1 2 1 1 1
2.5 – 3.0	2 1 2 1 2
3.0 – 3.5	2 5 3 2 2
3.5 – 4.0	2 1 2 2 1
4.0 – 4.5	2 2 1 2 2
4.5 – 5.0	2 1 2 2 1
5.0 – 5.5	2 2 1 2 1
5.5 – 6.0	2 2 2 3 2
6.0 – 6.5	3

Diagram (N100 Values)



Torque (Nm)

Depth (m)	Torque (Nm)
1.0	5
2.0	10
3.0	65
4.0	65
5.0	80
6.0	105

Remarks

Status: FINAL

Method, Plant

0.00 - 6.00m Premier 1

Logger SW

Hammer Weight (kg)	65.5
Hammer Drop (mm)	750
Cone Diameter (mm)	50
Cone Angle	90
Rod Diameter (mm)	35
Damper	None

Created using Pebble Geo

Appendix C Groundwater Monitoring Data

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS1
Date:	23/10/2025
Start Time:	11:20:00 AM

Weather				
Wind			*Moderate*	
Cloud Cover			*Cloudy*	
Precipitation			*Moderate*	
Ground Conditions			*Wet*	

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:		*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
3.45	4.92

Step 1				
	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2										
	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS2
Date:	23/10/2025
Start Time:	11:30:00 AM

Weather				
Wind			*Moderate*	
Cloud Cover			*Cloudy*	
Precipitation			*Moderate*	
Ground Conditions			*Wet*	

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:		*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
4.06	4.95

Step 1				
	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2										
	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS1
Date:	26/11/2025
Start Time:	11:00:00 AM

Weather	* Delete as appropriate			
Wind	*Still*			
Cloud Cover		*Light*		
Precipitation	*Dry*			
Ground Conditions			*Wet*	

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:*	*Dual phase*	*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
2.18	4.90

Step 1

	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2

	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS2
Date:	26/11/2025
Start Time:	11:00:00 AM

Weather	* Delete as appropriate			
Wind	*Still*			
Cloud Cover		*Light*		
Precipitation	*Dry*			
Ground Conditions			*Wet*	

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:*	*Dual phase*	*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
0.54	4.95

Step 1				
	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2										
	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS1
Date:	12/12/2025
Start Time:	1:35:00 PM

Weather	* Delete as appropriate			
Wind		*Light*		
Cloud Cover			*Cloudy*	
Precipitation	*Dry*			
Ground Conditions				*Flooded*

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:*	*Dual phase*	*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
4.57	4.92

Step 1				
	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2										
	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									12
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS2
Date:	12/12/2025
Start Time:	1:30:00 PM

Weather	* Delete as appropriate			
Wind			*Moderate*	
Cloud Cover			*Cloudy*	
Precipitation	*Dry*			
Ground Conditions			*Wet*	

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:*	*Dual phase*	*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
0.47	4.92

Step 1

	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2

	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									12
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS1
Date:	21/01/2026
Start Time:	2:22:00 PM

Weather	* Delete as appropriate			
Wind		*Light*		
Cloud Cover				*Overcast*
Precipitation	*Dry*			
Ground Conditions			*Wet*	

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:*	*Dual phase*	*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
4.10	4.93

Step 1				
	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2											
	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									10
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS2
Date:	21/01/2026
Start Time:	2:23:00 PM

Weather	* Delete as appropriate			
Wind		*Light*		
Cloud Cover				*Overcast*
Precipitation	*Dry*			
Ground Conditions				*Flooded*

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:*	*Dual phase*	*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
0.17	4.92

Step 1				
	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2											
	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									10
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS1
Date:	20/02/2026
Start Time:	1:32:00 PM

Weather	* Delete as appropriate			
Wind		*Light*		
Cloud Cover				*Overcast*
Precipitation	*Dry*			
Ground Conditions			*Wet*	

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:*	*Dual phase*	*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
3.77	4.99

Step 1

	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2

	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS2
Date:	20/02/2026
Start Time:	1:36:00 PM

Weather	* Delete as appropriate			
Wind		*Light*		
Cloud Cover				*Overcast*
Precipitation	*Dry*	*Slight*		
Ground Conditions			*Wet*	

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:*	*Dual phase*	*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
0.36	4.98

Step 1				
	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2											
	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS1
Date:	01/01/1900
Start Time:	12:00:00 AM

Weather	* Delete as appropriate			
Wind	*Still*	*Light*	*Moderate*	*Strong*
Cloud Cover	*None*	*Light*	*Cloudy*	*Overcast*
Precipitation	*Dry*	*Slight*	*Moderate*	*Heavy*
Ground Conditions	*Dry*	*Moist*	*Wet*	*Flooded*

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:*	*Dual phase*	*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
2.73	5.00

Step 1				
	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2											
	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS2
Date:	17.03.26
Start Time:	12:00:00 AM

Weather	* Delete as appropriate			
Wind	*Still*	*Light*	*Moderate*	*Strong*
Cloud Cover	*None*	*Light*	*Cloudy*	*Overcast*
Precipitation	*Dry*	*Slight*	*Moderate*	*Heavy*
Ground Conditions	*Dry*	*Moist*	*Wet*	*Flooded*

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:*	*Dual phase*	*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
0.57	5.00

Step 1

	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2

	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS1
Date:	22/04/2026
Start Time:	10:05:00 AM

Weather	* Delete as appropriate			
Wind		*Light*		
Cloud Cover	*None*			
Precipitation	*Dry*			
Ground Conditions	*Dry*			

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:*		*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
3.21	4.95

Step 1				
	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

Step 2											
	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Job Number:	22138
Site Name:	North Street
BH/WS ID:	WS2
Date:	22/04/2026
Start Time:	10:10:00 AM

Weather	* Delete as appropriate			
Wind		*Light*		
Cloud Cover	*None*			
Precipitation	*Dry*			
Ground Conditions	*Dry*			

Gas Monitor:*	*Gas Data GFM 435 11555*	*or*	*Gas Data GFM 435 13571*
PID:*	*Watchgas Poli 1*	*or*	*Watchgas Poli 2*
Dip meter:*		*or*	*Single Phase*

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
1.00	4.95

Step 1				
	Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05			
	00:00:30			
	00:01:00			
	00:02:00			
	00:03:00			
	00:04:00			
	00:05:00			
	00:06:00			
	00:07:00			
	00:08:00			
	00:09:00			
	00:10:00			
	00:11:00			

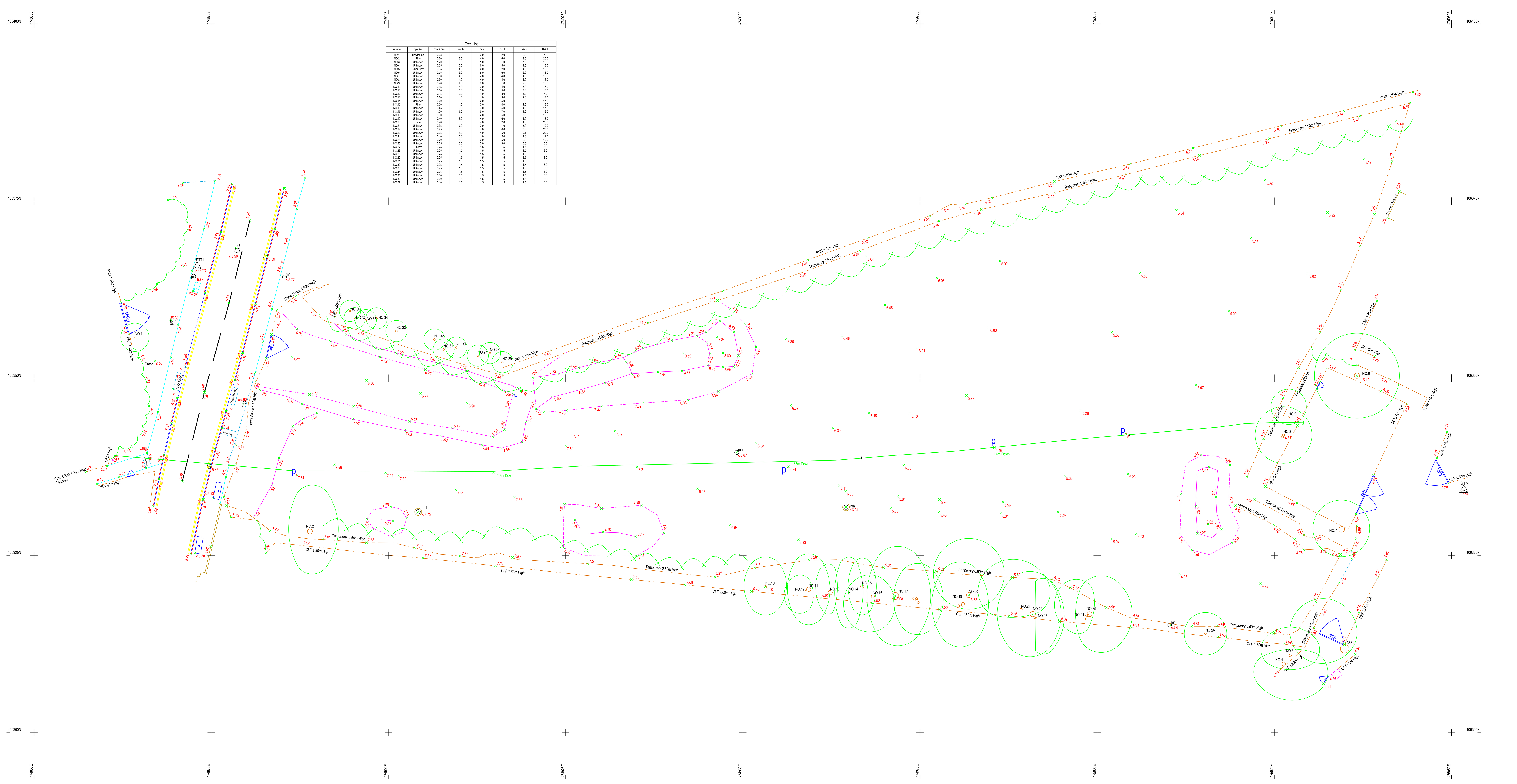
Step 2										
	Monitoring interval	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	LEL CH_4 %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (^oC)
	Atmosphere									
Borehole measurement	00:00:05									
	00:00:30									
	00:01:00									
	00:02:00									
	00:03:00									
	00:04:00									
	00:05:00									
	00:06:00									
	00:07:00									
	00:08:00									
	00:09:00									
	00:10:00									

Samples	
1 Litre Plastic	
1 Litre Glass	
40ml Vial	
Gas sample (Tedlar bag	

Notes;

ONE HOLE PER SHEET. PLEASE RECORD GAS CONCENTRATIONS AT INTERVALS INDICATED ON THE SHEET OR UNTIL THE READINGS STABILISE.

Appendix D Proposed Development



Tree List

Number	Species	Trunk Dia	North	East	South	West	Height
NO.1	Hawthorne	0.08	2.0	2.0	2.0	2.0	4.0
NO.2	Pine	0.70	6.5	4.0	6.0	3.0	20.0
NO.3	Unknown	1.20	6.0	1.0	1.0	7.0	18.0
NO.4	Unknown	0.55	2.0	6.0	5.0	4.0	18.0
NO.5	Silver Birch	0.35	4.0	4.0	2.0	4.0	18.0
NO.6	Unknown	0.75	6.0	6.0	6.0	6.0	18.0
NO.7	Unknown	0.80	4.0	4.0	4.0	4.0	16.0
NO.8	Unknown	0.30	4.0	4.0	4.0	4.0	16.0
NO.9	Unknown	0.20	4.0	2.0	1.0	2.0	16.0
NO.10	Unknown	0.35	4.2	3.0	4.0	3.0	16.0
NO.11	Unknown	0.60	5.0	3.0	5.0	3.0	18.0
NO.12	Unknown	0.15	2.0	1.0	3.0	3.0	4.0
NO.13	Unknown	0.60	4.0	1.0	3.0	2.0	18.0
NO.14	Unknown	0.20	5.0	2.0	5.0	2.0	17.0
NO.15	Pine	0.50	4.0	2.0	4.0	2.0	18.0
NO.16	Unknown	0.45	3.0	3.0	5.0	4.0	17.0
NO.17	Unknown	1.00	7.0	5.0	7.0	4.0	18.0
NO.18	Unknown	0.30	5.0	4.0	5.0	3.0	18.0
NO.19	Unknown	0.40	6.0	4.0	6.0	4.0	18.0
NO.20	Pine	0.70	8.0	4.0	2.0	4.0	20.0
NO.21	Unknown	0.35	7.0	3.0	1.0	5.0	19.0
NO.22	Unknown	0.75	6.0	4.0	6.0	5.0	20.0
NO.23	Unknown	0.35	5.0	4.0	5.0	0.1	20.0
NO.24	Unknown	0.40	5.0	1.0	2.0	4.0	19.0
NO.25	Unknown	0.70	5.0	6.0	5.0	2.0	19.0
NO.26	Unknown	0.25	3.0	3.0	3.0	3.0	8.0
NO.27	Cherry	0.25	1.5	1.5	1.5	1.5	8.0
NO.28	Unknown	0.25	1.5	1.5	1.5	1.5	8.0
NO.29	Unknown	0.25	1.5	1.5	1.5	1.5	8.0
NO.30	Unknown	0.25	1.5	1.5	1.5	1.5	8.0
NO.31	Unknown	0.25	1.5	1.5	1.5	1.5	8.0
NO.32	Unknown	0.25	1.5	1.5	1.5	1.5	8.0
NO.33	Unknown	0.25	1.5	1.5	1.5	1.5	8.0
NO.34	Unknown	0.25	1.5	1.5	1.5	1.5	8.0
NO.35	Unknown	0.20	1.5	1.5	1.5	1.5	8.0
NO.36	Unknown	0.20	1.5	1.5	1.5	1.5	8.0
NO.37	Unknown	0.10	1.5	1.5	1.5	1.5	8.0

Abbreviations

wl	brick wall	re	rodding eye
bol	bolard	rnp	road name plate
bs	bus stop	rwp	rainwater pipe
bt	tel inspection chamber	rs	road sign
ctv	cable tv cover	▲ Stn	survey station
dl	drainage channel	sc	stop cock
dk	dropped kerb	st	step
d	diameter	sv	stop valve
ep	electricity pole	tl	traffic light
er	earth rod	tp	telegraph pole
fb	flower bed	vp	vent pipe
fh	fire hydrant	wm	water meter
fp	footpath	wsc	water stop cock
g	gully	wsv	water stop valve
gsc	gas stop cock		
gsv	gas stop valve		
fh	hydrant		
ic	inspection chamber		
jbx	junction box		
kb	kerb		
lbx	letter box		
lp	lamp post		
mh	manhole		
mkr	marker		
h	height		
p	post		
pb	post box		
lp	lamp post		

Fence details

bwf	barbed wire
cb	crash barrier
ci	corrugated iron
clf	chain link
cnp	chestnut paling
ir	iron railing
pnw	post and wire
pwm	post and wire mesh
pnr	post and rail
cbf	close board fence

Line types

Fences
Kerb
Walls
Stairs
Change of Surface
Footpath
Bank Top
Bank Bottom
Building
Building Overhead
Roof heights
Flower Bed
Overhead Cable
Road Edge
Hedge Row
Canopy
Edge of vegitation

Multi directional tree canopy

Trunk position at ground level
No.38
Multi bole
Tree number
Edge of canopy

Notes

Tree species should be confirmed by a arboricultural consultant if critical
Trunk sizes are measured at 1.5m above ground level

Eaves heights (where shown) are taken at the end of the tile / top of guttering.
Ridge heights are taken at the top of the ridge tile.
Service covers indicated where visible at time of survey

Grid North

0 5 10 15 20

J. Brotherton & Partners
Land Surveyors & Engineers

'Firdown' 113 Frogmore Lane
Waterlooville, Hampshire PO8 9RD

Tel: 023 9259 1979
Email: enquiries@jbpsurveys.co.uk
Web: www.jbpsurveys.co.uk

Client: EMSWORTH BUSINESS PARK LTD

Drawing Title: Topographic Land Survey

Location: Interbridges, New Brighton Rd / North St, Emsworth

Revisions / Status / Notes
The grid and datum for this survey is based on the Ordinance Survey grid OSGB36
Revision A 06-05-25 : Gas Pipe Location taken from drawing 3551 New Brighton Rd
Revision B 15-05-25 : Gas Pipe depths provided
J Brotherton & Partners cannot verify these depths or locations.

LEVELS BASED ON	OSGB36	Surveyor:- SB	Assistant:- TC
GRID BASED ON	OSGB36	Drawn By:- SB	Checked by:- JB
Drawing & CAD Ref. 25324B		REVISIONS B	
SCALE (when printed) 1:200 @ A0		Date 13th April 2025	

Removal of this block also removes all warranties
This drawing has been created for use at a scale of 1:200
All critical dimensions, positions and levels to be checked on site

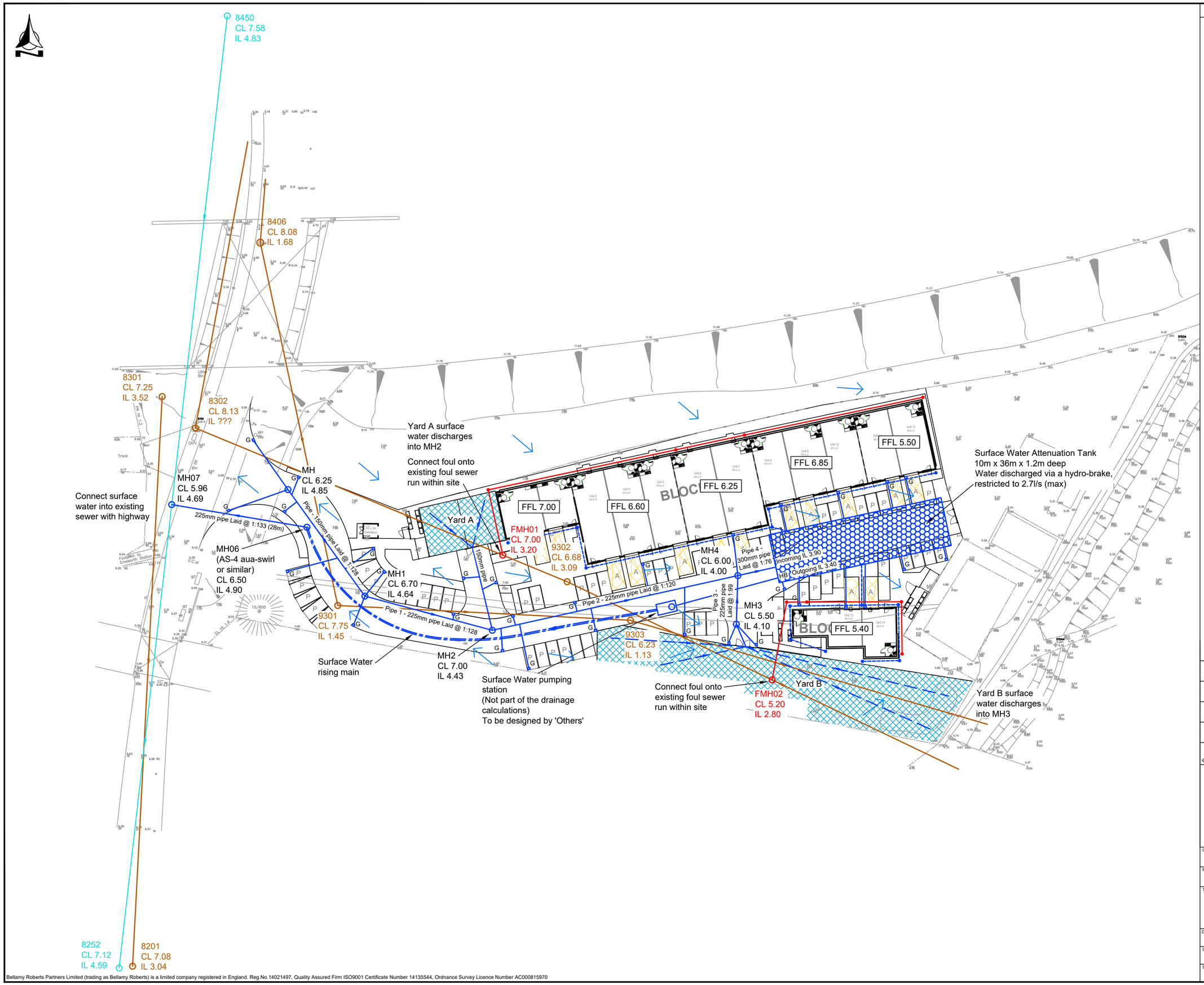
Soils Limited
Geotechnical & Environmental Consultants

Telford House
Unit 11,
Sun Valley Business Park
Winnall Close
Winchester SO23 0LB

T: 01737 814221
W: soilslimited.co.uk

APPENDIX 9

Surface & Foul Water Drainage Strategy Plan



Notes

Do not scale this drawing

This drawing shall be read in conjunction with all other relevant Engineering, Architectural, Landscaping details, drawings and specifications and all relevant Highway Authority Plans

Any works constructed prior to technical approval are at the contractors own risk

Yards A and B are to be permeable block paving depth by design, shallow infiltration

Deep infiltration for the remainder of the site is not expected, cellular storage is being suggested, with the capacity storing the surface water runoff from a total impermeable area of;
4330m²
Discharged into a nearby surface water sewer via a surface water pumping station at controlled rates of;
1:1yr - 1.3 l/s
1:30yr - 2.3 l/s
1:100yr - 2.7 l/s

All surface water drainage pipes to be lightweight HDPE pipes or similar to comply with HAPAS BBA, 100mmØ unless otherwise stated

All foul sewer pipes to be PVC or similar material, 150mmØ unless otherwise stated

- Proposed foul sewer
- Existing foul sewer
- Surface water sewer
- Surface water raising main
- Existing water sewer
- Surface water cellular storage crates
- HB Hydro-brake flow control device
- G Gully (subject to change following detailed design of levels design)
- Permeable block paving (yard areas)
- Overland surface water exceedance flow paths
- FFL 5.40 Indicative FFL's

REVISION	AMENDMENT	DRN	DATE	CHK
E	Access updated	IO	10/10/25	MT
D	Drainage updated	JCB	06/06/25	MT
C	Drainage updated	JCB	18/03/25	MT
B	Site layout revised	JCB	04/12/24	ITR
A	Site layout revised drainage updated, drawing size and scale changed	JCB	27/11/24	ITR

Bellamy Roberts
Clover House
Western Lane
Odiham
Hampshire, RG29 1TU
Tel: 01256 703355
Email: info@bellamyroberts.co.uk

CLIENT
PNH Properties

PROJECT
Interbridges Site, Emsworth

TITLE
Drainage Strategy

DRAWN BY	DESIGN BY	CHK BY
JCB	JCB	MT

DATE 03/07/24
SCALE 1:500 @ A2
DRAWING No. 6096 / 101
REV No. E

Bellamy Roberts Partners Limited (trading as Bellamy Roberts) is a limited company registered in England. Reg.No.14021497, Quality Assured Firm ISO9001 Certificate Number 14135544, Ordnance Survey Licence Number AC000815970

APPENDIX 10

Infodrainage Network Model

Project:	Date:		
Interbridges, Emsworth Surface Water Drainage Ref: 6096	06/08/2025		
	Designed by:	Checked by:	Approved By:
	JCB	MT	MT
Report Details:	Company Address:		
Type: Junctions Storm Phase: Phase	Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)
Manhole	Manhole	1485.357	1310.404	6.250	1.400	4.850	Circular	1.200
Manhole (1)	Manhole	1501.082	1288.622	6.700	2.060	4.640	Circular	1.200
Manhole (2)	Manhole	1527.147	1281.641	7.000	2.570	4.430	Circular	1.200
Manhole (3)	Manhole	1577.350	1292.824	6.000	2.000	4.000	Circular	1.200
Manhole (4)	Manhole	1577.043	1282.887	5.500	1.400	4.100	Circular	1.200

Name	Lock
Manhole	None
Manhole (1)	None
Manhole (2)	None
Manhole (3)	None
Manhole (4)	None

Inlets

Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
Manhole	Inlet	Catchment Area	(None)	No Restriction
Manhole (1)	Inlet	Pipe	(None)	No Restriction
	Inlet (1)	Catchment Area (5)	(None)	No Restriction
Manhole (2)	Inlet	Pipe (1)	(None)	No Restriction
	Inlet (1)	Catchment Area (4)	(None)	No Restriction
Manhole (3)	Inlet	Pipe (2) Pipe (3)	(None)	No Restriction
	Inlet (1)	Catchment Area (1)	(None)	No Restriction
Manhole (4)	Inlet	Catchment Area (3)	(None)	No Restriction

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
Manhole	Outlet	Pipe	Free Discharge
Manhole (1)	Outlet	Pipe (1)	Free Discharge
Manhole (2)	Outlet	Pipe (2)	Free Discharge
Manhole (3)	Outlet	Pipe (4)	Free Discharge
Manhole (4)	Outlet	Pipe (3)	Free Discharge

Project:	Date:		
Interbridges, Emsworth Surface Water Drainage Ref: 6096	06/08/2025		
	Designed by:	Checked by:	Approved By:
	JCB	MT	MT
Report Details:	Company Address:		
Type: Stormwater Controls Storm Phase: Phase	Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

Cellular Storage

Type : Cellular Storage

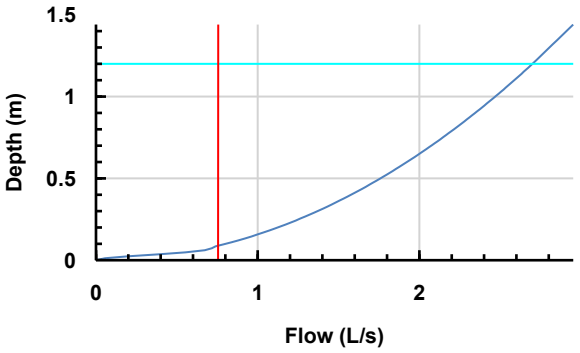
Dimensions

Exceedance Level (m)	5.200
Depth (m)	1.200
Base Level (m)	3.400
Number of Crates Long	36
Number of Crates Wide	10
Number of Crates High	3
Porosity (%)	95
Crate Length (m)	1
Crate Width (m)	1
Crate Height (m)	0.4
Total Volume (m³)	411.000

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Hydro-Brake®
Invert Level (m)	3.400
Design Depth (m)	1.200
Design Flow (L/s)	2.7
Objective	Linear Discharge Profile
Application	Surface Water Only
Sump Available	☐
Unit Reference	CCU-0049-2700-1200-2700



Project:	Date:		
Interbridges, Emsworth Surface Water Drainage Ref: 6096	06/08/2025		
	Designed by:	Checked by:	Approved By:
	JCB	MT	MT
Report Details:	Company Address:		
Type: Connections Storm Phase: Phase	Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
Pipe	26.865	Pipe	127.931		0.6	150	6.250	4.850
Pipe (1)	26.983	Pipe	128.490		0.6	225	6.700	4.640
Pipe (2)	51.434	Pipe	119.614		0.6	225	7.000	4.430
Pipe (3)	9.941	Pipe	99.410		0.6	225	5.500	4.100
Pipe (4)	15.204	Pipe	76.020		0.6	300	6.000	4.000

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Lock	Velocity (m/s)	Time Of Travel (mins)
Pipe	6.700	4.640	None		
Pipe (1)	7.000	4.430	None		
Pipe (2)	6.000	4.000	None		
Pipe (3)	6.000	4.000	None		
Pipe (4)	5.200	3.800	Levels		

Project:	Date:		
Interbridges, Emsworth Surface Water Drainage Ref: 6096	06/08/2025		
	Designed by:	Checked by:	Approved By:
	JCB	MT	MT
Report Details:	Company Address:		
Type: Inflow Summary Storm Phase: Phase	Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	Manhole		Time of Concentration	0.011	100	0	100	0.011
Catchment Area (1)	Manhole (3)		Time of Concentration	0.093	100	0	100	0.093
Catchment Area (2)	Cellular Storage		Time of Concentration	0.247	100	0	100	0.247
Catchment Area (3)	Manhole (4)		Time of Concentration	0.107	100	0	100	0.107
Catchment Area (4)	Manhole (2)		Time of Concentration	0.059	100	0	100	0.059
Catchment Area (5)	Manhole (1)		Time of Concentration	0.035	100	0	100	0.035
TOTAL		**0.0**		**0.552**				**0.552**

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.4	0.606
Catchment Area (1)	FSR: 1 years: +0 %: 15 mins: Summer	0.09	11.7	5.113
Catchment Area (2)	FSR: 1 years: +0 %: 15 mins: Summer	0.25	31.0	13.576
Catchment Area (3)	FSR: 1 years: +0 %: 15 mins: Summer	0.11	13.4	5.878
Catchment Area (4)	FSR: 1 years: +0 %: 15 mins: Summer	0.06	7.4	3.242
Catchment Area (5)	FSR: 1 years: +0 %: 15 mins: Summer	0.04	4.4	1.925

FSR: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 30 years: +35 %: 15 mins: Summer	0.01	4.6	2.003
Catchment Area (1)	FSR: 30 years: +35 %: 15 mins: Summer	0.09	38.7	16.915
Catchment Area (2)	FSR: 30 years: +35 %: 15 mins: Summer	0.25	102.9	44.925
Catchment Area (3)	FSR: 30 years: +35 %: 15 mins: Summer	0.11	44.6	19.459
Catchment Area (4)	FSR: 30 years: +35 %: 15 mins: Summer	0.06	24.6	10.731
Catchment Area (5)	FSR: 30 years: +35 %: 15 mins: Summer	0.04	14.6	6.364

FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 100 years: +45 %: 15 mins: Summer	0.01	6.2	2.799
Catchment Area (1)	FSR: 100 years: +45 %: 15 mins: Summer	0.09	52.6	23.641
Catchment Area (2)	FSR: 100 years: +45 %: 15 mins: Summer	0.25	139.8	62.791
Catchment Area (3)	FSR: 100 years: +45 %: 15 mins: Summer	0.11	60.6	27.203
Catchment Area (4)	FSR: 100 years: +45 %: 15 mins: Summer	0.06	33.4	14.999
Catchment Area (5)	FSR: 100 years: +45 %: 15 mins: Summer	0.04	19.8	8.898

Project:	Date:		
Interbridges, Emsworth Surface Water Drainage Ref: 6096	06/08/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
Manhole	FSR: 1 years: +0 %: 15 mins: Summer	6.250	4.850	4.879	0.029	1.4	0.032	0.000	1.3	0.602	OK
Manhole (1)	FSR: 1 years: +0 %: 15 mins: Summer	6.700	4.640	4.691	0.051	5.7	0.058	0.000	5.2	2.521	OK
Manhole (2)	FSR: 1 years: +0 %: 15 mins: Summer	7.000	4.430	4.505	0.075	12.6	0.085	0.000	11.4	5.736	OK
Manhole (3)	FSR: 1 years: +0 %: 15 mins: Summer	6.000	4.000	4.114	0.114	36.2	0.129	0.000	33.7	16.691	OK
Manhole (4)	FSR: 1 years: +0 %: 15 mins: Summer	5.500	4.100	4.185	0.085	13.4	0.096	0.000	13.1	5.875	OK

Project:	Date:		
Interbridges, Emsworth Surface Water Drainage Ref: 6096	06/08/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
Manhole	FSR: 30 years: +35 %: 15 mins: Summer	6.250	4.850	4.904	0.054	4.6	0.061	0.000	4.3	1.999	OK
Manhole (1)	FSR: 30 years: +35 %: 15 mins: Summer	6.700	4.640	4.738	0.098	18.9	0.111	0.000	18.0	8.354	OK
Manhole (2)	FSR: 30 years: +35 %: 15 mins: Summer	7.000	4.430	4.589	0.159	42.6	0.179	0.000	39.4	19.052	OK
Manhole (3)	FSR: 30 years: +35 %: 15 mins: Summer	6.000	4.000	4.268	0.268	121.2	0.303	0.000	115.7	55.371	OK
Manhole (4)	FSR: 30 years: +35 %: 15 mins: Summer	5.500	4.100	4.363	0.263	44.6	0.298	0.000	43.0	19.453	Surcharged

FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
Manhole	FSR: 100 years: +45 %: 15 mins: Summer	6.250	4.850	4.916	0.066	6.2	0.074	0.000	5.1	2.889	OK
Manhole (1)	FSR: 100 years: +45 %: 15 mins: Summer	6.700	4.640	4.898	0.258	24.9	0.291	0.000	14.5	11.960	Surcharged
Manhole (2)	FSR: 100 years: +45 %: 15 mins: Summer	7.000	4.430	4.850	0.420	47.9	0.476	0.000	42.2	27.126	Surcharged
Manhole (3)	FSR: 100 years: +45 %: 1440 mins: Winter	6.000	4.000	4.585	0.585	8.9	0.662	0.000	8.7	304.677	Surcharged
Manhole (4)	FSR: 100 years: +45 %: 15 mins: Summer	5.500	4.100	4.646	0.546	60.6	0.618	0.000	57.7	27.222	Surcharged

FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Status
Cellular Storage	FSR: 1 years: +0 %: 1440 mins: Summer	3.675	3.675	0.275	0.275	6.8	94.053	0.000	0.000	1.2	138.474	754	OK

FSR: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Status
Cellular Storage	FSR: 30 years: +35 %: 1440 mins: Summer	4.239	4.239	0.839	0.839	18.4	286.936	0.000	0.000	2.2	277.199	1303	OK

Project:	Date:		
Interbridges, Emsworth Surface Water Drainage Ref: 6096	06/08/2025		
	Designed by: JCB	Checked by: MT	Approved By: MT
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Status
Cellular Storage	FSR: 100 years: +45 %: 1440 mins: Winter	4.584	4.584	1.184	1.184	15.8	404.897	0.000	0.000	2.5	334.451	1551	OK

Project:	Date:		
Interbridges, Emsworth Surface Water Drainage Ref: 6096	06/08/2025		
	Designed by:	Checked by:	Approved By:
	JCB	MT	MT
Report Details:	Company Address:		
Type: Connections Summary Storm Phase: Phase	Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Pipe	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole	Manhole (1)	6.250	4.879	0.040	0.602	0.3	0.08	1.3	OK
Pipe (1)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (1)	Manhole (2)	6.700	4.691	0.063	2.521	0.6	0.11	5.2	OK
Pipe (2)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (2)	Manhole (3)	7.000	4.505	0.095	5.736	0.7	0.24	11.4	OK
Pipe (3)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (4)	Manhole (3)	5.500	4.185	0.100	5.875	0.8	0.25	13.1	OK
Pipe (4)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (3)	Cellular Storage	6.000	4.114	0.110	16.691	1.4	0.26	33.7	OK

Project:	Date:		
Interbridges, Emsworth Surface Water Drainage Ref: 6096	06/08/2025		
	Designed by:	Checked by:	Approved By:
	JCB	MT	MT
Report Details:	Company Address:		
Type: Connections Summary Storm Phase: Phase	Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Pipe	FSR: 30 years: +35 %: 15 mins: Summer	Pipe	Manhole	Manhole (1)	6.250	4.904	0.076	1.999	0.5	0.28	4.3	OK
Pipe (1)	FSR: 30 years: +35 %: 15 mins: Summer	Pipe	Manhole (1)	Manhole (2)	6.700	4.738	0.128	8.354	0.8	0.39	18.0	OK
Pipe (2)	FSR: 30 years: +35 %: 15 mins: Summer	Pipe	Manhole (2)	Manhole (3)	7.000	4.589	0.213	19.052	1.0	0.83	39.4	OK
Pipe (3)	FSR: 30 years: +35 %: 15 mins: Summer	Pipe	Manhole (4)	Manhole (3)	5.500	4.363	0.225	19.453	1.1	0.82	43.0	Surcharged
Pipe (4)	FSR: 30 years: +35 %: 15 mins: Summer	Pipe	Manhole (3)	Cellular Storage	6.000	4.268	0.245	55.371	1.9	0.91	115.7	OK

Project:	Date:		
Interbridges, Emsworth Surface Water Drainage Ref: 6096	06/08/2025		
	Designed by:	Checked by:	Approved By:
	JCB	MT	MT
Report Details:	Company Address:		
Type: Connections Summary Storm Phase: Phase	Bellamy Roberts Clover House, Western Lane Odiham, Hampshire, RG29 1TU		

FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Pipe	FSR: 100 years: +45 %: 15 mins: Winter	Pipe	Manhole	Manhole (1)	6.250	4.912	0.106	2.825	0.4	0.36	5.7	OK
Pipe (1)	FSR: 100 years: +45 %: 30 mins: Summer	Pipe	Manhole (1)	Manhole (2)	6.700	4.738	0.132	15.673	0.8	0.4	18.1	OK
Pipe (2)	FSR: 100 years: +45 %: 15 mins: Summer	Pipe	Manhole (2)	Manhole (3)	7.000	4.850	0.225	27.126	1.1	0.89	42.2	Surcharged
Pipe (3)	FSR: 100 years: +45 %: 15 mins: Summer	Pipe	Manhole (4)	Manhole (3)	5.500	4.646	0.225	27.222	1.5	1.11	57.7	Surcharged
Pipe (4)	FSR: 100 years: +45 %: 15 mins: Summer	Pipe	Manhole (3)	Cellular Storage	6.000	4.475	0.300	77.911	2.1	1.17	149.6	Surcharged

Phase
FSR: 1 years: Increase Rainfall (%): +0: 1440 mins: Summer

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Cellular Storage			1.2	138.474
TOTAL	6.8	150.666	1.2	138.474

Phase
FSR: 30 years: Increase Rainfall (%): +35: 1440 mins: Summer

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Cellular Storage			2.2	277.199
TOTAL	18.4	405.382	2.2	277.199

Phase
FSR: 100 years: Increase Rainfall (%): +45: 1440 mins: Winter

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Cellular Storage			2.5	334.413
TOTAL	16.0	547.854	2.5	334.413

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