

ENVIRONMENT

Richborough
Little Green Lane
Croxley Green
Flood Risk Assessment

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December 2024

DOCUMENT ISSUE RECORD

Document Number:	233574-BWB-ZZ-XX-T-W-0002_FRA
BWB Reference:	233574_FRA

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Rev	Date	Status	Comment	Author:	Checked:	Approved:
P01	24/09/24	S2	Preliminary Issue	CC	SR	LR
P02	13/11/24	S2	Updated with Client Comments	CC	RJ	RJ
P03	06/12/24	S2	Updated with Final Illustrative Masterplan	CC	RJ	RJ
P04	17/12/24	S2	Updated with new Development Description and Client Comments	CC	RJ	RJ

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EXECUTIVE SUMMARY

This Flood Risk Assessment (FRA) has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance (PPG). It has been produced on behalf of Richborough in respect of a planning application for a proposed residential-led, mixed use development on land north of Little Green Lane, Croxley Green (approximate grid reference: TQ 08101 96702).

This report demonstrates that the proposed development is not at significant flood risk, subject to the recommended flood mitigation strategies being implemented.

The Environment Agency (EA) Flood Map for Planning shows the site is located entirely within Flood Zone 1 (low probability of flooding from rivers or seas). The nearest Flood Zone extents are located approximately 500m east of the site, attributed to the River Gade and the Grand Union Canal. A review of EA 1m Light Detection and Ranging (LiDAR) data suggests the intervening topography is raised approximately 23m above the Flood Zones, providing a topographic barrier. Furthermore, model data from the Gade and Bulbourne Flood Modelling Study (JBA, 2016) shows the site to be located outside of the modelled flood extents, including an allowance for climate change. No mapped ordinary watercourses are located within close proximity to the site. Therefore, the risk of fluvial flooding is considered to be low.

Site-specific ground investigations and historical British Geological Society borehole records do not record the presence of shallow groundwater within the site. Therefore, the risk of flooding from groundwater is considered to be low.

The site is shown to be predominantly at very low risk of flooding from surface water. A small low risk flow route bisects the western corner of the site and a low risk flow route is present in the east of the site.

The site has been sequentially arranged such that built development is located outside of areas at risk of flooding from surface water and such that development will not impede flows. It is recommended that finished floor levels are raised a minimum of 150mm above surrounding ground levels to mitigate any residual risk of flooding. Ground levels should be profiled to encourage pluvial runoff and overland flows away from the built development and towards the nearest drainage point.

The site has been assessed against a range of other sources including canals, tidal, sewers, reservoirs and large waterbodies. These are considered to pose a low or minimal risk to the site.

To mitigate the impact of the proposed development on the current runoff regime, it is proposed to incorporate surface water attenuation and storage as part of the development proposals. Foul water from the development will be discharged separately to surface water.

In compliance with the requirements of the NPPF, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Moreover, the development will not increase flood risk to the wider catchment area subject to suitable management of surface water runoff discharging from the site.

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1. INTRODUCTION

- 1.1 This Flood Risk Assessment (FRA) has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance (PPG). The FRA has been produced on behalf of Richborough in respect of a planning application for a residential-led, mixed use development on land to the north of Little Green Lane, Croxley Green.
- 1.2 This FRA is intended to support an outline planning application and as such, the level of detail included is commensurate and subject to the nature of the proposals at the planning stage. Summary information is included as **Table 1.1**.

Table 1.1: Site Summary

Site Name	Little Green Lane
Location	Croxley Green
NGR (approx.)	TQ 08101 96702
Application Site Area (ha)	40.7 (approx.)
Development Type	Mixed Use • Residential • School • Local Centre
Flood Zone Classification	Flood Zone 1
NPPF Vulnerability	More Vulnerable and Less Vulnerable
Anticipated Development Lifetime	100+ years
Environment Agency Office	Hertfordshire and North London
Lead Local Flood Authority	Hertfordshire County Council
Local Planning Authority	Three Rivers District Council

Sources of Data

- i. Topographical Survey undertaken by BWB Consulting Limited in June 2024, reference LGL-BWB-00-ZZ-M2-G-0001
- ii. Environment Agency (EA) 2022 1m Spatial Resolution Light Detection and Ranging (LiDAR) data
- iii. EA Risk of Flooding from Surface Water (RoFSW) mapping
- iv. Gade and Bulbourne Flood Modelling Study Hydraulic Model Data (JBA, 2016)
- v. Hertfordshire County Council Consultation
- vi. South West Hertfordshire Level 1 Strategic Flood Risk Assessment (SFRA)
- vii. Three Rivers District Council Level 2 SFRA
- viii. Hertfordshire County Council Preliminary Flood Risk Assessment (PFRA) and Addendum
- ix. Hertfordshire County Council Local Flood Risk Management Strategy 2 (LFRMS 2) 2019-2029
- x. Thames River Basin District Flood Risk Management Plan (FRMP)
- xi. Three Rivers District Council Local Development Framework Core Strategy
- xii. Three Rivers District Council Local Plan Site Allocations Local Development Document
- xiii. Three River District Council Local Plan Development Management Policies Local Development Document
- xiv. British Geological Survey (BGS) Drift & Geology Maps
- xv. BGS Groundwater Flooding Mapping
- xvi. Ground Investigations undertaken by PJS Geotechnical Engineers in February 2020, reference PJSG20-01-R02
- xvii. Thames Water Sewer Records

Existing Site

- 1.3 The site is located to the north of Little Green Lane, on the northern fringe of Croxley Green. The site is bound to the south by Little Green Lane, to the west by woodland and agricultural fields and to the east and north by Rousebarn Lane, with the West Herts Golf Course beyond. The existing site is greenfield in nature, comprising agricultural fields and ancient woodland. The location of the site is illustrated within **Figure 1.1**.

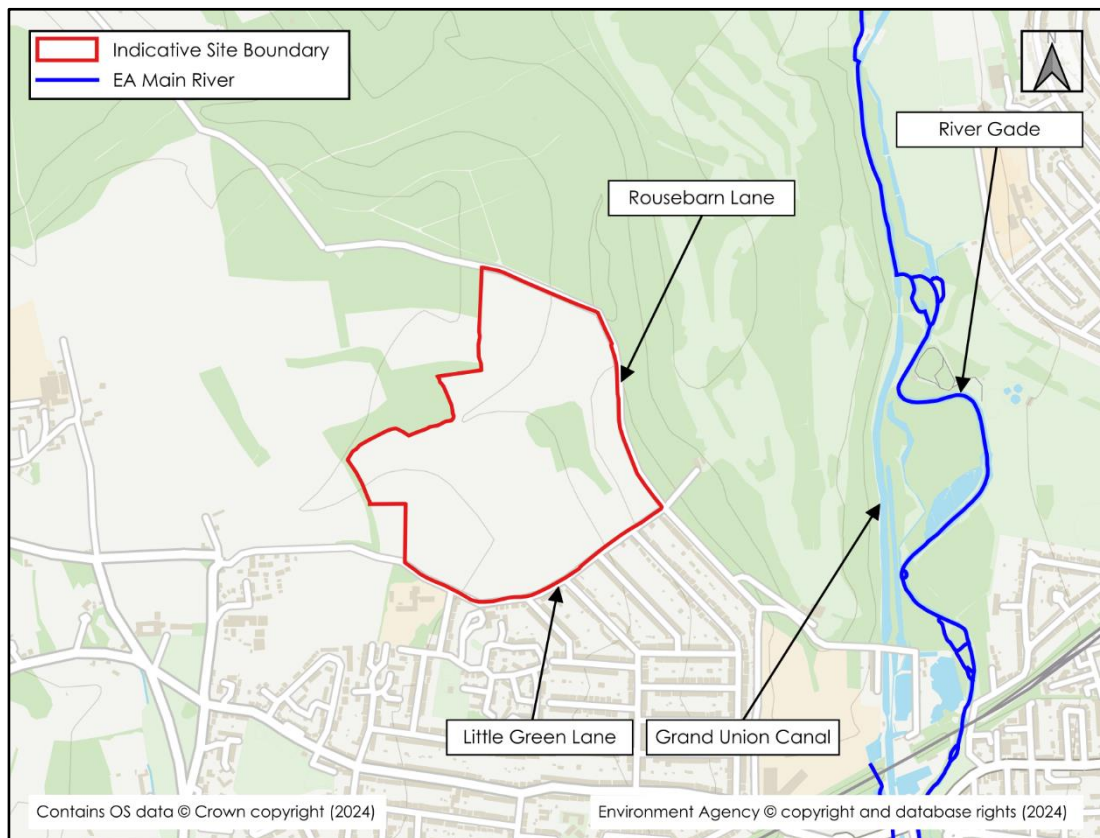


Figure 1.1: Site Location

- 1.4 A topographical survey has been undertaken and is included in **Appendix 1**. Ground levels within the site typically fall in an easterly direction, with levels ranging from approximately 84.4 metres Above Ordnance Datum (m AOD) in the south-west to approximately 56.9m AOD in the south-east.

Proposed Development

- 1.5 The proposals are for an Outline Application: Construction of up to 600 residential dwellings (Use Class C3(a)), a 5-bedroom property for children's social care and supported living (Use Class C3(b)). Two vehicular access points from Little Green Lane and further pedestrian / cycleway accesses. A one form entry primary school (Use Class F1(a)) (plus expansion land for a two form entry primary school). A mixed use local centre including provision for NHS health and social care services (Use Class E(e)), community building (Use Class F2), retail and café provision (Use Class E(a-c)), car parking and associated infrastructure. A country park, areas for play and recreation, allotments, community orchard and landscaping with associated infrastructure including sustainable urban drainage systems. (All matters are reserved except for vehicular access). Access is proposed via Little Green Lane to the south. An Illustrative Masterplan is included in **Appendix 2**.

2. FLOOD RISK PLANNING POLICY & GUIDANCE

National Planning Policy Framework

- 2.1 The NPPF¹ sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. The PPG is also available online².
- 2.2 The PPG sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk off site to the wider catchment area.
- 2.3 The PPG also states that alternative sources of flooding, other than fluvial (river flooding), should be considered when preparing a FRA.
- 2.4 The PPG includes a series of tables that define Flood Zones (Table 1), the flood risk vulnerability classification of development land uses (Table 2) and 'compatibility' of development within the defined Flood Zones (Table 3). Table 2 and Table 3 are recreated within **Appendix 3** of this report for reference.
- 2.5 This FRA is written in accordance with the NPPF and the PPG.

Flood Map for Planning

- 2.6 With particular reference to planning and development, the Flood Map for Planning identifies Flood Zones in accordance with Table 1 of the PPG. Further details on the Flood Zone classifications are outlined in **Table 2.1**.

Table 2.1: Flood Zone Classifications

Flood Zone	Description
Flood Zone 1 (Low Probability)	Land having less than a 1 in 1000 annual probability of river or sea flooding (<0.1% Annual Exceedance Probability). All land outside of Flood Zone 2 and 3.
Flood Zone 2 (Medium Probability)	Land having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1% AEP); or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1% AEP).
Flood Zone 3a (High Probability)	Land having a 1 in 100 or greater annual probability of river flooding (>1% AEP); or land having a 1 in 200 or greater annual probability of flooding from the sea (>0.5% AEP). This is represented by "Flood Zone 3" on the Flood Map for Planning.
Flood Zone 3b (The Functional Floodplain)	Flood Zone 3b (The Functional Floodplain) is defined as land where water must flow or be stored in times of flood. This is not identified or separately distinguished from Zone 3a on the Flood Map for Planning.

¹ Revised National Planning Policy Framework, Ministry of Housing, Communities & Local Government, amended December 2024

² Planning Practice Guidance: <https://www.gov.uk/government/collections/planning-practice-guidance>

2.7 The site is shown to be located wholly within Flood Zone 1, as shown in **Figure 2.1**.

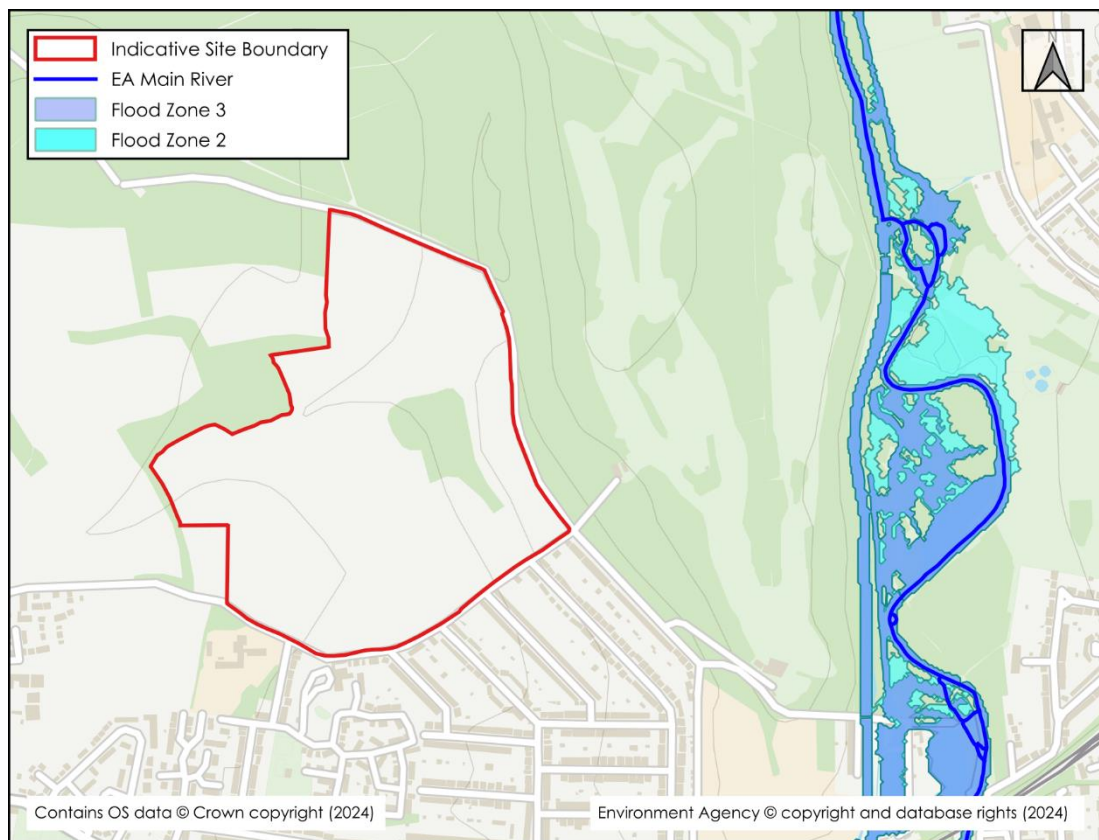


Figure 2.1: Flood Map for Planning

The Design Flood

- 2.8 The PPG identifies that new developments should be designed to provide adequate flood risk management, mitigation, and resilience against the 'design flood' for their lifetime.
- 2.9 This is a flood event of a given annual flood probability, which is generally taken as fluvial (river) and surface water (pluvial) flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year), or tidal flooding with a 0.5% annual probability (1 in 200 chance each year), against which the suitability of a proposed development is assessed and mitigation measures, if any, are designed.

Climate Change

- 2.10 Predicted future changes in peak river flows caused by climate change are provided by the EA³, with a range of projections applied to regionalised 'River Basin Districts', which are further subdivided into Management Catchments.

³ Environment Agency, Flood risk assessments: climate change allowances: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>. Last Accessed December 2024.

- 2.11 The site falls within the Colne Management Catchment of the Thames River Basin District. **Table 2.2** identifies the relevant peak river flow climate change allowances from this Management Catchment.

Table 2.2: Peak River Flow Climate Change Allowances for the Colne Management Catchment within the Thames River Basin District

Allowance Category	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2125)
Upper End	30%	38%	72%
Higher Central	16%	16%	35%
Central	10%	8%	21%

- 2.12 When determining the appropriate allowance for use in a FRA, the Flood Zone classification, flood risk vulnerability and the anticipated lifespan of the development should be considered. **Table 2.3** provides a matrix summarising the EA's guidance on determining the appropriate allowance(s).

Table 2.3: Application of Appropriate Peak River Flow Climate Change Allowances

Flood Zone	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1	Use the central allowance where a location may fall within Flood Zone 2 or 3 in the future.				
2	Use the higher central allowance	Use the central allowance			
3a	Use the higher central allowance	Development should not be permitted	Use the central allowance		
3b	Use the higher central allowance	Development should not be permitted			Use the central allowance
If development is considered appropriate by the local authority when not in accordance with Flood Zone vulnerability categories, then it would be appropriate to use the higher central allowance.					

- 2.13 The site is located entirely within Flood Zone 1; the proposed development is classified as both 'More Vulnerable' and 'Less Vulnerable' and has an anticipated lifespan of over 100 years. Therefore, the Central allowance for the '2080s' epoch should be considered.

Strategic Flood Risk Assessment

- 2.14 A SFRA is a study carried out by one or more local planning authorities to assess the risk to an area from flooding from all sources, now and in the future.

- 2.15 The South West Hertfordshire Level 1 SFRA⁴ has been reviewed in the production of this FRA. The SFRA provides information specific to the site location in the form of fluvial, surface water and groundwater flood risk mapping, as well as records of historical flooding. It also includes flood risk policy and guidance for the area. Information from the Level 1 SFRA will be referenced within **Section 3**, where applicable.
- 2.16 The Draft Three Rivers District Council Level 2 SFRA⁵ was produced to facilitate the application of Sequential and Exception Tests to screen allocated development sites. The site is not referenced within the Level 2 SFRA. Upon review, no applicable information in relation to flood risk at the site was identified.

Preliminary Flood Risk Assessment

- 2.17 A PFRA is an assessment of floods that have taken place in the past and floods that could take place in the future. It generally considers flooding from surface water runoff, groundwater and ordinary watercourses, and is prepared by the Lead Local Flood Authorities (LLFAs).
- 2.18 The Hertfordshire County Council PFRA⁶ considers flooding from surface water runoff, groundwater, ordinary watercourses and canals. No historical instances of flooding at the site are referenced. Upon review, no applicable information in relation to flood risk at the site was identified within the PFRA.
- 2.19 An addendum to the Hertfordshire County Council PFRA⁷ was produced in December 2017. The addendum notes significant floods between 2013 and 2016; however, no relevant information on flooding at the site or within Croxley Green was reported.

Local Flood Risk Management Strategy

- 2.20 A LFRMS is prepared by an LLFA to help understand and manage flood risk at a local level.
- 2.21 The LFRMS aims to ensure that the knowledge of local flood risk issues is communicated effectively so that they can be better managed. The LFRMS also aims to promote sustainable development and environmental protection.
- 2.22 The Hertfordshire County Council LFRMS 2⁸ 2019-2029 has been reviewed and will be referenced within this report, where applicable.

River Basin Flood Risk Management Plan

- 2.23 Flood Risk Management Plans (FRMPs) explain the risk of flooding from rivers, the sea, surface water, groundwater and reservoirs. FRMPs set out how risk management authorities will work with communities to manage flood and coastal risk. Risk

⁴Level 1 Strategic Flood Risk Assessment (JBA Consulting, March 2019)

⁵Level 2 Strategic Flood Risk Assessment (JBA Consulting, November 2021)

⁶Preliminary Flood Risk Assessment (Hertfordshire County Council, August 2011)

⁷Preliminary Flood Risk Assessment Addendum (Hertfordshire County Council, December 2017)

⁸Local Flood Risk Management Strategy (Hertfordshire County Council, February 2019)

management authorities include the EA, Natural Resources Wales, local councils, Internal Drainage Boards, National Highways and LLFAs.

- 2.24 The first FRMPs were published in March 2016 and subsequently updated in December 2022. These describe actions to manage flood risk across England between 2021 to 2027.
- 2.25 The site is located within the Thames River Basin District and the Thames River Basin District FRMP⁹ has been reviewed; however, no relevant site scale objectives were found.

Surface Water Management Plan

- 2.26 Surface Water Management Plans (SWMPs) are non-statutory plans which preceded the introduction of the Flood and Water Management Act 2010. They can provide an important evidence base of local flood risk issues which can include surface water drains, groundwater and small watercourses.
- 2.27 The Three Rivers District SWMP¹⁰ has been reviewed; however, no information relevant to the site was found.

Section 19 Flood Investigation Reports

- 2.28 Under their duties of the Flood and Water Management Act 2010, LLFAs have a responsibility to publish reports of investigations of flood incidents. A Section 19 flood investigation report is a public statement of the circumstances of a historical flood event and what parties have a role in managing the risks. The investigation does not always give an in-depth analysis of the flood risk or mechanisms, but it can provide a valuable record of past events.
- 2.29 Hertfordshire County Council have published six Section 19 reports on their website, which document the flooding that occurred within the Three Rivers District between 2013 and 2016. The reports have been reviewed in relation to the location of the site, but no evidence of flooding at the site or immediate vicinity was identified.

Local Plan

- 2.30 The Adopted Three Rivers District Local Plan comprises three documents, the Core Strategy¹¹, Site Allocations Local Development Document¹² and the Development Management Policies Local Development Document¹³.
- 2.31 A new Local Plan is in production; however, updates to the Local Plan policies are not yet finalised.

⁹ Thames River Basin District Flood Risk Management Plan (Environment Agency, December 2022)

¹⁰ Surface Water Management Plan (Hertfordshire County Council, March 2021)

¹¹ Local Plan – Core Strategy (Three Rivers District Council, Adopted October 2011)

¹² Local Plan – Site Allocations Local Development Document (Three Rivers District Council, Adopted November 2014)

¹³ Local Plan – Development Management Policies Local Development Document (Three Rivers District Council, Adopted July 2013)

Core Strategy

- 2.32 The adopted Core Strategy provides the over-arching strategy and policies and the long-term vision for Three Rivers. The Core Strategy was reviewed; however, no specific policies related to flood risk were detailed.

Site Allocations Local Development Document

- 2.33 The Site Allocations Local Development allocates sites for housing, employment, retail, open space, education and community uses. This document has been reviewed; however, the site is not allocated. No information regarding flood risk at the site is included within the document.

Development Management Policies Local Development Document

- 2.34 The Development Management Policies Local Development Document sets out the policies against which planning applications will be assessed. Policy 'DM8 Flood Risk and Water Resources' states that:
- i. *"Development will only be permitted where it would not be subject to unacceptable risk of flooding; and would not unacceptably exacerbate risk of flooding elsewhere. Where practicable existing flood risks should be reduced."*
 - ii. *"A Flood Risk Assessment (FRA) will be required for development proposals of 1ha or more in Flood Zone 1."*
 - iii. *"Within sites at risk of flooding the most vulnerable parts of proposed development should be located in areas of lowest risk unless there are overriding reasons to prefer different locations."*
 - iv. *"Development in all areas should include Sustainable Drainage Systems to reduce surface water run off."*

3. POTENTIAL SOURCES OF FLOOD RISK

- 3.1 Flooding can occur from a variety of sources, or combination of sources, which may be natural or artificial. **Table 3.1** below identifies the potential sources of flood risk to the site in its current condition, and the impacts which the development could have in the wider catchment, prior to mitigation. These are discussed in greater detail in the forthcoming section. The mitigation measures proposed to address flood risk issues and ensure the development is appropriate for its location are discussed within **Section 4**.

Table 3.1: Pre-Mitigation Sources of Flood Risk

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
Fluvial			X		The site is located wholly within Flood Zone 1 and outside of the modelled flood extents associated with the River Gade.
Coastal				X	The site is not at risk of tidal inundation.
Canals				X	The nearest canal is located approximately 560m east of the site; however, the intervening topography is raised approximately 23m above the canal. As such there is not considered to be risk from this source.
Groundwater			X		No groundwater was recorded during site-specific ground investigations, therefore, the site is considered to be at a low risk of flooding from groundwater.
Reservoirs and waterbodies				X	The site is shown to fall outside of the area at risk of reservoir failure. There are no mapped large waterbodies within close proximity to the site.
Pluvial runoff			X		The site is predominantly at a very low risk of flooding from surface water. Two flow routes are present within the west and east of the site.
Sewers			X		A public sewer is present within the east of the site. In the unlikely event of exceedance, flows from this sewer could pond in the south-east corner of the site in line with local topography.

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
Effect of Development on Wider Catchment		X			There are two low risk surface water flow routes present within the site, both of which originate from off-site. The proposed development has the potential to impede these flow routes unless appropriately mitigated.
		X			The development will increase the area of impermeable surfaces, leading to a potential increase in runoff unless appropriately mitigated.

Fluvial Flood Risk

- 3.2 Flooding from watercourses occurs when flows exceed the capacity of the channel, or where a restrictive structure is encountered, which leads to water overtopping the banks into the floodplain. This process can be exacerbated when debris is mobilised by high flows and accumulates at structures.
- 3.3 The site is shown to be located entirely within Flood Zone 1 (**Figure 2.1**). The nearest Flood Zones are located approximately 500m east of the site, attributed to the River Gade and the Grand Union Canal. A review of EA 1m LiDAR data suggests the intervening topography is raised approximately 23m above the Flood Zones, providing a topographical barrier to the site.
- 3.4 There are no EA recorded flood outlines present within the site. The nearest recorded flood outline is located approximately 770m south-east of the site, associated with the River Gade exceeding capacity in June 1999 with no raised defences. There are no reports of fluvial flooding at the site discussed within the Level 1 SFRA or LFRMS 2.
- 3.5 The EA have provided modelled flood outlines from the Gade and Bulbourne Flood Modelling Study Hydraulic Model (JBA, 2016). An extract of these extents is included as **Figure 3.1**.

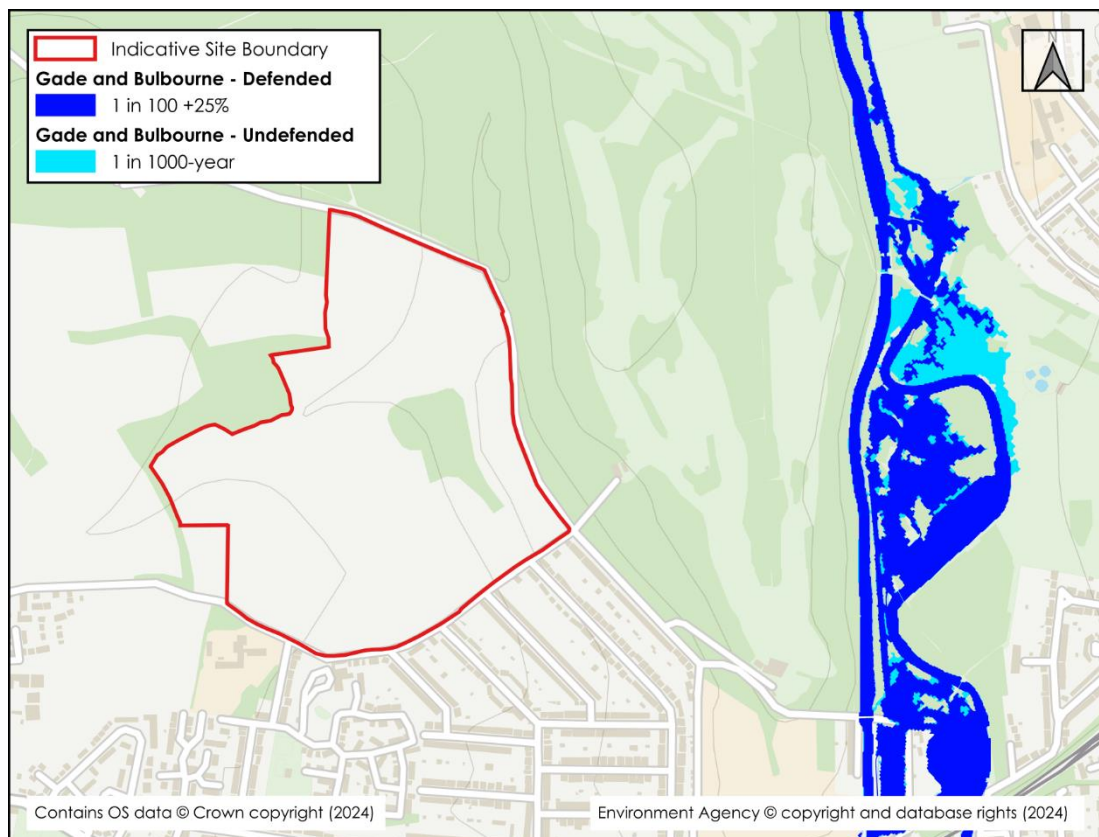


Figure 3.1: Gade and Bulbourne (JBA, 2016) Modelled Flood Extents

- 3.6 The site is not shown to be at risk from the River Gade in modelled flood events up to and including the 1 in 100-year +25% climate change event. The climate change allowances included within the Gade and Bulbourne Flood Modelling Study Hydraulic Model (JBA, 2016) do not align with the central allowance for the Colne Management Catchment (21%); however, the 25% allowance is considered to be a conservative proxy. The site is also shown to be unaffected during an extreme undefended 1 in 1000-year event.
- 3.7 There are no mapped ordinary watercourses within or in close proximity to the site.
- 3.8 Overall, the site is considered to be at a low risk of flooding from fluvial sources, both in the present-day and when accounting for climate change.

Groundwater Flood Risk

- 3.9 Groundwater flooding occurs when the water table rises above ground elevations, or it rises to depths containing basement level development. It is most likely to happen in low lying areas underlain by permeable geology. This is most common on regional scale chalk aquifers, but there may also be a risk on sandstone and limestone aquifers or on thick deposits of sands and gravels underlain by less permeable strata such as that in a river valley.
- 3.10 BGS mapping shows the site to be underlain entirely by Seaford Chalk Formation and Newhaven Chalk Formation (Undifferentiated) – Chalk. This is designated by the EA as

a Principal Aquifer which is defined as layers of rock that have high intergranular and/or fracture permeability which usually provide a high level of water storage and may support water supply and/or river base flow on a strategic scale.

- 3.11 Superficial deposits of Gerrards Cross Gravel (Sand and Gravel) are mapped within the west of the site. These deposits are designated Secondary A Aquifers, defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. No superficial deposits are mapped in the east of the site.
- 3.12 JBA Groundwater Flood Risk mapping, included within the Level 1 SFRA, suggests groundwater levels in the west of the site to be at least 5m below ground. Groundwater levels in the east of the site are indicated to be between 0.5m and 5m of the ground surface. A small area along the eastern boundary is indicated to have groundwater within 0.025m to 0.5m of the ground surface. However, the Level 1 SFRA notes that the mapping should not be used as sole evidence for any specific flood risk management, land use planning or other decisions at any scale.
- 3.13 BGS Groundwater Flooding mapping, shown in **Figure 3.2**, indicates that there is limited potential for groundwater flooding to occur across the majority of the site. The mapping suggests that in the low point of the site, in the east, there is potential for groundwater flooding to impact properties below and above ground. It is noted that this susceptibility data should not be used on its own to make planning decisions at any scale and, in particular, should not be used to inform planning decisions at the site scale.

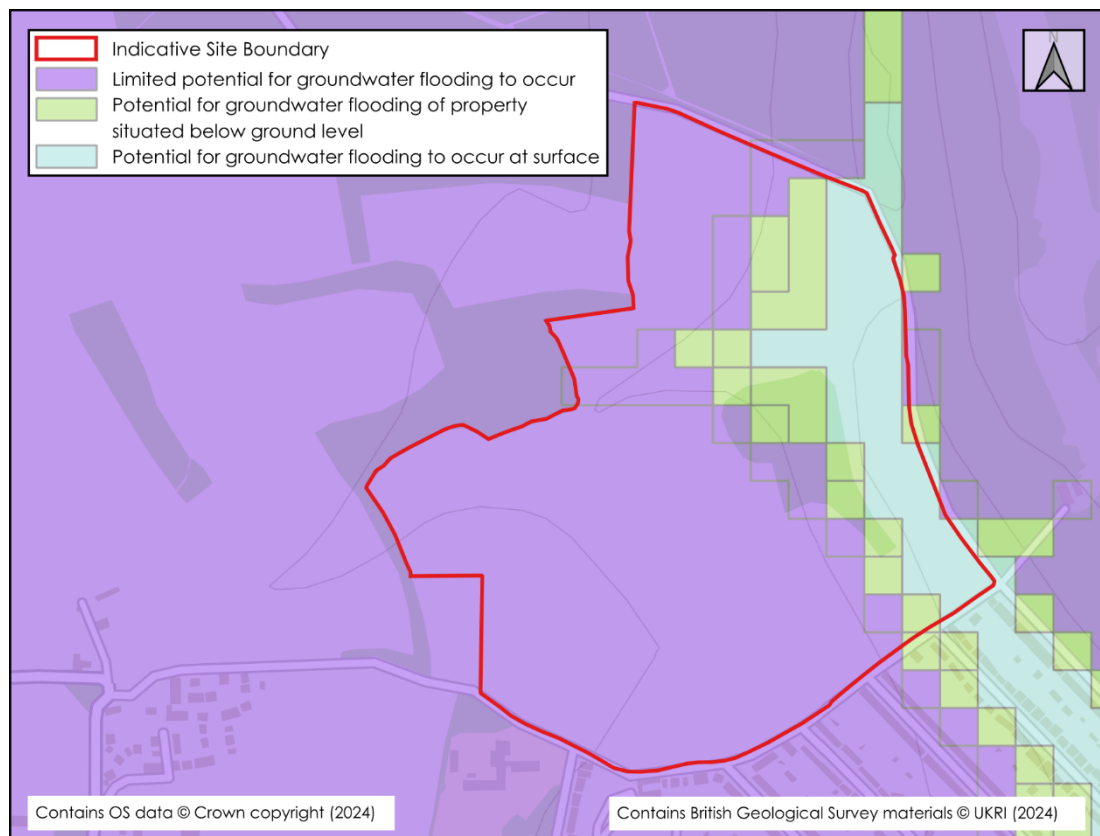


Figure 3.2: BGS Groundwater Flooding Mapping

- 3.14 The BGS holds historical records of borehole samples across the UK which include measurements of groundwater levels taken during the sample. These are measurements taken at one point in space and time and are not a substitute for a long-term record of groundwater levels. However, they provide an indication of possible groundwater levels in metres below ground level (m bgl) that could be experienced.
- 3.15 One publicly available borehole log is located within the north of the site (reference: TQ09NE7) and is shown to be underlain by sand and gravel deposits and chalk bedrock. Groundwater was not struck within the borehole to an excavated depth of 2.7m bgl.
- 3.16 Site-specific ground investigations were undertaken by PJS Geotechnical Engineers in February 2020 (reference: PJSG20-01-R02). Two trial pits were excavated in the east of the site for the purpose of identifying groundwater conditions. No groundwater was encountered in either trial pit to excavated depths of 3.1m bgl and 3.2m bgl respectively.
- 3.17 Seven additional trial pits were undertaken within the site for the purpose of identifying infiltration rates; however, it is also noted that groundwater was not encountered in any of these pits, to a maximum excavated depth of 2.0m bgl.
- 3.18 Overall, while strategic scale mapping suggests there to be groundwater risk within the east of the site, site-specific ground investigations and historical BGS records do not record shallow groundwater within the site. Therefore, the risk of flooding from groundwater is considered to be low.

Pluvial Flood Risk

- 3.19 Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.
- 3.20 RoFSW mapping has been collated and published by the EA; this shows the potential flooding which could occur when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead. An extract from the mapping is included as **Figure 3.3**.

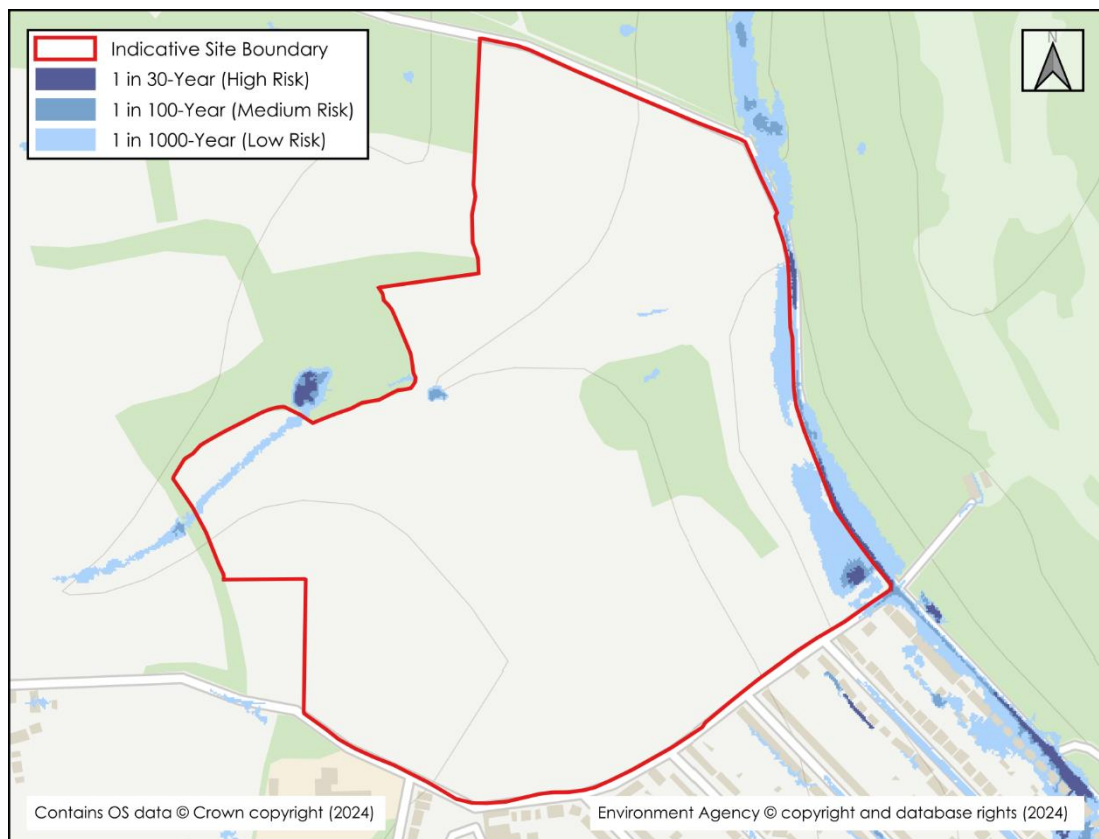


Figure 3.3: EA Risk of Flooding from Surface Water Mapping

- 3.21 The site is shown to be predominantly at a very low risk of flooding from surface water. A small, low risk (1 in 1000-year), surface water flow route, associated with minor valley topography, bisects the western corner of the site, flowing from the west before ponding beyond the site to the north.
- 3.22 A further low risk surface water flow route is present in the east of the site, flowing from north to south along Rousebarn Lane. A small area of low to high risk (1 in 30-year) surface water ponding occurs within the south-east corner of the site, within an existing topographical low spot.
- 3.23 Correspondence with Hertfordshire County Council (**Appendix 4**) reports no historical flood events within the site.
- 3.24 There are no records of historical pluvial flooding at the site reported within the Level 1 SFRA. The LFRMS 2 reports one incident of historical pluvial flooding south of the site; however, no records of historical flooding at the site are noted.
- 3.25 Access and egress to the site via Little Green Lane to the south is shown to be at a very low risk of flooding from surface water.
- 3.26 Overall, the site is considered to be at a low risk of flooding from pluvial sources. Mitigation measures for any residual risk are discussed in **Section 4**.

Flood Risk from Sewers

- 3.27 Sewer flooding can occur when the capacity of the infrastructure is exceeded by excessive flows, or as a result of a reduction in capacity due to collapse or blockage, or if the downstream system becomes surcharged. This can lead to the sewers flooding onto the surrounding ground via manholes and gullies, which can generate overland flows.
- 3.28 The local sewerage undertaker is Thames Water; a copy of their sewer records is included in **Appendix 5**.
- 3.29 A 300mm diameter foul water sewer is shown to be located within the north-east of the site. No onward connectivity of the sewer is shown; however, the sewer is expected to flow to the south towards the existing network within the residential development. In the event of exceedance, flows are expected to be pool in the south-east corner of the site following similar mechanisms to the surface water mapping.
- 3.30 There are a series of existing sewers within the existing residential development to the south of the site. The sewers are expected to all flow to the south away from the site. In the unlikely event of exceedance, flows are expected to be directed to the south away from the site.
- 3.31 There are no records of sewer flooding reported in the Level 1 SFRA or LFRMS 2.
- 3.32 Overall, the risk of sewer flooding at the site is considered to be low.

Effect of Development on Wider Catchment

Impedance of Flood Flows

- 3.33 There are two low risk surface water flow routes present within the site, both of which originate from off-site. The proposed development has the potential to impede these flow routes unless appropriately mitigated. Appropriate mitigation is discussed in **Section 4**.

Development Land Use/Drainage Considerations

- 3.34 The development will increase the area of impermeable surfaces, leading to a potential increase in runoff unless appropriately mitigated. Appropriate mitigation measures are discussed in **Section 4**.

4. FLOOD RISK MITIGATION

- 4.1 **Section 3** has identified the sources of flooding which could potentially pose a risk to the site and the proposed development. This section of the FRA sets out the mitigation measures which are to be incorporated within the proposed development to address and reduce the risk of flooding to within acceptable levels.

Sequential Arrangement

- 4.2 The site is located entirely within Flood Zone 1 and has been sequentially arranged such that the proposed built development is located outside of areas at risk of flooding from surface water. This will also ensure that built development will not result in an impedance of surface water flow routes within the site.

Development Levels

- 4.3 It is recommended that finished floor levels are raised a minimum of 150mm above surrounding ground levels to mitigate any residual risk of flooding.
- 4.4 Ground levels should be profiled to encourage pluvial runoff and overland flows away from the built development and towards the nearest drainage point.

Safe Access and Egress

- 4.5 Access/egress via Little Green Lane to the south is located entirely within Flood Zone 1 and is at a very low risk of surface water flooding. Therefore, safe access and egress is considered achievable for the proposed development.

Surface Water Drainage

- 4.6 To mitigate the impact of the proposed development on the current runoff regime, it is proposed to incorporate surface water attenuation and storage as part of the development proposals.
- 4.7 The 300mm diameter foul water sewer within the site will require an appropriate easement, subject to confirmation with Thames Water. Further information on this easement is included in the accompanying SDS.
- 4.8 The proposed development should be designed with exceedance in mind and the road network should be used to convey excess overland flows towards the attenuation points.
- 4.9 Further information on the drainage approach is provided within the accompanying Sustainable Drainage Statement (SDS) (reference: 233574-BWB-ZZ-XX-T-W-0001_SDS).

Foul Water Drainage

- 4.10 It is proposed to drain foul water from the proposed development separately to surface water.
- 4.11 Further information on the drainage approach is provided within the accompanying SDS (reference: 233574-BWB-ZZ-XX-T-W-0001_SDS).

5. CONCLUSIONS AND RECOMMENDATIONS

- 5.1 This FRA has been prepared in accordance with the requirements set out in the NPPF and the associated PPG. The FRA has been produced on behalf of Richborough in respect of a planning application for a residential-led, mixed use development on land to the north of Little Green Lane, Croxley Green.
- 5.2 This FRA is intended to support an outline planning application and as such, the level of detail included is commensurate and subject to the nature of the proposals at the planning stage.
- 5.3 This report demonstrates that the proposed development is not at significant flood risk, subject to the recommended flood mitigation strategies being implemented. The identified risks and mitigation measures are summarised within **Table 5.1**:

Table 5.1: Summary of Flood Risk Assessment

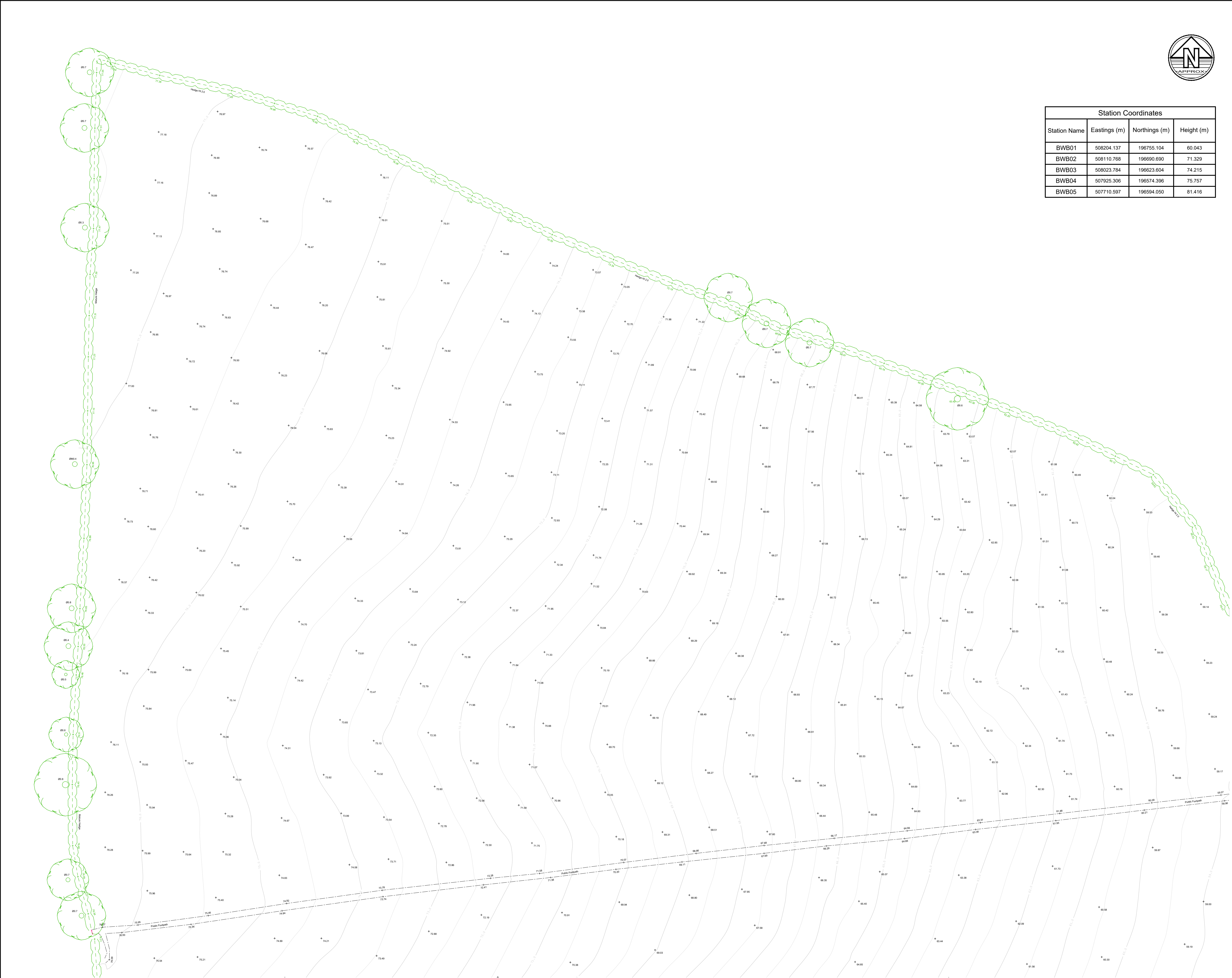
Flood Source	Risk & Proposed Mitigation Measures
Fluvial	The site is located entirely within Flood Zone 1 and outside of the modelled flood extents associated with the River Gade. There are no mapped ordinary watercourses within close proximity to the site.
Groundwater	Based on site-specific ground investigations and historical BGS records, shallow groundwater is not expected to be present within the site. Therefore, the risk of flooding from groundwater is considered to be low.
Pluvial runoff	The site is shown to be predominantly at a very low risk of flooding from surface water. A small, low risk flow route bisects the western corner of the site. A low risk flow route is present in the east of the site, flowing from north to south along Rousebarn Lane and ponding in the south-east corner of the site. The site has been sequentially arranged such that built development is located outside of areas at risk of flooding from surface water. It is recommended that finished floor levels are raised a minimum of 150mm above surrounding ground levels to mitigate any residual risk of flooding. Ground levels should be profiled to encourage pluvial runoff and overland flows away from the built development and towards the nearest drainage point.
Other Sources of Flood Risk	The site has been assessed against a range of other sources including canals, tidal, sewers, reservoirs and large waterbodies. These are considered to pose a low or minimal risk to the site.
Impact of the Development	The site has been arranged such that there will be no impedance of surface water flow routes. Surface water runoff from the proposed development will be controlled appropriately with attenuated surface water storage provided with capacity for the 1 in 100-year storm, including an allowance for climate change.

	Foul water from the proposed development will be discharged separately to surface water.
This summary should be read in conjunction with BWB's full report. It reflects an assessment of the Site based on information received by BWB at the time of production.	

- 5.4 In compliance with the requirements of the NPPF, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Moreover, the development will not increase flood risk to the wider catchment area, subject to suitable management of surface water runoff discharging from the site.

APPENDICES

Appendix 1: Topographical Survey

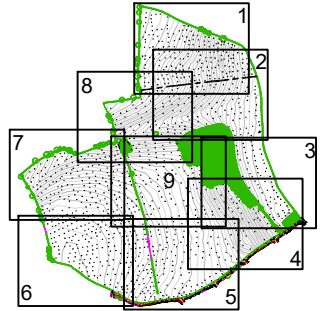


Station Coordinates			
Station Name	Eastings (m)	Northings (m)	Height (m)
BWB01	508204.137	196755.104	60.043
BWB02	508110.768	196690.690	71.329
BWB03	508023.784	196623.604	74.215
BWB04	507925.306	196574.396	75.757
BWB05	507710.597	196594.050	81.416

Notes

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- OS license number: 100022432

Key Plan



Legend

	OS Buildings		Contour Lines
	Surveyed Buildings		Inspection Chamber
	Building		Flow direction and pipe diameter
	Kerb Channel Line		Station and Name
	Top of Kerb		Monitoring Borehole
	Edge of Surface		Tree / Bush / Sapling
	Top of Bank		Area of Vegetation/ Extent of Tree Canopy
	Bottom of Bank		Hedge
	Canopy / Overhang		Body of Water
	Line Marking		Body of Water from OS
	Centre Line		Spot Level
	Watercourse		Assumed Surface
	Centre Line		Surface Water Drainage Line
	Barrier		
	Fence		
	Gate		
	Overhead Powerline		
	Overhead Utilities		

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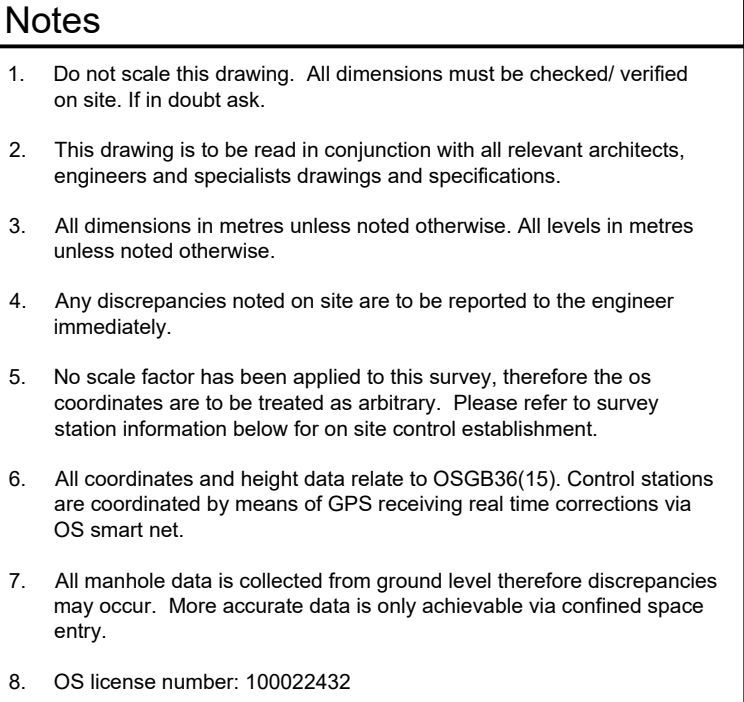
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OS Buildings		Contour Lines	
	Surveyed Buildings	Inspection Chamber	
	Building	Flow direction and pipe diameter	
	Wall	Station and Name	
	Kerb Channel Line	Monitoring Borehole	
	Top of Kerb	Tree / Bush / Sapling	
	Edge of Surface	Area of Vegetation / Extent of Tree Canopy	
	Top of Bank	Hedge	
	Bottom of Bank	Body of Water	
	Canopy / Overhang	Body of Water from OS	
	Line Marking	Spot Level	
	Centre Line	Gate	
	Watercourse	Assumed Surface	
	Centre Line	Water Drainage Line	
	Barrier	Surface Water Drainage Line	
	Fence	Spot Level	
	Overhead Powerline	Assumed Surface	
	Overhead Utilities	Water Drainage Line	
AP	Anchor Point	LB	Litter Bin
BG	Back Gully	LP	Lamp Post
BS	Bolard	MH	Manhole
BS	Bustop	Mkr	Service Marker
BT	British Telecom	PB	Post Box
C	Crest	PT	Post
CL	Cover Level	RE	Reinforcing Eye
CMP	Cache Marker	SP	Sign Post
	Post	ST	Stop Sign
CCTV	Security Camera	ST	Stop Sign
CTV	Cable	ST	Stop Sign
DC	Drainage Channel	TCS	Telephone Call Box
DK	Down Pipe	THL	Threshold Level
DK	Down Kerb	TL	Traffic Light
DP	Down Pipe	TP	Telephone
Elec	Electricity	TS	Traffic Signal
EP	Electricity Post	UTS	Unable to Survey
ER	Earth Road	WL	Water Level
FH	Fire Hydrant	WM	Water Meter
FL	Floodlight	WO	Waste Out

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**Little Green Lane,
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Existing Site Plan

Sheet 2 of 9

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Station Coordinates			
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BWB03	508023.784	196623.604	74.215
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8. OS licence number: 100022432

	OS Buildings	Contours Lines			
	Surveyed Buildings	Inspection Chamber			
	Building	Flow direction and pipe diameter			
	Wall	Station and Name			
	Kerb Channel Line	Monitoring Borehole			
	Top of Kerb	Tree / Bush / Sapling			
	Edge of Surface	Area of Vegetation / Extent of Tree Canopy			
	Top of Bank	Hedge			
	Bottom of Bank	Body of Water			
	Canopy / Overhang	Body of Water from OS			
	Line Marking	Spot Level			
	Centre Line	Assumed Surface			
	Watercourse	Water Drainage Line			
	Barrier	Surface Water Drainage Line			
	Gate	Surface Water Drainage Line			
	Overhead Powerline	Surface Water Drainage Line			
	Overhead Utilities	Surface Water Drainage Line			
AP	Anchor Point	FBW	Fence Barbed Wire	LB	Litter Bin
BG	Back Gully	FCB	Fence Closed Barbed	LP	Lamp Post
BO	Bollard	FCL	Fence Chain Link	MH	Manhole
BS	Bus Stop	FEL	Fence Electric	MR	Service Marker
BT	Building Telecom	FMP	Fence Metal Panel	PS	Post Box
C	Crest	FMR	Fence Metal Railing	PT	Post
CL	Clad Cover	FMB	Fence Open Barbed	RE	Rodding Eye
CM	Cable Marker	FWP	Fence Post & Wire	SP	Sign Post
CS	Cross	FFW	Fence Steel Palisade	ST	Stop Sign
CCTV	Security Camera	FFM	Fence Wire Mesh	SV	Street View
CTV	Cable TV	FFL	Fence Flashed	TCLB	Telephone
DC	Drainage	FP	Flagpole	CB	Call Box
DK	Drop Kerb	GS	Gas Gas	THL	Threshold Level
DM	Down Pipe	GV	Gas Valve	TL	Traffic Light
E	Electric	G	Gully	TP	Telegraph Post
Elec	Electricity Post	H	Height	TS	Traffic Signal
ER	Earth	IC	Inspection Chamber	UTS	Unable to Survey
ERH	Fire Hydrant	IFL	Internal Floor Level	WL	Water Level
FL	Floodlight	IL	Invert Level	WM	Water Meter
			(as a surveyed level)	WO	Wash Out

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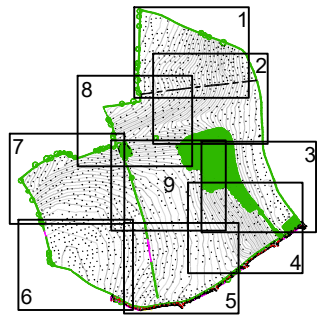


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Key Plan



Legend

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	Building		Flow direction and pipe diameter
	Wall		Station and Name
	Kerb Channel Line		Monitoring Borehole
	Top of Kerb		Tree / Bush / Sapling
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	Top of Bank		Hedge
	Bottom of Bank		Body of Water
	Canopy / Overhang		Body of Water from OS
	Line Marking		Spot Level
	Centre Line		Assumed Surface
	Watercourse		Water Drainage Line
	Centre Line		
	Barrier		
	Fence		
	Gate		
	Overhead Powerline		
	Overhead Utilities		

AP Anchor Point

BG Back Gully

BO Bollard

BS Bus Stop

BT British Telecom

C Crest

CL Cover Level

CMP Cable Marker

CCTV Security Camera

DC Drainage

DK Drop Kerb

DP Down Pipe

Elec Electric

EP Electricity Post

ER Earth Rd

FH Fire Hydrant

FL Floodlight

FBW Fence Barbed Wire

FCB Fence Closed Board

FCL Fence Chain Link

FEL Fence Electric

FMP Fence Metal Panel

FMR Fence Metal Railing

FOB Fence Open Board

FPM Fence Post & Wire

FSP Fence Steel Palisade

FWM Fence Wire Mesh

FFL Finished Floor Level

FP Flagpole

Gas Gas

GV Gas Valve

GY Gully

Ht Height

IC Inspection Chamber

IFL Internal Floor Level

IL Invert Level

(as a reduced level)

LB Litter Bin

LP Lamp Post

LP Lamp Post

MH Manhole

Mir Service Marker

PB Post Box

PT Post

RE Rodding Eye

SP Sign Post

ST Stop Tap

SV Stop Valve

TCB Telephone

Call Box

THL Threshold Level

TL Traffic Light

TP Telegraph Post

TS Traffic Signal

UTS Unable to Survey

WL Water Level

WM Water Meter

WO Wash Out

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Rev	Date	Details of issue / revision	Drw	Rev

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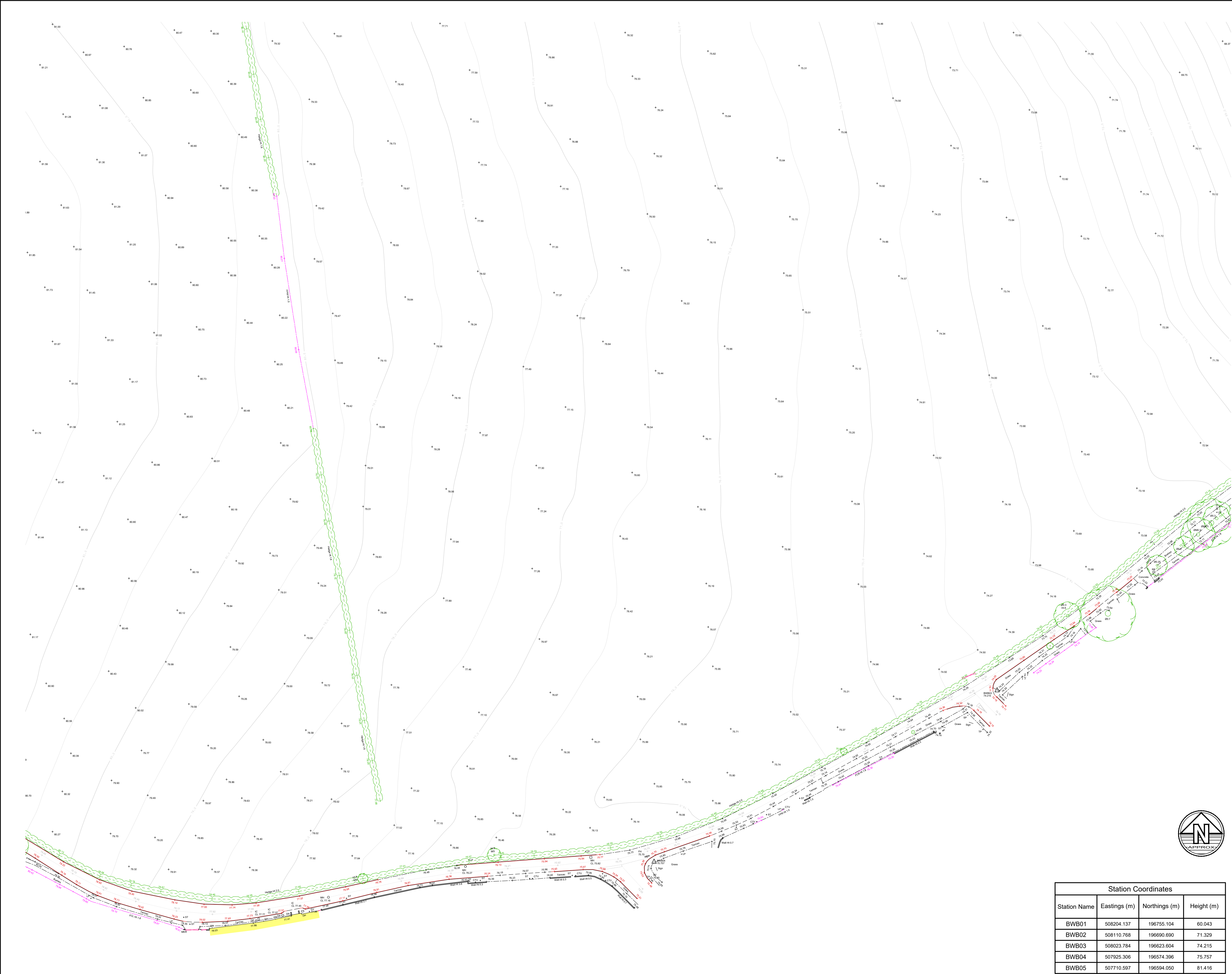
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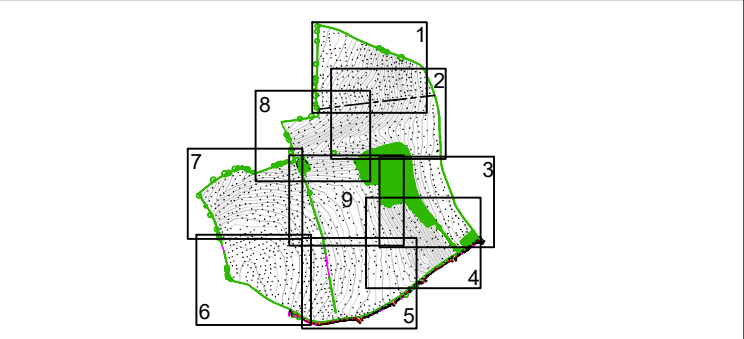
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Key Plan



Legend

- | | |
|--------------------|---|
| OS Buildings | Contour Lines |
| Surveyed Buildings | Flow direction and pipe diameter |
| Building | Station and Name |
| Wall | Monitoring Borehole |
| Kerb Channel Line | Tree / Bush / Sapling |
| Top of Kerb | Area of Vegetation/ Extent of Tree Canopy |
| Edge of Surface | Hedge |
| Top of Bank | Body of Water |
| Bottom of Bank | Body of Water from OS |
| Canopy / Overhang | Spot Level |
| Line Marking | Assumed Surface |
| Centre Line | Surface Water Drainage Line |
| Watercourse | |
| Centre Line | |
| Barrier | |
| Fence | |
| Gate | |
| Overhead Powerline | |
| Overhead Utilities | |
- | | | |
|----------------------|--------------------------|----------------------|
| AP Anchor Point | FBW Fence Barbed Wire | LB Litter Bin |
| BG Back Gully | FCB Fence Closed Board | LP Lamp Post |
| BO Bollard | FCL Fence Chain Link | MH Manhole |
| BS Bus Stop | FEL Fence Electric | Mir Service Marker |
| BT British Telecom | FMP Fence Metal Panel | PB Post Box |
| C Crest | FMR Fence Metal Railing | PT Post |
| CL Cover Level | FOB Fence Open Board | RE Rodding Eye |
| CMP Cable Marker | FPW Fence Post & Wire | SP Sign Post |
| Post | FSP Fence Steel Palisade | ST Stop Tap |
| CCTV/Security Camera | FWM Fence Wire Mesh | SV Stop Valve |
| CTV Cable TV | FFL Finished Floor Level | TCB Telephone |
| DC Drainage | FP Flagpole | Call Box |
| Channel | Gas Gas | THL Threshold Level |
| DK Drop Kerb | GV Gas Valve | TL Traffic Light |
| DP Down Pipe | GY Gully | TP Telegraph Post |
| Elec Electric | Ht Height | TS Traffic Signal |
| EP Electricity Post | IC Inspection Chamber | UTS Unable to Survey |
| ER Earth Rd | IFL Internal Floor Level | WL Water Level |
| FH Fire Hydrant | IL Invert Level | WM Water Meter |
| FL Floodlight | (as a reduced level) | WO Wash Out |

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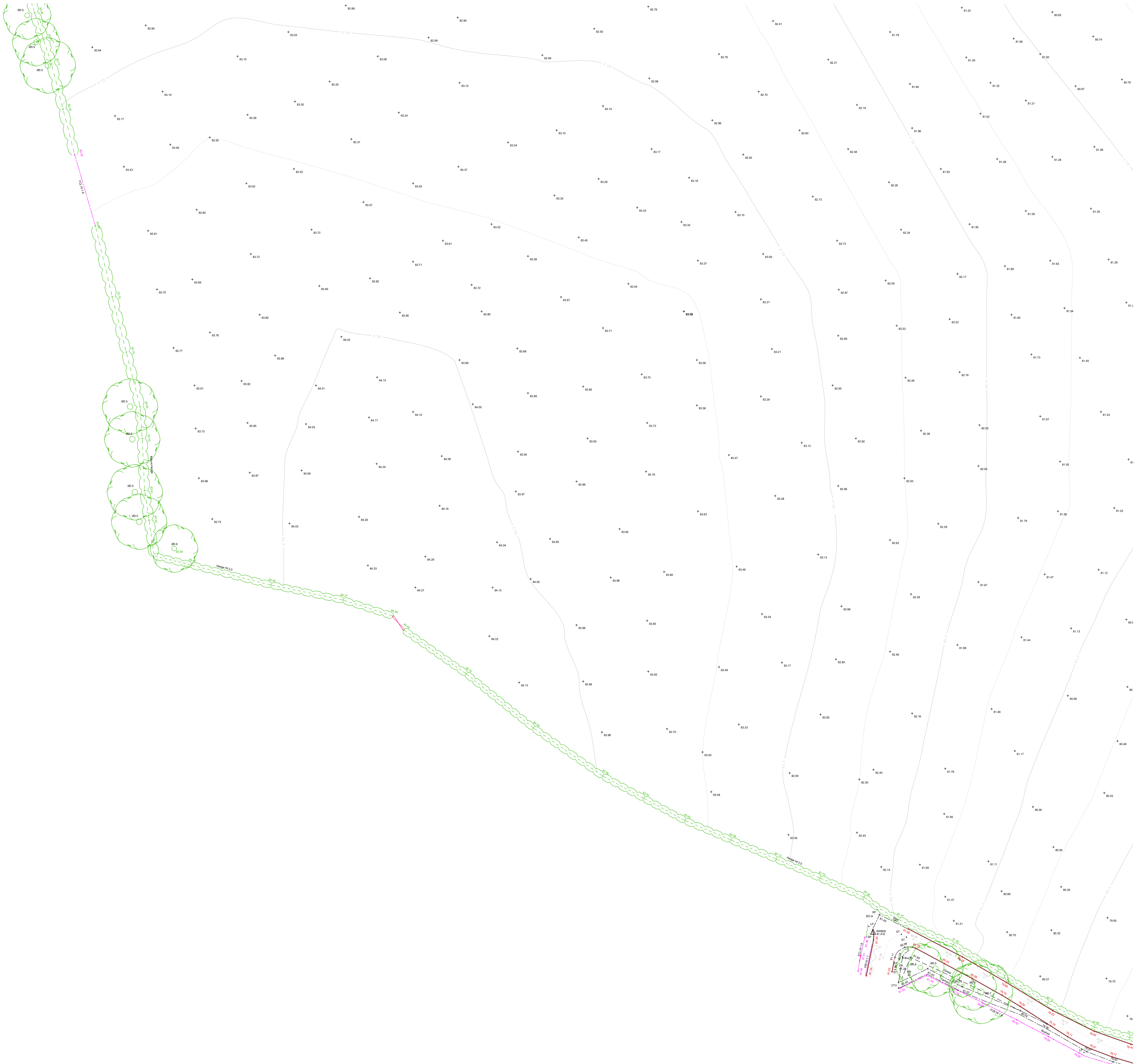
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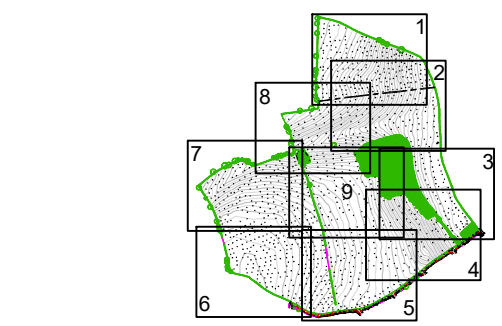
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Key Plan



Legend

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Bottom of Bank	Body of Water
Canopy / Overhang	Body of Water from OS
Line Marking	Spot Level
Centre Line	Assumed Surface
Watercourse	Water Drainage Line
Centre Line	
Barrier	
Fence	
Gate	
Overhead Powerline	
Overhead Utilities	
AP Anchor Point	FBW Fence Barbed Wire
BG Back Gully	FCB Fence Closed Board
BO Bollard	FCL Fence Chain Link
BS Bus Stop	FEL Fence Electric
BT British Telecom	FMP Fence Metal Panel
C Crest	FMR Fence Metal Railing
CL Cover Level	FOB Fence Open Board
CMP Cable Marker	FPM Fence Post & Wire
Post	FSP Fence Steel Palisade
CCTV/Security Camera	FWM Fence Wire Mesh
Cable TV	FFL Finished Floor Level
DC Drainage	FP Flagpole
Channel	Gas Gas
DK Drop Kerb	GV Gas Valve
DP Down Pipe	GY Gully
Elec Electric	Ht Height
EP Electricity Post	IC Inspection Chamber
ER Earth Rd	IFL Internal Floor Level
FH Fire Hydrant	IL Invert Level
FL Floodlight	(as a reduced level)
LB Litter Bin	LP Lamp Post
MH Manhole	Mir Service Marker
PB Post Box	PT Post
RE Rodding Eye	SP Sign Post
ST Stop Tap	SV Stop Valve
TCB Telephone	Call Box
THL Threshold Level	TL Traffic Light
TP Telegraph Post	TS Traffic Signal
UTS Unable to Survey	WL Water Level
WM Water Meter	WO Wash Out

P1	20.06.24	First Issue	DS	SS
Rev	Date	Details of issue / revision	Drw	Rev

Issues & Revisions

	☐ Birmingham 0121 233 3322
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Client
Richborough Estates Limited

Project Title
Little Green Lane, Croxley Green

Drawing Title
Existing Site Plan Sheet 6 of 9

Drawn:	D.Smith	Reviewed:	S.Shreeves
BWB Ref:	233574	Date:	20.06.24
Scale@A1:	1:500		

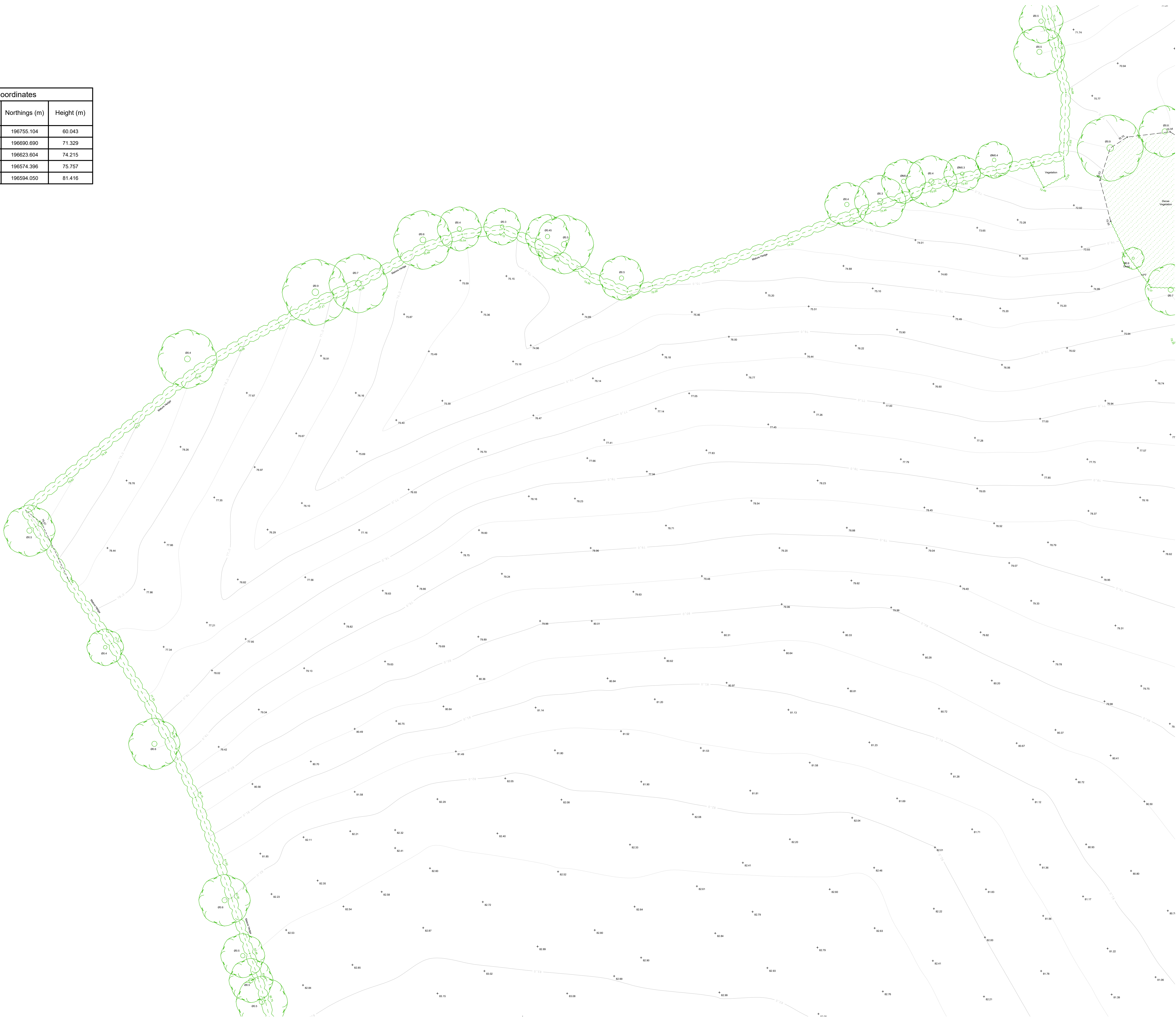
Drawing Status

Information

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
LGL-BWB-00-06-DR-G-0001	S2	P1



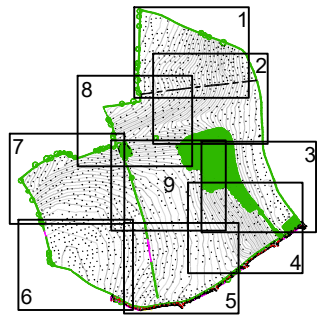
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Station Name	Eastings (m)	Northings (m)	Height (m)
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BWB02	508110.768	196690.690	71.329
BWB03	508023.784	196623.604	74.215
BWB04	507925.306	196574.396	75.757
BWB05	507710.597	196594.050	81.416



Notes

- Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
- This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
- All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise.
- Any discrepancies noted on site are to be reported to the engineer immediately.
- No scale factor has been applied to this survey, therefore the os coordinates are to be treated as arbitrary. Please refer to survey station information below for on site control establishment.
- All coordinates and height data relate to OSGB36(15). Control stations are coordinated by means of GPS receiving real time corrections via OS smart net.
- All manhole data is collected from ground level therefore discrepancies may occur. More accurate data is only achievable via confined space entry.
- OS license number: 100022432

Key Plan



Legend

	OS Buildings		Contour Lines
	Surveyed Buildings		Inspection Chamber
	Building		Flow direction and pipe diameter
	Wall		Station and Name
	Kerb Channel Line		Monitoring Borehole
	Top of Kerb		Tree / Bush / Sapling
	Edge of Surface		Area of Vegetation / Extent of Tree Canopy
	Top of Bank		Hedge
	Bottom of Bank		Body of Water
	Canopy / Overhang		Body of Water from OS
	Line Marking		Spot Level
	Centre Line		Assumed Surface
	Watercourse		Surface Water Drainage Line
	Barrier		
	Fence		
	Gate		
	Overhead Powerline		
	Overhead Utilities		

P1	20.06.24	First Issue	DS	SS
Rev	Date	Details of issue / revision	Drw	Rev

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Client
Richborough Estates Limited

Project Title
Little Green Lane, Croxley Green

Drawing Title
Existing Site Plan Sheet 7 of 9

Drawn:	D.Smith	Reviewed:	S.Shreeves
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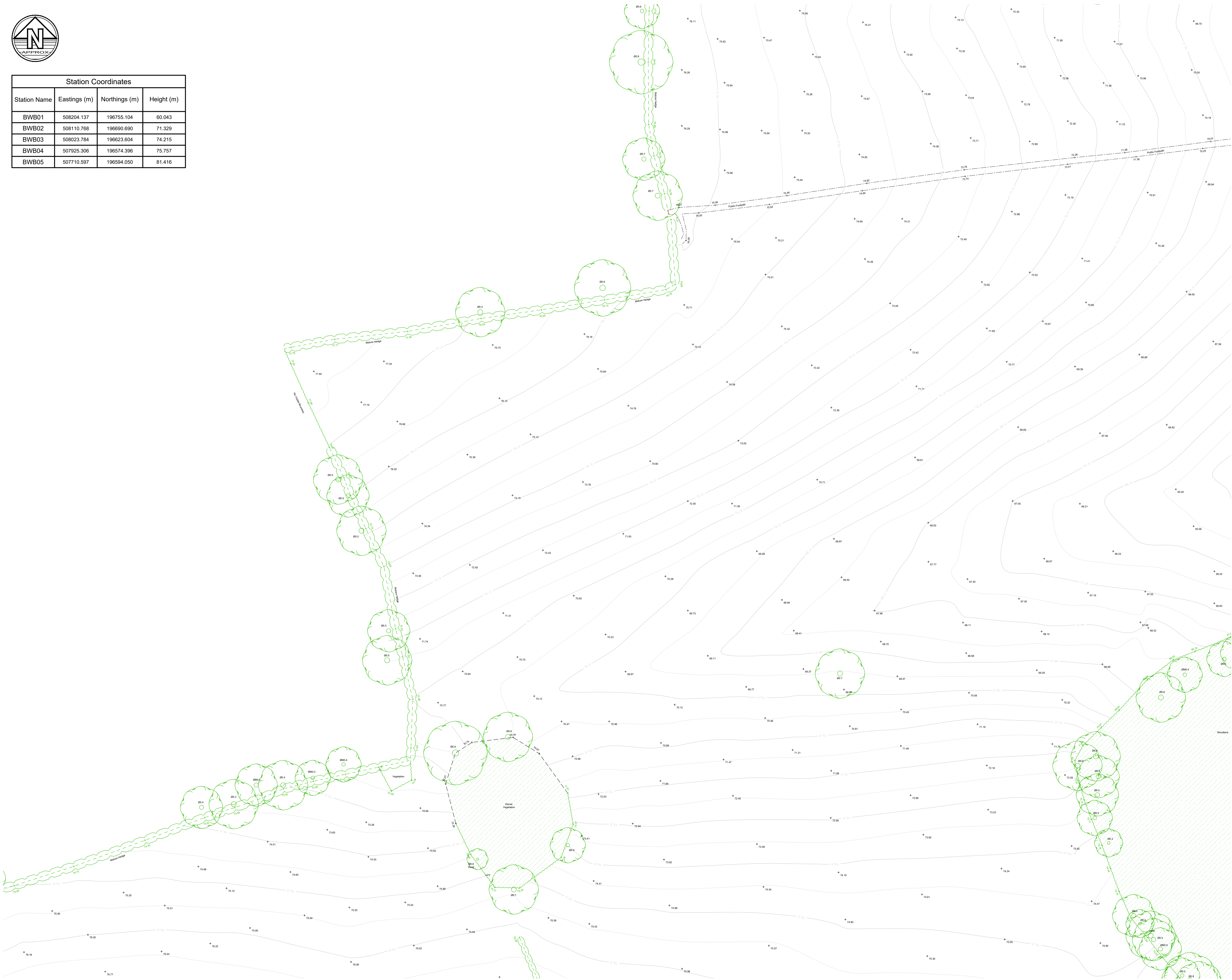
BWB Ref:	233574	Date:	20.06.24	Scale@A1:	1:500
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Drawing Status

Information					Status	Rev
Project - Originator - Zone - Level - Type - Role - Number					S2	P1
LGL-BWB-00-07-DR-G-0001						



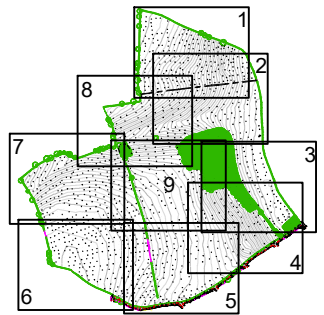
Station Coordinates			
Station Name	Eastings (m)	Northings (m)	Height (m)
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BWB02	508110.768	196690.690	71.329
BWB03	508023.784	196623.604	74.215
BWB04	507925.306	196574.396	75.757
BWB05	507710.597	196594.050	81.416



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Key Plan



Legend

	OS Buildings		Contour Lines
	Surveyed Buildings		Flow direction and pipe diameter
	Building		Station and Name
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	Top of Kerb		Area of Vegetation/ Extent of Tree Canopy
	Edge of Surface		Hedge
	Bottom of Bank		Body of Water
	Canopy / Overhang		Body of Water from OS
	Line Marking		Spot Level
	Centre Line		Assumed Surface
	Watercourse		Surface Water Drainage Line
	Centre Line		
	Barrier		
	Fence		
	Gate		
	Overhead Powerline		
	Overhead Utilities		

AP	Anchor Point	FBW	Fence Barbed Wire	LB	Litter Bin
BG	Back Gully	FCB	Fence Closed Board	LP	Lamp Post
BO	Bollard	FCL	Fence Chain Link	MH	Manhole
BS	Bus Stop	FEL	Fence Electric	Mir	Service Marker
BT	British Telecom	FMP	Fence Metal Panel	PB	Post Box
C	Crest	FMR	Fence Metal Railing	PT	Post
CL	Cover Level	FOB	Fence Open Board	RE	Rodding Eye
CMP	Cable Marker	FPM	Fence Post & Wire	SP	Sign Post
		FSP	Fence Steel Palisade	ST	Stop Tap
CCTV	Security Camera	FWM	Fence Wire Mesh	SV	Stop Valve
CTV	Cable TV	FFL	Finished Floor Level	TCB	Telephone
DC	Drainage	FP	Flagpole		Call Box
	Channel	Gas	Gas	THL	Threshold Level
DK	Drop Kerb	GV	Gas Valve	TL	Traffic Light
DP	Down Pipe	GY	Gully	TP	Telegraph Post
Elec	Electric	Ht	Height	TS	Traffic Signal
EP	Electricity Post	IC	Inspection Chamber	UTS	Unable to Survey
ER	Earth Rd	IFL	Internal Floor Level	WL	Water Level
FH	Fire Hydrant	IL	Invert Level	WM	Water Meter
FL	Floodlight		(as a reduced level)	WO	Wash Out

P1	20.06.24	First Issue	DS	SS
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Client
Richborough Estates Limited

Project Title
Little Green Lane, Croxley Green

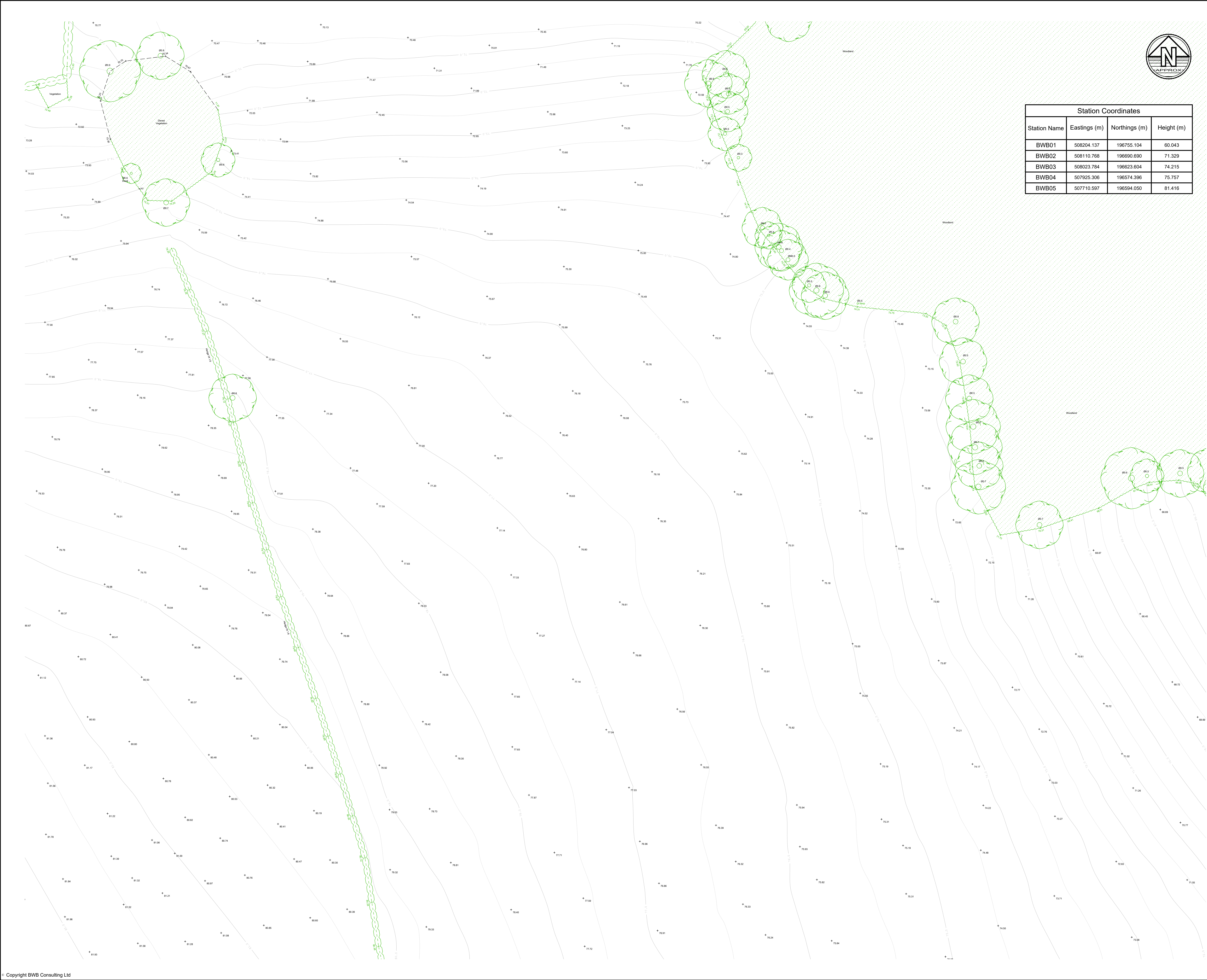
Drawing Title
Existing Site Plan Sheet 8 of 9

Drawn:	D.Smith	Reviewed:	S.Shreeves
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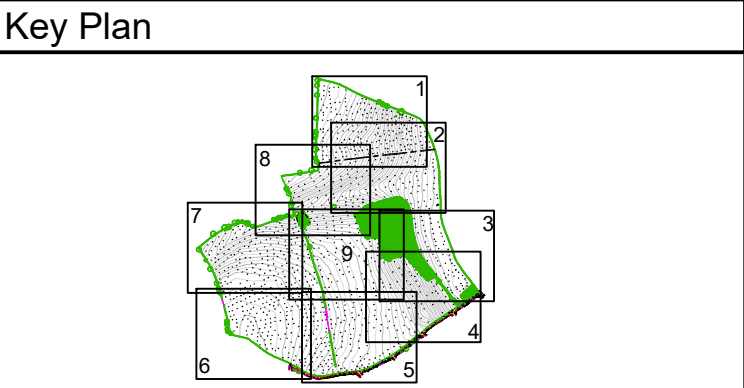
BWB Ref:	233574	Date:	20.06.24	Scale@A1:	1:500
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Drawing Status
Information

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
LGL-BWB-00-08-DR-G-0001	S2	P1



- ### Notes
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Legend

OS Buildings	Contour Lines
Surveyed Buildings	Inspection Chamber
Building	Flow direction and pipe diameter
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Fence	
Gate	
Overhead Powerline	
Overhead Utilities	

AP Anchor Point
BG Back Gully
BO Bollard
BS Bus Stop
BT British Telecom
C Crest
CL Cover Level
CMP Cable Marker
CCTV Security Camera
CTV Cable TV
DC Drainage
Channel
DK Drop Kerb
DP Down Pipe
Elec Electric
EP Electricity Post
ER Earth Rd
FH Fire Hydrant
FL Floodlight

FBW Fence Barbed Wire
FCB Fence Closed Board
FCL Fence Chain Link
FEL Fence Electric
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FMR Fence Metal Railing
FOB Fence Open Board
FPM Fence Post & Wire
FSP Fence Steel Palisade
FWM Fence Wire Mesh
FFL Finished Floor Level
FP Flagpole
Gas Gas
GV Gas Valve
GY Gully
Ht Height
IC Inspection Chamber
IFL Internal Floor Level
IL Invert Level (as a reduced level)

LB Litter Bin
LP Lamp Post
MH Manhole
Mir Service Marker
PB Post Box
PT Post
RE Rodding Eye
SP Sign Post
ST Stop Tap
SV Stop Valve
TCB Telephone
Call Box
THL Threshold Level
TL Traffic Light
TP Telegraph Post
TS Traffic Signal
UTS Unable to Survey
WL Water Level
WM Water Meter
WO Wash Out

P1	20.06.24	First Issue	DS	SS
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Issues & Revisions

☐	Birmingham 0121 233 3322
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Client

Richborough Estates Limited

Project Title

Little Green Lane, Croxley Green

Drawing Title

Existing Site Plan Sheet 9 of 9

Drawn:	D.Smith	Reviewed:	S.Shreeves
BWB Ref:	233574	Date:	20.06.24
Drawing Status	Scale@A1:	1:500	

Information

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
LGL-BWB-00-09-DR-G-0001	S2	P1

Appendix 2: Illustrative Masterplan



KEY

- SITE LOCATION
- PUBLIC OPEN SPACE AND AMENITY SPACE
- HARD LANDSCAPE FEATURE SQUARES/ FOCAL SPACES WITH PEDESTRIAN/CYCLE PRIORITY
- EXISTING TREES
- NEW TREE PLANTING
- WILDFLOWER / LONG GRASS
- COMMUNITY ORCHARD
- AREA FOR PLAY
- SUSTAINABLE DRAINAGE
- TRIM TRAIL ROUTE (2KM)
- PROPOSED NATIVE THICKET PLANTING
- PROPOSED ORNAMENTAL SHRUBS
- PROPOSED HEDGEROW
- SWALE
- MOWN PATHS
- PROPOSED SHARED PEDESTRIAN / CYCLE WAY ALONG CANTERBURY ROAD

KEY PRINCIPLES

- PROPOSED DEVELOPMENT ACCESS VIA DURRANTS DRIVE AND LINKS WAY,
- PRIMARY STREET AND BUS ROUTE,
- FOCAL SPACE WITH AREAS OF LANDSCAPING, PLAY AND RECREATION,
- ACTIVE TRAVEL ROUTES, TRIM/FITNESS TRAIL
- PEDESTRIAN ROUTES PROVIDING ACCESS TO ALL AREAS OF PUBLIC OPEN SPACE,
- RETENTION AND BUFFER TO THE ANCIENT WOODLAND AND EXISTING VEGETATION,
- PROPOSED NATIVE WOODLAND PLANTING TO BUFFER ROUSEBARN LANE AND ANCIENT WOODLANDS,
- NEW LANDSCAPE AND RETAINED HEDGEROW TO THE PERIMETER OF DEVELOPMENT,
- WILDFLOWER PLANTING AND NEUTRAL GRASSLANDS PROMOTING BIODIVERSITY AND HABITAT CREATION,
- WETLAND FEATURES WITH ASSOCIATED BANKSIDE AND AQUATIC VEGETATION,
- COMMUNITY SPACE,
- AREAS OF EQUIPPED PLAY AND RECREATION FOR OLDER CHILDREN/TEENAGERS,
- LOCAL PLAY AND NATURAL PLAY FOR YOUNGER CHILDREN,
- DWELLINGS OVERLOOKING NEWLY CREATED AREAS OF PUBLIC OPEN SPACE,
- VIEW CORRIDOR TO DURRANTS HOUSE
- BUS GATE.

0 20 50 m

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Appendix 3: NPPF Flood Risk Vulnerability and Flood Zone Compatibility

Flood Risk Vulnerability Classifications (recreated from the NPPF Planning Practice Guidance)

Vulnerability Classification	Description
Essential infrastructure	• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including infrastructure for electricity supply including generation, storage and distribution systems; including electricity generating power stations, grid and primary substations storage; and water treatment works that need to remain operational in times of flood. • Wind turbines. • Solar farms.
Highly Vulnerable	• Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure'.)
More Vulnerable	• Hospitals • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non-residential uses for health services, nurseries and educational establishments. • Landfill* and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less Vulnerable	• Police, ambulance and fire stations which are not required to be operational during flooding. • Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill* and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do not need to remain operational during times of flood. • Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place. • Car parks.
Water-Compatible Development	• Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel working. • Docks, marinas and wharves. • Navigation facilities. • Ministry of Defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

Flood Zone Compatibility (recreated from the NPPF Planning Practice Guidance)

Flood Zone	Vulnerability Classification				
	Essential infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Flood Zone 1 (Low Probability)	Development is appropriate	Development is appropriate	Development is appropriate	Development is appropriate	Development is appropriate
Flood Zone 2 (Medium Probability)	Development is appropriate	To be deemed appropriate an exception test is required to demonstrate: - The development will be safe for its life time without increasing flood risk elsewhere, and where possible reduce overall flood risk - the sustainability benefits of the development to the community outweigh the flood risk.	Development is appropriate	Development is appropriate	Development is appropriate
Flood Zone 3a (High Probability)	To be deemed appropriate an exception test is required to demonstrate: The development will be safe for its life time without increasing flood risk elsewhere, and where possible reduce overall flood risk the sustainability benefits of the development to the community outweigh the flood risk. Additionally, essential infrastructure should be designed and constructed to remain operational and safe in times of flood.	Development should not be permitted	To be deemed appropriate an exception test is required to demonstrate: - The development will be safe for its life time without increasing flood risk elsewhere, and where possible reduce overall flood risk - the sustainability benefits of the development to the community outweigh the flood risk.	Development is appropriate	Development is appropriate

Flood Zone	Vulnerability Classification				
	Essential infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Flood Zone 3b (The Functional Floodplain)	To be deemed appropriate an exception test is required to demonstrate: • The development will be safe for its life time without increasing flood risk elsewhere, and where possible reduce overall flood risk • the sustainability benefits of the development to the community outweigh the flood risk. Additionally, development should be designed and constructed to: • remain operational and safe for users in times of flood; • result in no net loss of floodplain storage; • not impede water flows and not increase flood risk elsewhere.	Development should not be permitted	Development should not be permitted	Development should not be permitted	Development is appropriate if designed and constructed to: • remain operational and safe for users in times of flood; • result in no net loss of floodplain storage; • not impede water flows and not increase flood risk elsewhere.

Appendix 4: Hertfordshire County Council

From: <FRMConsultations@hertfordshire.gov.uk>
Sent: 19 June 2024 09:55
To:
Cc: FRMConsultations
Subject: RE: 233574 - Flood Risk and Drainage FOI

This email originated from outside of our organisation. Please exercise caution with content, links and attachments.

Thanks for your email

- Any local policy and guidance documents that we should be aware of when preparing a surface water drainage strategy for the site; **See link below**
- Any hydraulic model data you may hold for the local watercourses area; **None held**
- Any local guidance documents or requirements that we should be aware of regarding flood risk; and, **See link below**
- Any available data on historical flood events. **None recorded within site area. We have record of a cluster of flooded properties on Links Way and Ludlow Way to the south east of the site.**

<https://www.hertfordshire.gov.uk/services/recycling-waste-and-environment/water/surface-water-drainage/surface-water-drainage.aspx#>

Please note the "Guidance for developers" document is superseded by the proforma and validation list documents.

Best wishes,



Senior Flood Risk Officer | Lead Local Flood Authority
Growth and Environment

Hertfordshire County Council

County Hall, Pegs Lane, Hertford, SG13 8DN Postal Point: CHN101

E: FRMConsultations@hertfordshire.gov.uk

T:

Working hours: 08:00 – 16:00 Monday - Friday



[Our vision](#) is to create a cleaner, greener and healthier Hertfordshire, guided by our RISE values

**We improve
Residents' lives**

**We work with
Integrity**

**We act
Sustainably**

**We champion
Equality & fairness**

Sent: Tuesday, June 18, 2024 1:36 PM

To: FRMConsultations <FRMConsultations@hertfordshire.gov.uk>

Subject: 233574 - Flood Risk and Drainage FOI

You don't often get email from [Hertfordshire County Council](#). [Learn why this is important](#)

Good afternoon,

We are undertaking a Flood Risk Assessment and Drainage Strategy for a site to the north of Croxley Green, approximate NGR: TQ 07898 96927. Location plan attached.

To aid in our works please could I request the following information for the area:

- Any local policy and guidance documents that we should be aware of when preparing a surface water drainage strategy for the site;
- Any hydraulic model data you may hold for the local watercourses area;
- Any local guidance documents or requirements that we should be aware of regarding flood risk; and,
- Any available data on historical flood events.

Kind regards,

Consultant (Water)

5th Floor, Waterfront House, Station Street, Nottingham, NG2 3DQ

T: W:



Registered in England and Wales

Registered Office: 5th Floor, Waterfront House, Station Street, Nottingham, NG2 3DQ

Company No. 5265863

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Appendix 5: Thames Water Sewer Records

Richborough estates
Waterloo House, 20 Waterloo House

BIRMINGHAM
B2 5TB

Search address supplied The Tree House
Little Green Lane
Croxley Green
Rickmansworth
WD3 3ST

Your reference Croxley Green

Our reference ALS/ALS Standard/2024_4948557

Search date 23 February 2024

Notification of Price Changes

From 1st April 2023 Thames water Property Searches will be increasing the prices of its CON29DW, CommercialDW Drainage & Water Enquiries and Asset Location Searches. Historically costs would rise in line with RPI but as this currently sits at 14.2%, we are capping it at 10%.

Customers will be emailed with the new prices by January 1st 2023.

Any orders received with a higher payment prior to the 1st April 2023 will be non-refundable. For further details on the price increase please visit our website at www.thameswater-propertysearches.co.uk



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0800 009 4540

Search address supplied: The Tree House, Little Green Lane, Croxley Green,
Rickmansworth, WD3 3ST

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This search provides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk

Web: www.thameswater-propertysearches.co.uk

Waste Water Services

Please provide a copy extract from the public sewer map.

The following quartiles have been printed as they fall within Thames' sewerage area:

TQ0796NW
TQ0796NE
TQ0797NE
TQ0896NW
TQ0897SW

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

The following quartiles have not been printed as they contain no assets:

TQ0797SW
TQ0797SE

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

Following examination of our statutory maps, Thames Water has been unable to find any plans of water mains within this area. If you require a connection to the public water supply system, please write to:

New Connections / Diversions
Thames Water
Network Services Business Centre
Brentford
Middlesex
TW8 0EE

Tel: 0845 850 2777
Fax: 0207 713 3858
Email: developer.services@thameswater.co.uk

The following quartiles have not been printed as they are out of Thames' water catchment area. For details of the assets requested please contact the water company indicated below:

TQ0796NW	Affinity Water
TQ0797SW	Affinity Water
TQ0796NE	Affinity Water
TQ0797SE	Affinity Water
TQ0797NE	Affinity Water
TQ0896NW	Affinity Water
TQ0897SW	Affinity Water

Affinity Water Ltd
Tamblin Way
Hatfield
AL10 9EZ

Tel: 0345 3572401

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.



Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

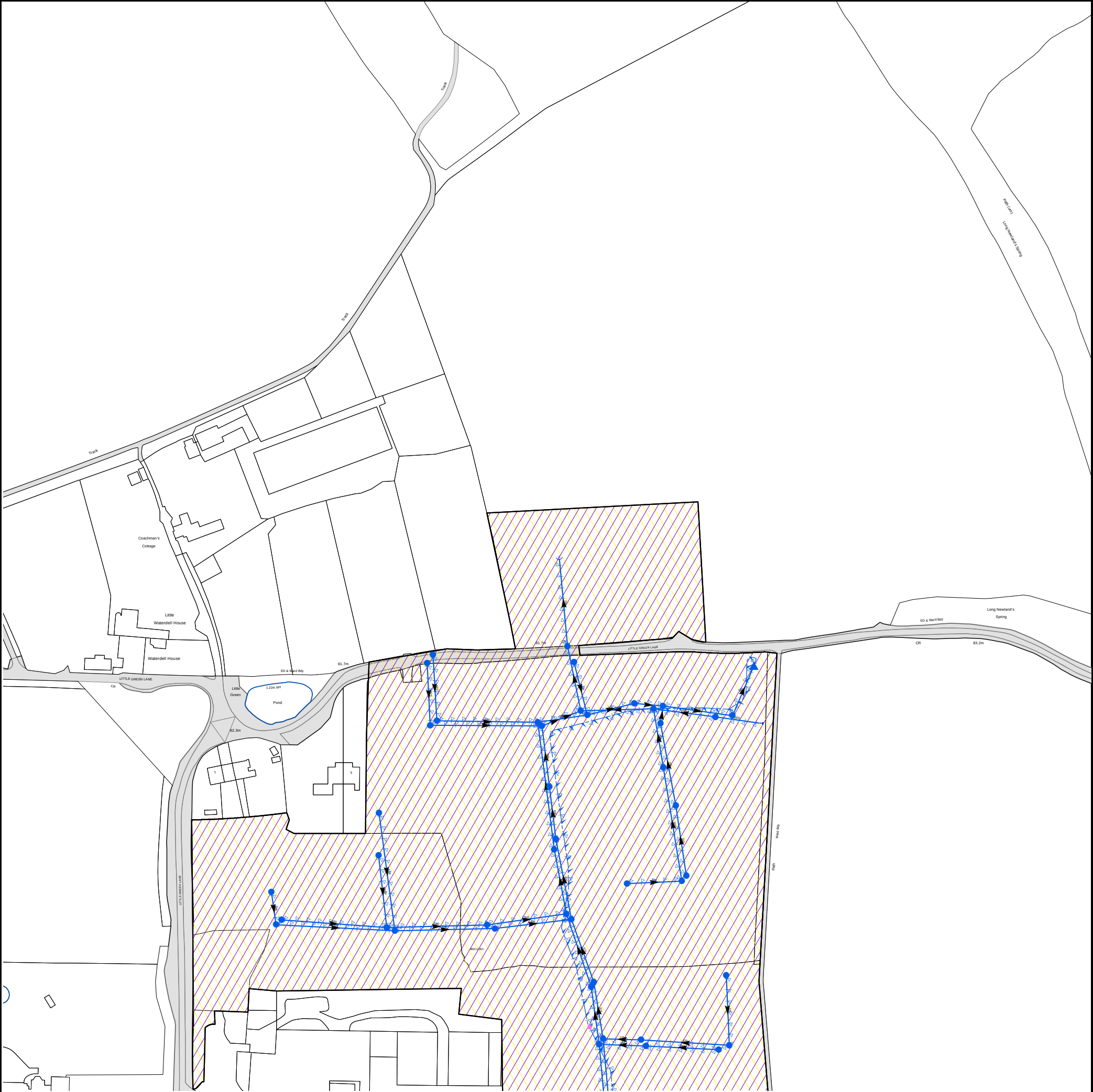
Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 507250,196750

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

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NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

[illegible]



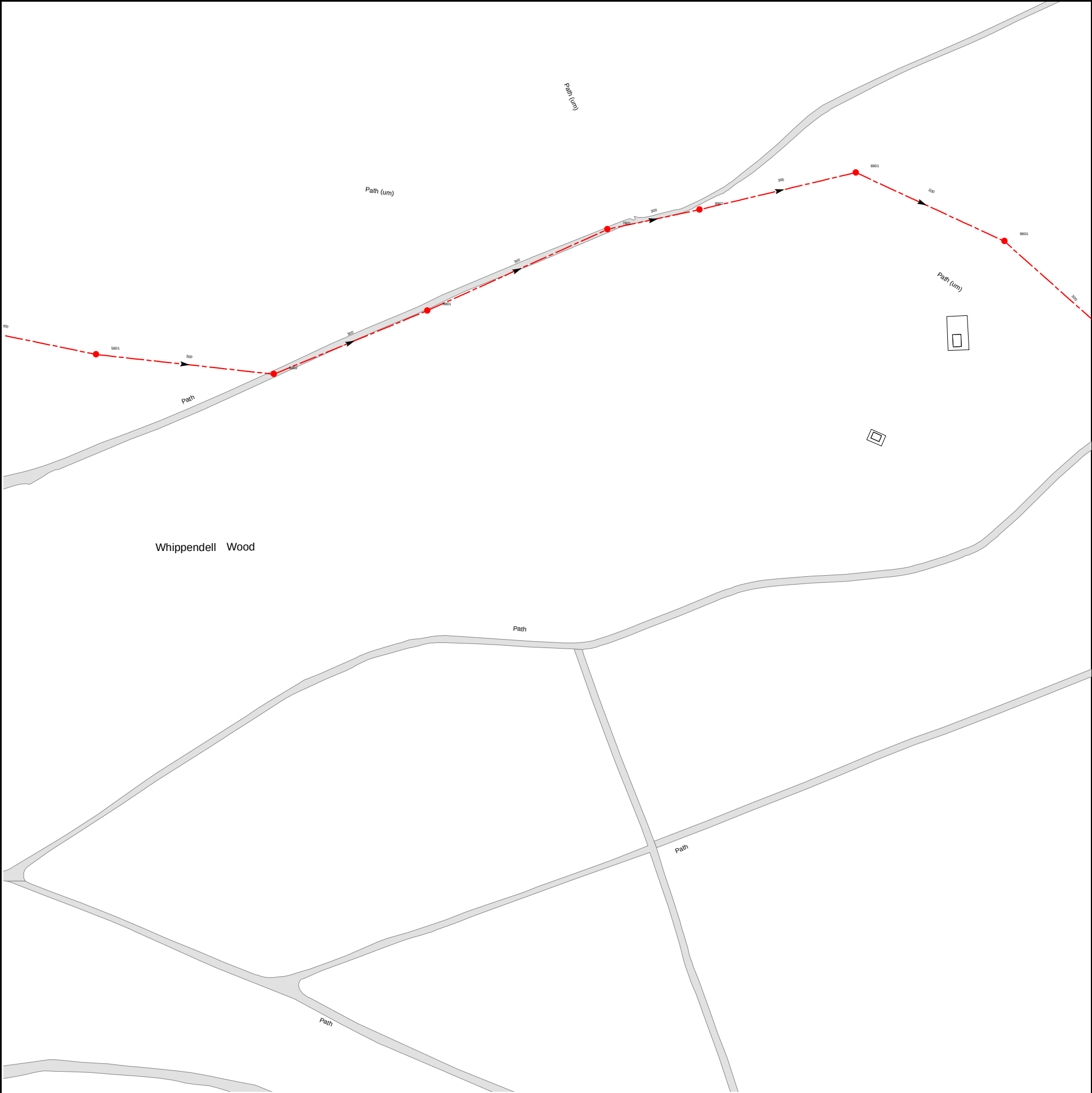
The width of the displayed area is 500m and the centre of the map is located at OS coordinates 507750,196750

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

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Manhole Reference	Manhole Cover Level	Manhole Invert Level
9501	74.58	72.37
751A	n/a	n/a
7501	80.7	78.89
9503	75.46	73.1
9502	75.4	72.92
8502	n/a	n/a
8501	77.06	74.88
9504	75.73	n/a
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The width of the displayed area is 500m and the centre of the map is located at OS coordinates 507750,197750

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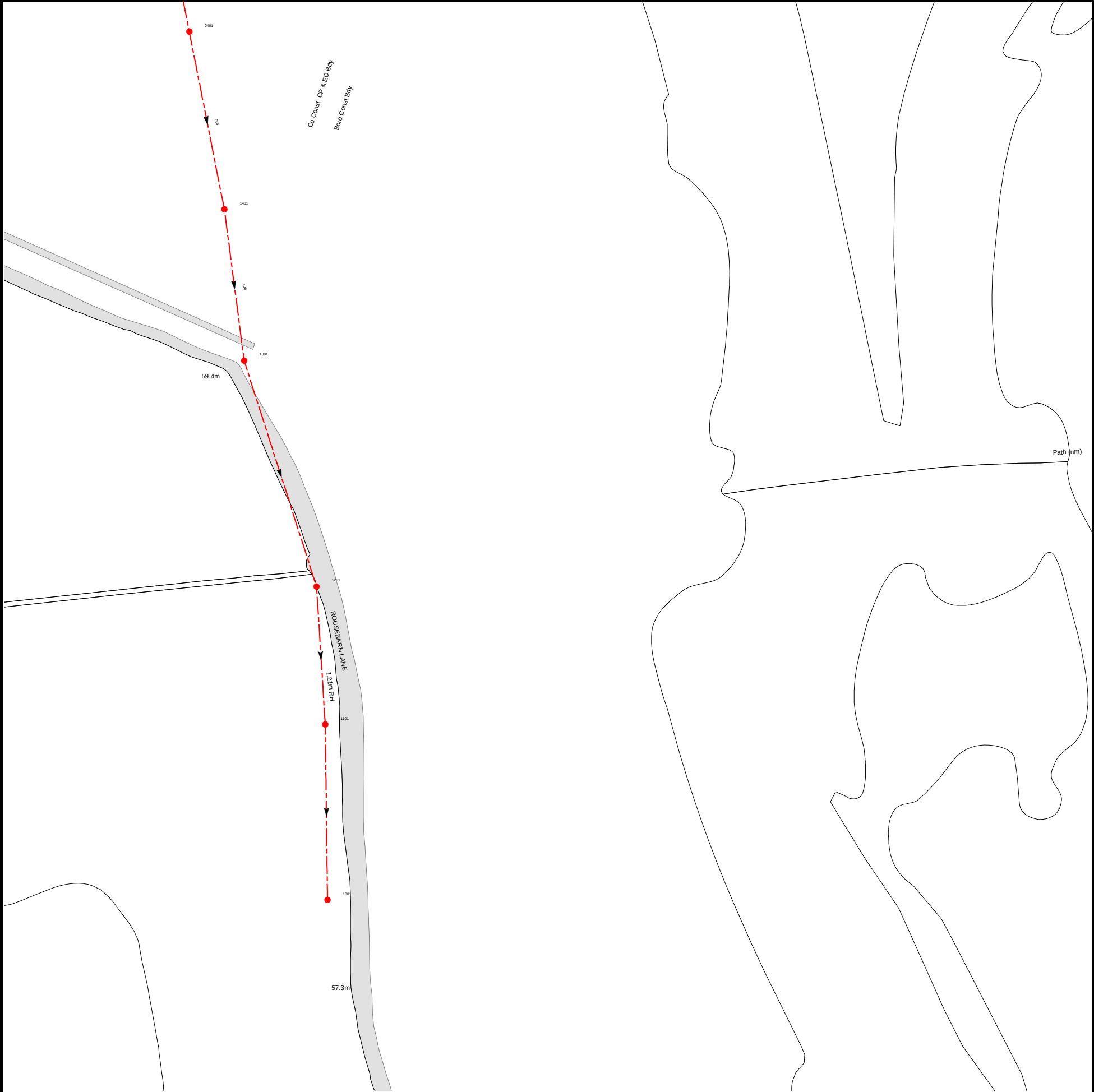
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NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
6801	63.17	61.18
7801	63.27	60.92
8902	63.1	60.63
8901	62.3	60.43
9801	61.76	59.9
6802	63.19	61.46
5801	64.08	61.72
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.		

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
4502	55.7	54.72
451A	n/a	n/a
151B	n/a	n/a
261I	n/a	n/a
261J	n/a	n/a
361C	n/a	n/a
451B	n/a	n/a
4501	57.24	54.27
351C	n/a	n/a
351D	n/a	n/a
251C	n/a	n/a
351B	n/a	n/a
3601	58.32	54.61
261D	n/a	n/a
161B	n/a	n/a
261B	n/a	n/a
261C	n/a	n/a
1601	69.94	67.54
261E	n/a	n/a
161A	n/a	n/a
261H	n/a	n/a
261A	n/a	n/a
2601	59.02	54.75
261G	n/a	n/a
261F	n/a	n/a
371E	n/a	n/a
371F	n/a	n/a
371D	n/a	n/a
371A	n/a	n/a
271B	n/a	n/a
1701	60.78	55.28
371C	n/a	n/a
271A	n/a	n/a
271C	n/a	n/a
351J	n/a	n/a
251B	n/a	n/a
351A	n/a	n/a
351E	n/a	n/a
151A	n/a	n/a
351I	n/a	n/a
251A	n/a	n/a
351G	n/a	n/a
351F	n/a	n/a
251D	n/a	n/a
2501	67.47	65.09
0501	73.43	71.52
1602	70.83	68.28
361A	n/a	n/a
371B	n/a	n/a
371H	n/a	n/a
371G	n/a	n/a
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.		



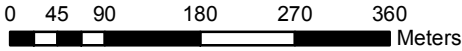
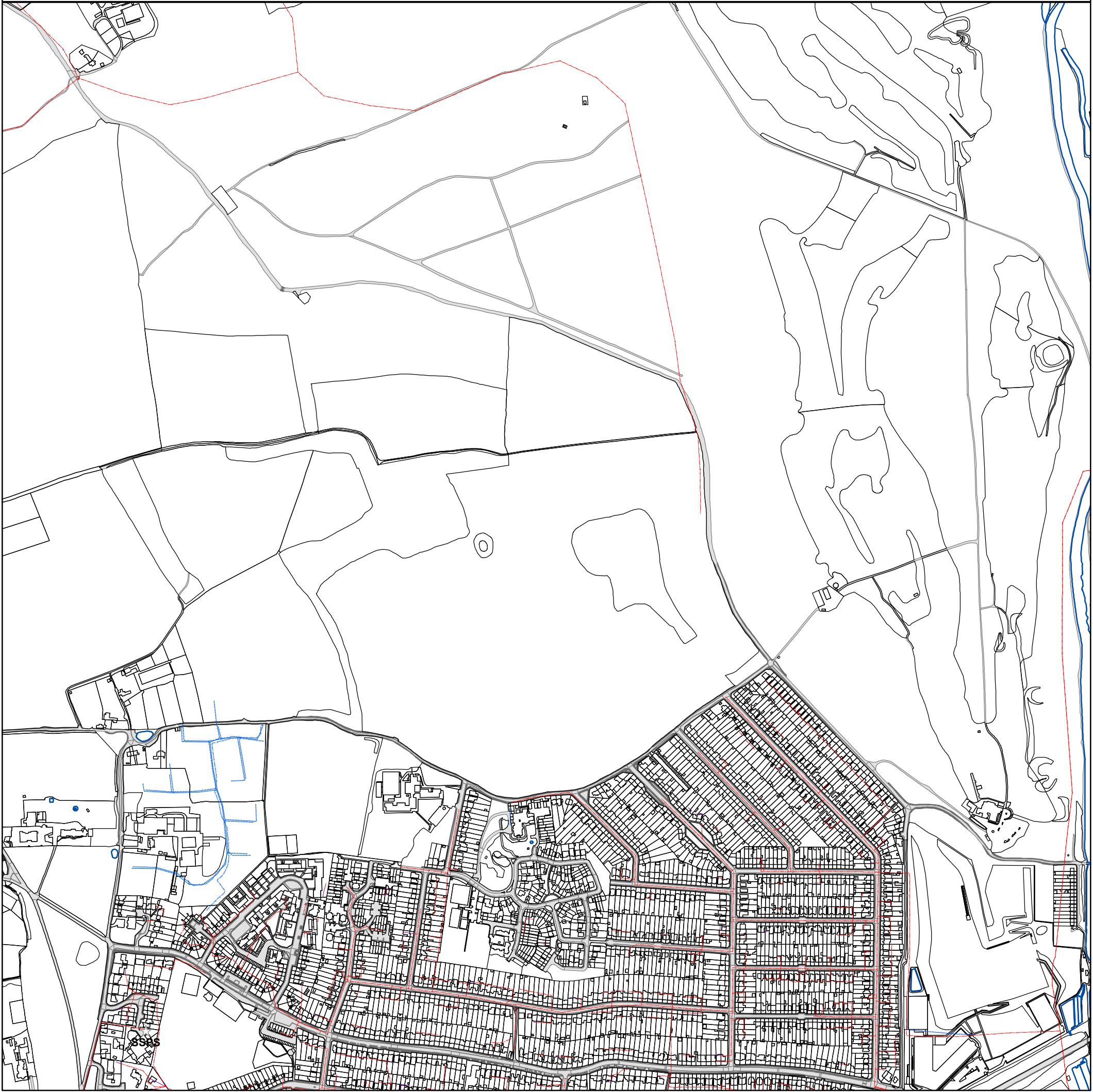
The width of the displayed area is 500m and the centre of the map is located at OS coordinates 508250,197250

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

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Manhole Reference	Manhole Cover Level	Manhole Invert Level
0401	59.69	57.88
1401	58.83	57.3
1301	n/a	n/a
1201	n/a	n/a
1101	n/a	n/a
1001	n/a	n/a
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Scale: 1:7161
Width: 2000m
Printed By: TSOMASUN
Print Date: 26/02/2024
Map Centre: 507865,197027
Grid Reference: TQ0797SE

Comments:

REFERENCE	COVER LEVEL	INVERT LEVEL
021D		
241D		
451B		
351G		
351D		
3107		
4011		
8801	58.7	47.76
2001	69.48	67.58
2501	67.47	65.09
3102	62.6	60.76
5101	54.52	52.45
3106		
3104		
3201	58.36	56.54
3302		
5201	54.43	52.87
7101	53.96	48.13
0402	70.55	68.38
9503	75.46	73.1
2203	63.75	61.86
2303	65.16	63.54
9502	75.4	72.92
4201	56.44	53.14
4402	55.63	54.01
4209		
9201		
9202		
0701	62.04	58.85
2301	60.25	58.29
0403	71.78	69.2
0601	63.04	58.48
2009		
4306		
4002	55.7	52.42
6101	55.56	51.66
1106		
3010		
4106		
4108		
4205		
0801	60.79	59.37
3211		
1701	60.78	55.28
3205		
2204		
4104		
2005		
4403	56.31	54.1
4111		
4309		
3402	62.31	60.4
4006		
4117		
4310		
7201	57.77	47.23
0203		
2007		
2209		
2003		
2205		
3007		
1401	71.57	69.54
0205		
0101	70.68	68.73
1401	58.83	57.3
1002		
0401	59.69	57.88
0001	72.32	69.5
0105		
4307		
4007		
1104		
1001		
1102		
1108		
4101	54.64	52.72
3209		
4311		
4118		
4502	55.7	54.72

REFERENCE	COVER LEVEL	INVERT LEVEL
241C		
251D		
351F		
351I		
351J		
3105		
8001	53.1	47.01
8001	58.42	47.99
3202		
3204		
3008		
5102	54.09	52.51
3101	59.83	58.15
3103		
3401	58.77	56.95
5301	54.68	53.03
5401	54.8	53.19
9801	61.76	59.9
8501	58.42	47.52
2202	65.07	62.69
2302	63.23	61.38
2402	67.31	65.72
5103	55.69	52.03
4304	55.66	53.59
4501	57.24	54.27
4116		
9203		
9101	73.1	71.21
0202		
9501	74.58	72.37
0201	70.64	68.74
0102	71.63	69.64
2008		
4305		
4005	55.75	52.47
1101	69.87	68.06
1107		
3208		
4107		
4105		
4204		
1001		
3009		
3203		
3004		
4103		
0104	70.88	
2004		
4112		
4110		
4302	56.32	54.05
4401	55.6	53.83
4114		
4207		
3403	63.2	61.4
0501	73.43	71.52
0204		
2006		
2208		
2206		
2201	62.67	60.48
3301	58.02	56.21
1201		
0501	61.23	58.27
0003		
1003		
1101		
0002	72.5	69.56
0103	71.45	69.28
4308		
4109		
1301		
1301	67.43	65.65
1103		
1109		
4003	55.08	52.56
4102	55.13	52.87
3210		
4312		
4206		
4208		

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NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
8701	72.25	69.76
8502		
7202		
3001	82.61	80.53
7801	63.27	60.92
5204		
5301		
7004		
4101	82.44	80.39
4105		
7501	80.7	78.89
3311		
3310		
0001	82.45	81.79
0101	83.56	82.65
5207		
6301	79.78	78.32
6207		
3202		
6801	63.17	61.18
3101		
5302		
0802	69.27	67.4
2304		
4802		
4003		
4202		
9901	711.5	69.8
1103		
8101	74.19	72.31
6206		
5102		
8002		
6202	78.06	76.45
6208		
2801	66.84	65.39
3303	84.12	82.1
5208		
6204	79.04	77.78
6306		
6002		
901C		
2303	84.2	
1101	82.02	81.1
3305	84.3	82.55
3801	65.53	64.27
3306	84.53	83.05
221F		
221H		
421E		
7204		
911E		
911A		
2104		
211A		
751A		
8202		
621C		
711E		
131B		
431D		
431F		
911C		
131A		
4301	55.83	53.49
3201	82.74	
3601	58.32	54.61
6201	78.02	76.44
6802	63.19	61.46
2401	65.37	63.5
0801		
6303		
6450	79.16	78.41
3206		
1107		
011B		
021B		
421A		
231B		
711B		
431A		

REFERENCE	COVER LEVEL	INVERT LEVEL
7101	76.5	74.87
7201		
4001	82.72	79.98
4801	63.45	61.96
5202	80.86	
5303		
8103		
8102	75.09	73.32
4102	82.2	
5205		
3002	82.44	80.69
3304	83.98	
3901	64.06	62.68
0003	83.02	82.14
5201	79.57	77.9
2203		
6005		
3308		
6403	79.24	77.75
7203		
4201	80.51	78.76
3309		
1001	81.12	80.48
2302	84.15	82.13
4103	81.9	
4205		
4301		
5801	64.08	61.72
8901	62.3	60.43
2202		
6305		
5206		
6304		
6308		
6451		
3301	84.17	
5101		
5401	82.9	80.29
6402	81	79.05
6004		
6401	79.37	
6203	78.88	77.27
1102	82.86	81.83
1801	67.79	66.22
3307	84.59	83.31
3312		
6205	78.36	76.87
221G		
8101	57.94	48.09
4104	81.99	80.14
8001	76.73	74.91
911F		
2102		
2103		
011A		
301B		
621B		
501F		
131A		
431C		
431E		
431G		
001A		
6302		
1601	69.94	67.54
221D		
8501	77.06	74.88
1201	66.76	65.27
9504	75.73	
1602	70.83	68.28
6307		
5103		
3207		
2211		
531A		
021A		
021C		
231A		
711A		
441A		
431B		

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REFERENCE	COVER LEVEL	INVERT LEVEL
331A		
431B		
121A		
221B		
531B		
2301		
351A		
161A		
241E		
8902	63.1	60.63
0401	69.34	67.31
1105		
4115		
7005		
121A		
621A		
621E		
501B		
501D		
121C		
121G		
011A		
021B		
741A		
431G		
151A		
221B		
811A		
811B		
431D		
2207		
221A		
101A		
431H		
4008		
4009		
4113		
261A		
901A		
351E		
441A		
261D		
351C		
101C		
131C		
311B		
5003		
101E		
041C		
321C		
411A		
031A		
931B		
301A		
311B		
521B		
131E		
901B		
341A		
611A		
711C		
341D		
811D		
611C		
411B		
431F		
1002	81.03	80.4
101D	81.46	80.86
101G	82.15	81.2
101K		
4203		
421C		
321B		
131C		
131E		
321E		
911B		
131B		
511A		
531D		
531C		

REFERENCE	COVER LEVEL	INVERT LEVEL
431A		
431C		
221A		
221C		
631A		
251A		
251B		
161B		
9801	71.5	69.15
2601	59.02	54.75
4203		
3302	84.11	
2101	68.25	66.24
4303	56.83	54.75
121B		
621D		
141A		
501C		
121B		
121F		
501A		
021A		
1201	83.57	82.31
641A		
431H		
2201		
221C		
811C		
431E		
351B		
2210		
251C		
101B		
431I		
4010		
4119		-0.88
011B		
231A		
901D		
311A		
261C		
261E		
261B		
101D		
131D		
311C		
501E		
041A		
401A		
321D		
411B		
931A		
301D		
311A		
521A		
101F		
8201		
011C		
341B		
411D		
711D		
7205		
611B		
411A		
101E	81.54	80.77
001C		
101C	81.46	80.96
101F	81.54	80.645
101I	82.15	81.85
101L		
4202		
441B		
321A		
131D		
441C		
421B		
911D		
121H		
411C		
5304		
241F		

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ALS/ALS Standard/2024_4948557

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REFERENCE	COVER LEVEL	INVERT LEVEL
241G		
421A		
5203		
021E		
131F		
321C		
221D		
011E		
431I		
301C		
261H		
441B		
341A		
371A		
271C		
271A		
221I		
8004		
8003		
801G		
441E		
221E		
121C		
001B		
6209		
901E		
041B		
261F		
411D		
321G		
371C		
321H		
411F		
621F		
711A	54.12	48.98
031B		
031D		
311C		
711F		
911G		
831A		
371G		
361A		
421D		
521C		
531E		
231E		
231D		
801H		
611D		
311D		
911H		
911J		
911K		
721E		
821A		
511B		
261I		
821C		
151B		

REFERENCE	COVER LEVEL	INVERT LEVEL
421D		
421B		
421C		
101G		
131G		
321E		
2105		
431K		
431J		
451A		
431J		
441C		
341B		
371B		
271B		
211B		
221E		
8005		
801F		
441D		
441F		
121D		
441G		
801A		
101H		
041D		
431L		
261G		
321F		
371E		
371D		
411E		
411G		
371F		
721A	57.6	54.87
031C		
411H		
311D		
721A		
011F		
831B		
371H		
201B		
421E		
621H		
031E		
231C		
231B		
401D		
321I		
311E		
911I		
011G		
721C		
721D		
361C		
261J		
511C		
821B		



Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

	Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
	Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
	Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
	Storm Sewer
	Sludge Sewer
	Foul Trunk Sewer
	Surface Trunk Sewer
	Combined Trunk Sewer
	Foul Rising Main
	Surface Water Rising Main
	Combined Rising Main
	Vacuum
	Thames Water Proposed
	Vent Pipe
	Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

	Sewer
	Culverted Watercourse
	Proposed
	Decommissioned Sewer
	Content of this drainage network is currently unknown
	Ownership of this drainage network is currently unknown

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plan are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

	Air Valve		Meter
	Dam Chase		Vent
	Fitting		

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

	Ancillary		Drop Pipe
	Control Valve		Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

	Inlet		Outfall
	Undefined End		

Other Symbols

Symbols used on maps which do not fall under other general categories.

	Change of Characteristic Indicator		Public / Private Pumping Station
	Invert Level		Summit

Areas

Lines denoting areas of underground surveys, etc.

	Agreement
	Chamber
	Operational Site

Ducts or Crossings

	Casement	Ducts may contain high voltage cables. Please check with Thames Water.
	Conduit Bridge	
	Subway	
	Tunnel	

5) 'na' or '0' on a manhole indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Payment Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment within 14 days of the date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service or will be held to be invalid.
4. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
5. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
6. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800.

If you are unhappy with our service, you can speak to your original goods or customer service provider. If you are still not satisfied with the outcome provided, we will refer the matter to a Senior Manager for resolution who will provide you with a response.

If you are still dissatisfied with our final response, and in certain circumstances such as you are buying a residential property or commercial property within certain parameters, The Property Ombudsman will investigate your case and give an independent view. The Ombudsman can award compensation of up to £25,000 to you if he finds that you have suffered actual financial loss and/or aggravation, distress, or inconvenience because of your search not keeping to the Code. Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0300 034 2222 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	BACS Payment	Telephone Banking
Please Call 0800 009 4540 quoting your invoice number starting CBA or ADS	Account number 90478703 Sort code 60-00-01 A remittance advice must be sent to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW. or email ps.billing@thameswater.co.uk	By calling your bank and quoting: Account number 90478703 Sort code 60-00-01 and your invoice number

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

