FLOOD RISK ASSESSMENT AND DRAINAGE STRATEGY

Proposed Residential Development

Land off 52 New Street
Ash
Wingham
Kent
CT3 2BN

Prepared for:
Classicus Estates Limited

19th January 2023

Project Number:
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RMA ENVIRONMENTAL

environmental planning consultancy

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1 INTRODUCTION

Background

1.1 RMA Environmental Limited was commissioned by ENTRAN on behalf of Classicus Estates Limited to prepare a Flood Risk Assessment (FRA) and drainage strategy to support an outline planning application for a proposed residential development on land off 52 New Street in Ash, near Wingham, Kent, CT3 2BN.

1.2 This FRA has been prepared in accordance with the National Planning Policy Framework (NPPF), associated Planning Practice Guidance (PPG) and Environment Agency (EA) standing advice on flood risk for new development.

Site Location and Land Use

1.3 The site is brownfield comprising an existing house, redundant offices, outbuildings, an area of hardstanding and open land. It extends to an area of 1.54 hectares (ha) and is located at National Grid Reference TR 29435 58325 (refer to Figure 1.1).

1.4 The site is bordered by the following land uses:

- Sandwich Road is located to the north, beyond which lies agricultural land;
- residential housing and industrial uses are located to the east and west;
- New Street is located to the south; and
- Cherry Garden Lane is located further to the west.

1.5 Access to the site is currently via New Street to the south of the site. Further details on site topography, geology and hydrology are set out in Section 2.

Proposed Development

1.6 This application seeks outline planning permission with all matters reserved (except for access) for the demolition of existing buildings, including 51-53 Sandwich Road, and the erection of up to 52 new homes, including affordable, access from New Street and Sandwich Road, together with associated parking, open space, landscaping, drainage and associated infrastructure (refer to Appendix A). This will include widening the existing access point off New Street, potential connection points to adjoining land and retaining a Victorian villa as a refurbished home.

Requirements for a Flood Risk Assessment

1.7 The requirements for FRAs are provided in the NPPF and associated PPG. Paragraph 167 of the NPPF (July 2021) requires that a site-specific FRA should be submitted with planning applications for:

- all sites greater than 1 ha in Flood Zone 1;

- for sites of any size within Flood Zones 2 or 3;
- in an area within Flood Zone 1 which has critical drainage problems;
- in an area within Flood Zone 1 which is identified in a strategic flood risk assessment as being at increased flood risk in the future; and/or
- an area within Flood Zone 1 that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

1.8 The EA's Flood Zones are defined as follows:

- Flood Zone 1 is defined as land with little or no flood risk (an annual exceedance probability [AEP] of flooding of less than 0.1%);
- Flood Zone 2 is defined as having a medium flood risk (an AEP of between 0.1% and 0.5% for tidal areas or 0.1% and 1.0% for rivers); and
- Flood Zone 3 is defined as high risk (with an AEP of greater than 0.5% for tidal areas or greater than 1.0% for rivers).

1.9 The EA's Surface Water Flood Risk extents are defined as follows:

- Very low surface water flood risk is defined where "*each year, this area has a chance of flooding of less than 1 in 1000 (0.1%)*."
- Low surface water flood risk is defined where "*each year, the area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%)".*
- Medium surface water flood risk is defined where "*each year, this area has a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%)."*
- High surface water flood risk is defined where "*each year, this area has a chance of flooding of greater than 1 in 30 (3.3%)*".

1.10 FRAs should describe and assess all flood risks (from rivers, the sea, surface water, sewers, reservoirs and groundwater) to and from the development and demonstrate how they will be managed, including an evaluation of climate change effects.

2 BASELINE ENVIRONMENTAL CONDITIONS

Topography

2.1 The site slopes downwards in a north-easterly direction (refer to Appendix B). The highest level is approximately 27.68 metres Above Ordnance Datum (mAOD) in the southern part of the site, falling to approximately 18.80 mAOD in the north-eastern corner of the site.

Hydrology

2.2 There are no 'main rivers'[1] within a 500 m radius of the site; the closest 'ordinary watercourse'[2] is an unnamed watercourse located along the majority of the northern boundary. However, this shallow ditch does not appear to have connectivity to the wider drainage network.

2.3 An unnamed watercourse, hereafter referred to as Sandwich Brook, is located approximately 50 m to the north-west of the site and flows in a north-easterly direction into Goshall Stream approximately 450 m to the north-east of the site. According to the Flood Estimation Handbook (FEH) web service, the Sandwich Brook has a small catchment of less than 0.5 km^2 at the nearest location to the site.

2.4 Goshall Stream is located approximately 290 m to the east of the site and flows in a northerly direction into the River Stour, a 'main river', approximately 2.6 km to the north-east of the site. The Goshall Stream flows into the River Stour (Kent) Internal Drainage Board (IDB) Administration Area approximately 1.4 km to the north-east of the site and is classified by the EA as a 'main river' approximately 2 km to the north-east of the site. According to the FEH web service, the Goshall Stream has a small catchment of less than 0.5 km^2 at the nearest location to the site.

2.5 There are no other significant watercourses or water bodies within the surrounding area.

Geology and Hydrogeology

2.6 When reviewing the British Geological Survey (BGS) online map viewer, the majority of the site is underlain by the superficial geology of Head deposits comprising clay and silt. A few areas within the site are not underlain by any superficial geology.

2.7 The EA classify the Head deposits as Unproductive Strata; these are defined as *"rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow."*

2.8 The majority of the site is underlain by the bedrock geology of the Thanet Formation comprising sand, silt and clay. The southern part of the site is underlain by the bedrock geology of the Lambeth Group comprising sand.

[1] Main river is defined by the EA as any watercourse that contributes significantly to the hydrology of a catchment.

[2] Ordinary watercourse is defined by the EA as any watercourse including every river, stream, ditch, drain, cut, dyke, sluice, sewer (other than a public sewer) and passage through which water flows and which does not form part of a main river.

2.9 The EA classify the Thanet Formation and Lambeth Group as Secondary A Aquifers; these are 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. These are generally aquifers formerly classified as minor aquifers.”*

2.10 The site is not located within a groundwater Source Protection Zone (SPZ).

3 EXTERNAL FLOOD RISK

Flooding Mechanisms

3.1 The EA's flood map for planning (refer to Figure 3.1) indicates that the entire site is located within Flood Zone 1 (low risk). Land located within Flood Zones 2 and 3 (medium and high risk) is located approximately 490 m to the south-west of the site and is 11.1 m lower in elevation when compared to the site; however, the site does not drain towards this area. The area of flood zone downslope of the site is located approximately 1.5 km to the north-east and is 15.6 m lower in elevation when compared to the site. Therefore, with consideration of the predicted impacts of climate change on the Flood Zone 2 and 3 extents, it is concluded that the site will remain in Flood Zone 1 for its operational lifetime (assumed to be 100 years).

3.2 The EA's surface water flood risk map identifies that the majority of the site has a very low surface water flood risk with areas with up to a medium surface water flood risk (refer to Figure 3.2).

3.3 The Dover District Council Strategic Flood Risk Assessment (SFRA; Herrington, 2019) states that '*pumping stations can result in a bottleneck within the sewer system and as a result, can increase the risk of flooding in the surrounding areas*'. However, there are no records of sewer flooding in the vicinity of the site and a pumped connection for surface water or foul is not included within the development; therefore, the risk of sewer flooding is deemed to be low.

3.4 A review of the SFRA (Herrington, 2019) and EA flood maps, has identified that there are no other significant sources of flooding at the site, i.e. from reservoirs or groundwater.

Historic Flooding

3.5 The SFRA (Herrington, 2019) has been reviewed to identify any specific records of flooding within or adjacent to the site. No records have been identified from this review.

3.6 The EA's historic flood map indicates that there are no historic flood records for the site or surrounding area.

Surface Water Flooding

3.7 The EA's risk of flooding from surface water mapping (refer to Figure 3.2) shows that the majority of the site has a very low surface water flood risk; however, a number of areas throughout the site have a low or medium risk of surface water flooding.

3.8 There is an area of isolated ponding with up to a medium surface water flood risk in the south-western corner of the site. The area of ponding is almost entirely located outside of the site boundary and all of the proposed built development is located outside of the flood extent and, therefore, no mitigation measures are required.

3.9 Two surface water flow pathways with up to a low risk of surface water flooding are located in the northern part of the site which flow towards Sandwich Road. The EA's surface water model does not include drain along the northern boundary and, therefore, this flood risk is likely to be overestimated. This surface water flood risk event is beyond the 1% AEP design event and, therefore, no mitigation is required. However, as a precautionary approach the finished floor levels of the proposed dwellings along the boundary of Sandwich Road could be raised 150 mm above existing ground levels (i.e. plots 40 to 47 on the indicative layout).

Safe Access/Egress

3.10 Access/egress to the site would be via Sandwich Road to the north and New Street to the south. The access/egress routes are located entirely within Flood Zone 1 (low risk), as is the surrounding area.

3.11 It is noted that Sandwich Road and New Street are at risk of surface water flooding; however, it is considered unlikely that this would preclude access/egress as the majority of the low surface water flood depths are less than 300 mm (refer to Figure 3.3). Nevertheless, should access/egress not be possible, then a safe refuge is afforded within the proposed dwellings. Whilst this is not an ideal mitigation measure, it would ensure that occupants of the site would be safe until floodwaters receded to a level that would allow safe external egress.

3.12 On this basis, it is concluded that future occupants of the development would be safe during the design flood event for the operational lifetime of the development.

Land Use Vulnerability

3.13 Table 2 of the PPG sets out a schedule of land uses based on their vulnerability or sensitivity to flooding. According to Annex 3 of the NPPF, residential development is classified as 'more vulnerable' to flooding. Referring to Table 3 of the PPG, all land uses are considered appropriate within Flood Zone 1.

3.14 Additionally, the Ash Parish Council Neighbourhood Development Plan 2018-2037 (Adopted in September 2021) identifies that the site is allocated for residential development (Policy ANP7a).

3.15 Therefore, on the basis of land use vulnerability, the development should be deemed appropriate in planning policy terms in its proposed location.

Other Considerations

<u>Ordinary Watercourse Consent</u>

3.16 The proposed access point along the northern boundary may be subject to an ordinary watercourse consent if it affects the ditch along the northern boundary identified on OS mapping; however, it is not shown on the topographical survey so the impact on the ditch is unclear at this stage. If ordinary watercourse consent is required, it is not considered to be a significant constraint to the development.

4 DRAINAGE ASSESSMENT

Introduction

4.1 This drainage strategy has been prepared in accordance with Defra's *"Non-statutory technical standards for sustainable drainage systems"* (March 2015) to ensure that the proposed development does not increase flood risk to the site or elsewhere and where practicable reduces flood risk over the lifetime of the development.

4.2 Peak rainfall intensity is expected to increase as a result of climate change and, as such, storage calculations have included a 45% increase in rainfall depths in accordance with the current climate change guidance.

Discharge Method

4.3 The feasibility of infiltration-based SuDS will be confirmed via infiltration testing which was not completed at this stage given that the planning application is for outline permission.

4.4 If the results of infiltration testing and site investigation prove favourable, the proposed drainage strategy will utilise infiltration techniques. Infiltration-based SuDS would be sized appropriately to accommodate the 1 in 100 year storm including 45% for climate change and allow a half-drain time of less than 24 hours.

4.5 As infiltration techniques have not been confirmed to be feasible at this stage, an attenuation-based strategy has been provided for the 1 in 100 year storm including a 45% allowance for climate change. As such, it is proposed to discharge into Sandwich Brook to the north-west. A discharge to this watercourse could be achieved via a connection into a surface water sewer along Sandwich Road (via manhole 3454). This is considered to be acceptable as this sewer discharges into Sandwich Brook 10 m downstream.

Existing Runoff Arrangements

4.6 The existing site is brownfield comprising an existing house, redundant offices, outbuildings and an area of hardstanding; no details are available on the existing drainage arrangement, however, given the presence of buildings on the site, the existing runoff rates are significantly greater than greenfield runoff rates.

4.7 The existing brownfield land covers 0.26 ha and the existing runoff rates for this area has been estimated below using the Modified Rational Method; $Q_p = 2.78\ CiA$, where Q_p is peak flow in l/s; C is a dimensionless coefficient; i is the average rainfall intensity during the time of concentration (mm/hr); and A is the contributing area (ha):

- 1 in 1 year – 11.1 l/s
- 1 in 30 years – 36.6 l/s
- 1 in 100 years – 47.5 l/s

4.8 The existing runoff rates from the greenfield elements of the site (1.28 ha) have been estimated using the FEH Statistical Method and are added to the brownfield rates to provide an estimate of the total runoff rates from the existing site:

- 1 in 1 year – 12.98 l/s
- 1 in 30 years – 41.69 l/s
- 1 in 100 years – 54.58 l/s

Proposed Runoff Rates

4.9 Greenfield runoff rates for the site have been estimated using the UK Sustainable Drainage Greenfield Runoff Estimation Tool. The calculation record is included in Appendix C and the results are summarised as follows:

- Qbar – 1.73 l/s/ha
- 1 in 1 year – 1.47 l/s/ha
- 1 in 30 years – 3.98 l/s/ha
- 1 in 100 years – 5.53 l/s/ha

4.10 The proposed development will introduce impermeable areas which have been estimated as 8,360 m^2 (0.84 ha). The equivalent greenfield runoff rates for the proposed impermeable area are summarised as follows:

- Qbar – 1.45 l/s
- 1 in 1 year – 1.23 l/s
- 1 in 30 years – 3.34 l/s
- 1 in 100 years – 4.65 l/s

4.11 It is proposed to limit the rate of discharge for all events up to the 100 year plus 45% to 5.4 l/s. This discharge rate is proposed as this is the lowest rate to which runoff can be restricted without the half drain time significantly exceeding 24 hours. Whilst this is greater than the greenfield equivalent, it will still result in a significant reduction in existing runoff rates, given the existing brownfield nature of the site.

4.12 In comparison to the existing runoff from the brownfield element of the site only, the proposed discharge rate of 5.4 l/s will provide a reduction of 88.6% in the 1 in 100 year event, 85.2% betterment in the 1 in 30 year event and a 51.4% betterment in the 1 in 1 year event.

Storage Estimate

4.13 The impermeable area of the proposed development is increased by 10% to account for urban creep over the lifetime of the development and an impermeable area of 9,196 m^2 (0.92 ha) has therefore been used to estimate the attenuation volume required.

4.14 A storage estimate has been undertaken using Micro Drainage to inform the outline drainage strategy; the results are included in Appendix D. This estimates that an attenuation volume of 972.6 m^3 is required in order to limit the runoff rate to 5.4 l/s for all events up to and including the 1 in 100 year storm plus 45%.

SuDS Selection

4.15 Table 4.1 provides an overview of the feasibility of a range of SuDS techniques which are considered in accordance with the SuDS Hierarchy in order to identify the most appropriate for the proposed development. Further details are provided for the techniques which are considered to be feasible.

Table 4.1: Type of SuDS Components

Technique	Description	Suitability for Proposals	Feasibility
Green Roofs	A planted soil layer is constructed on the roof of a building and water is stored within the soil layer and absorbed by vegetation.	Limited value for runoff attenuation for extreme return periods and is not considered to be commercially viable for this residential development.	**Not Feasible**
Infiltration Systems	These systems collect and store runoff allowing it to infiltrate into the ground.	Infiltration techniques are potentially feasible, however, this would be determined through infiltration testing at a later stage.	**Potentially Feasible**
Filter Strips	Runoff from an impermeable area is allowed to flow across a grassed or heavily vegetated area to promote sedimentation and filtration.	Could be used within open space to provide treatment and would be considered at the detailed design stage.	**Potentially Feasible**
Filter Drains	Runoff is temporarily stored below the surface in a shallow trench filled with clean stone, providing attenuation, conveyance and filtration.	Normally used for the drainage of hardstanding areas. They could be used to collect and treat runoff and would be considered at the detailed design stage.	**Potentially Feasible**
Swales	A vegetated channel is used to convey and treat runoff (via filtration). It can be used as attenuation space with discharge to the ground (via infiltration) or to a watercourse or sewer.	Swales are not considered to be feasible for the site due to the limited area of open space within the proposed development.	**Not Feasible**
Bioretention Systems (Rain Gardens)	A shallow landscaped depression allows runoff to pond temporarily on the surface before filtering through vegetation and underlying soils prior to collection or infiltration.	Could be used within open space to provide treatment.	**Potentially Feasible**
Permeable Pavements	Runoff is allowed to soak through structural paving. Water can be stored in a porous sub-base and either collected or allowed to infiltrate.	Permeable paving could be used beneath the car parking areas and roads.	**Feasible**

Technique	Description	Suitability for Proposals	Feasibility
Attenuation Basins	Landscaped depressions that are normally dry except during and following rainfall, designed to attenuate runoff and, where vegetated, provide treatment.	Attenuation basins are considered to be feasible to provide attenuation storage.	**Feasible**
Ponds and Wetlands	Depressions designed to temporarily store surface water above permanently wet pools that permit settlement of suspended solids and biological removal of pollutants.	Could be used to attenuate runoff as an alternative to a basin and would be considered at the detailed design stage.	**Potentially Feasible**
Geo-cellular Storage	Structures that create a below-ground void space for the temporary storage of surface water before controlled release or use (rainwater harvesting).	Could be used to attenuate runoff under areas of hardstanding such as car parking areas and roads.	**Feasible**

Proposed Drainage Strategy

4.16 Areas of green space have been incorporated into the illustrative layout to allow the inclusion of above ground SuDS. This could include an attenuation basin, bio-retention areas, rain gardens and tree pits which will provide source control features, water quality treatment, encourage evaporation and transpiration. The depth of the basin could be up to 1 m which would be confirmed in the detailed design. Wherever practicable, runoff will first be directed to these features before draining into the geo-cellular storage. As a conservative approach, the storage volume provided by the above ground SuDS has not been included in the storage estimates below.

4.17 It is also proposed to include permeable paving to provide water quality treatment prior to runoff entering the geo-cellular storage.

4.18 Whilst above ground SuDS have been utilised, it is necessary to also include below ground storage to achieve the volume of attenuation needed, as a result of space constraints.

4.19 The attenuation volume of 972.6 m^3 could be provided in the form of geo-cellular storage throughout the site (refer to Figure 4.1). The geo-cellular storage shown has a plan area of 1025 m^2, a depth of 1 m and a void space of 95%. The geo-cellular storage could be overlain with a granular sub-base or permeable paving to provide water quality treatment.

Water Quality Requirement

4.20 One of the guiding principles of SuDS is the appropriate management of water quality and the use of pollution prevention techniques to improve the quality of runoff from developed sites. The SuDS Manual recommends the use of a management train whereby a series of consecutive treatment stages are employed to remove pollutants from runoff.

4.21 The recommended number of treatment stages is dependent on the type of development and sensitivity of the discharge receptor and the mitigation indices of proposed SuDS features. Surface water requiring treatment will come from the roofs, access road, driveways and parking areas. In this instance, mitigation with an index or combined indices of more than 0.5 for Total Suspended Solids (TSS), 0.4 for metals and 0.4 for hydrocarbons is acceptable.

4.22 The basin, bio-retention areas, tree pits and rain gardens, as well as the granular sub-base and permeable/grass paving system overlying the geo-cellular storage will meet the water quality requirements required for the proposed development. The granular material will provide a similar to the level of treatment provided by permeable paving.

Designing for Exceedance Events

4.23 If the proposed drainage system was to become blocked or an event above the design event occur, it is considered likely that some additional storage would be provided in the form of shallow flooding of hard-paved areas. Any water leaving the site would be routed along the road network towards the northern boundary and into Sandwich Brook (refer to Figure 4.2). This would mimic what would occur naturally on the site in its existing condition and would ensure that the proposed dwellings are safe during an exceedance event.

Long Term Maintenance of SuDS

4.24 Where SuDS features serve more than one property, it would be the responsibility of the developer to either maintain the SuDS features themselves or to negotiate with and secure the agreement of a third party to maintain the sustainable drainage system.

4.25 The maintenance requirements of the proposed SuDS features for use in the outline drainage strategy are detailed in the SuDS Manual and would be carried out accordingly (refer to Appendix E).

Foul Drainage

4.26 Southern Water mapping extracted from the Essential Utility Search Report indicates that a 100 mm foul rising main is located approximately 6 m to the north along Sandwich Road and the 150 mm public foul sewer is located approximately 12 m to the north-west of the site (refer to Appendix F).

4.27 Therefore, a connection into the foul sewer along Sandwich Road is considered to be feasible subject to consultation with Southern Water to establish if there is sufficient capacity in the local network. The proposed development will not be occupied until any potential off-site upgrades by Southern Water are completed, which will be secured under the Section 106 of the Water Industry Act.

5 CONCLUSIONS

5.1 The requirements for Flood Risk Assessment are provided in the National Planning Policy Framework and its associated Planning Practice Guidance, together with the Environment Agency's Guidance Notes. This policy and associated guidance have been followed in the preparation of this FRA.

5.2 The EA's flood map for planning indicates that the entire site is located within Flood Zone 1 (low risk). Land located within Flood Zones 2 and 3 (medium and high risk) is located approximately 490 m to the south-west of the site and is 11.1 m lower in elevation when compared to the site; however, the site does not drain towards this area of flood zone. The area of flood zone downslope of the site is located approximately 1.5 km to the north-east and is 15.6 m lower in elevation when compared to the site. Therefore, with consideration of the predicted impacts of climate change on the Flood Zone 2 and 3 extents, it is concluded that the site will remain in Flood Zone 1 for its operational lifetime.

5.3 The EA's surface water flood risk map identifies that the majority of the site has a very low surface water flood risk with areas with up to a medium surface water flood risk. There is an area of isolated ponding with up to a medium surface water flood risk in the south-west corner of the site. The area of ponding is almost entirely located outside of the site boundary and all of the proposed built development is located outside of the flood extent and, therefore, no mitigation measures are required.

5.4 Two surface water flow pathways with up to a low risk of surface water flooding are located in the northern part of the site which flow towards Sandwich Road. The EA's surface water model does not include drain along the northern boundary and, therefore, this flood risk is likely to be overestimated. This surface water flood risk event is beyond the 1% AEP design event and, therefore, no mitigation is required. However, as a precautionary approach the finished floor levels of the proposed dwellings along the boundary of Sandwich Road could be raised 150 mm above existing ground levels (i.e. plots 40 to 47 on the indicative layout).

5.5 The Dover District Council SFRA states that '*pumping stations can result in a bottleneck within the sewer system and as a result, can increase the risk of flooding in the surrounding areas'*. However, there are no records of sewer flooding in the vicinity of the site and a pumped connection for surface water or foul is not included within the site; therefore, the risk of sewer flooding is deemed to be low.

5.6 Access/egress to the site would be via Sandwich Road and New Street. The access/egress routes are located entirely within Flood Zone 1, as is the surrounding area. It is noted that these routes are at risk of surface water flooding; however, it is considered unlikely that this would preclude access/egress as the majority of the low surface water flood depths are less than 300 mm. Nevertheless, should access/egress not be possible, then a safe refuge is afforded within the proposed dwellings. Whilst this is not an ideal mitigation measure, it would ensure that occupants of the site would be safe until floodwaters receded to a level that would allow safe external egress.

5.7 The feasibility of infiltration-based SuDS will be confirmed via infiltration testing which was not completed at this stage of the development given that the planning application is for outline permission.

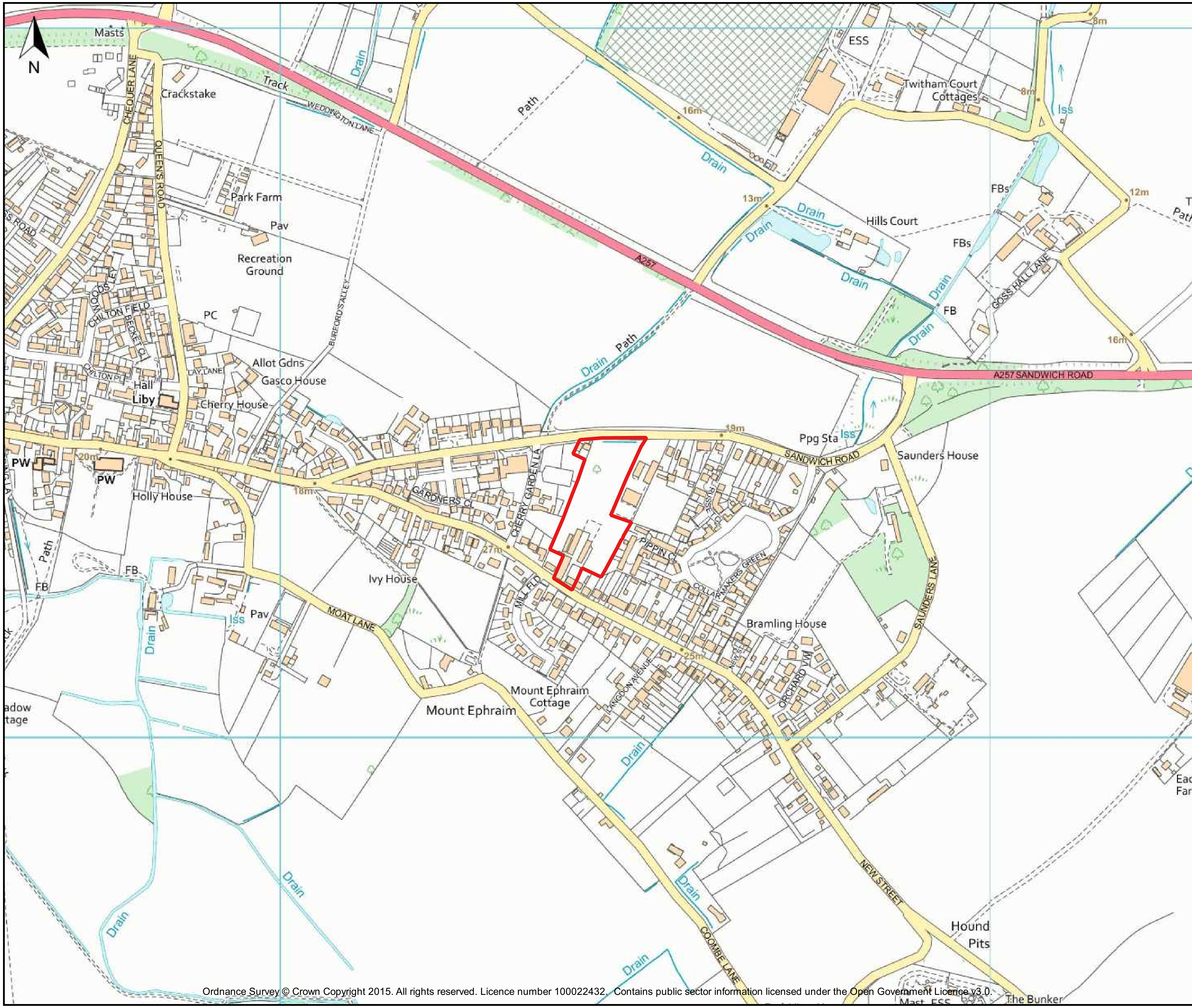
5.8 As infiltration techniques have not been confirmed to be feasible at this stage, an attenuation-based strategy has been provided. As such, it is proposed to discharge into Sandwich Brook via a connection into a surface water sewer along Sandwich Road. This is considered to be acceptable as this sewer discharges into Sandwich Brook 10 m downstream.

5.9 Areas of green space have been incorporated into the illustrative layout to demonstrate the inclusion of above ground SuDS. This will include an attenuation basin, bio-retention areas, rain gardens and tree pits which will provide source control features, water quality treatment, encourage evaporation and transpiration. Wherever practicable, runoff will first be directed to these features before draining into the geo-cellular storage.

5.10 The proposed drainage strategy utilises geo-cellular storage to ensure that surface water runoff rates for the proposed development are limited to the 5.4 l/s for all events up to and including the 1 in 100 year plus 45% CC event.

5.11 This FRA has therefore demonstrated that the proposed development will be safe and that it would not increase flood risk elsewhere. The residential development is classified as ‘more vulnerable’ to flooding. This land use is considered appropriate in relation to the flood risk vulnerability classifications set out in Table 3 of the PPG. The development should therefore be considered acceptable in planning policy terms.

Figures



Key

Application Site

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Figure 1.1:	**Site Location Plan**
Client:	**Classicus Estates Limited**
Project:	**Ash Sandwich**
Project No.:	**C2438**

RMA ENVIRONMENTAL

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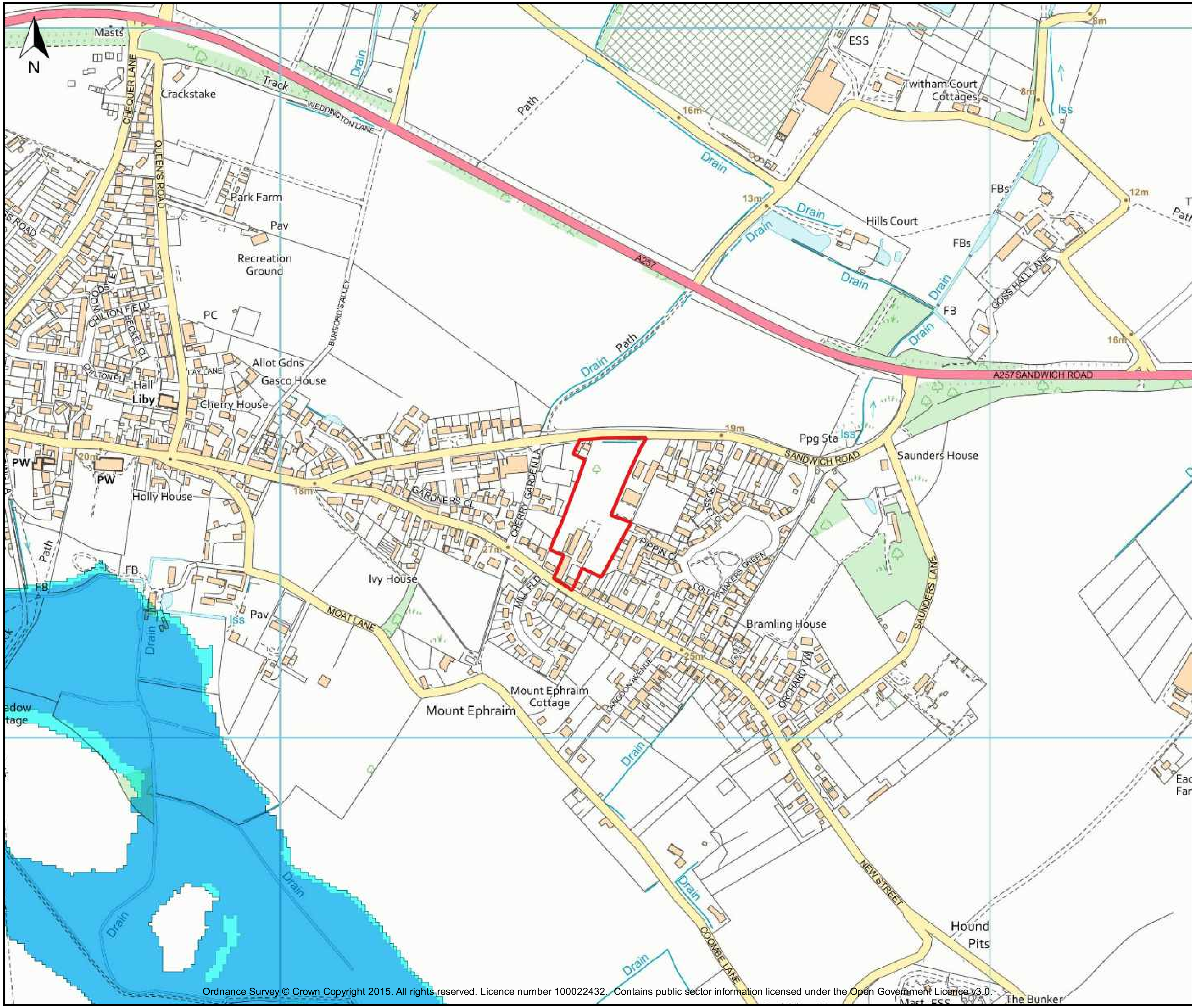

Key

- Application Site
- Flood Zone 2
- Flood Zone 3

Figure 3.1:	**EA's Flood Map for Planning**
Client:	**Classicus Estates Limited**
Project:	**Ash Sandwich**
Project No.:	**C2438**

RMA ENVIRONMENTAL

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Key

- Application Site
- Low Risk
- Medium Risk
- High Risk

Figure 3.2:	**EA's Surface Water Flood Map**
Client:	**Classicus Estates Limited**
Project:	**Ash Sandwich**
Project No.:	**C2438**

RMA ENVIRONMENTAL

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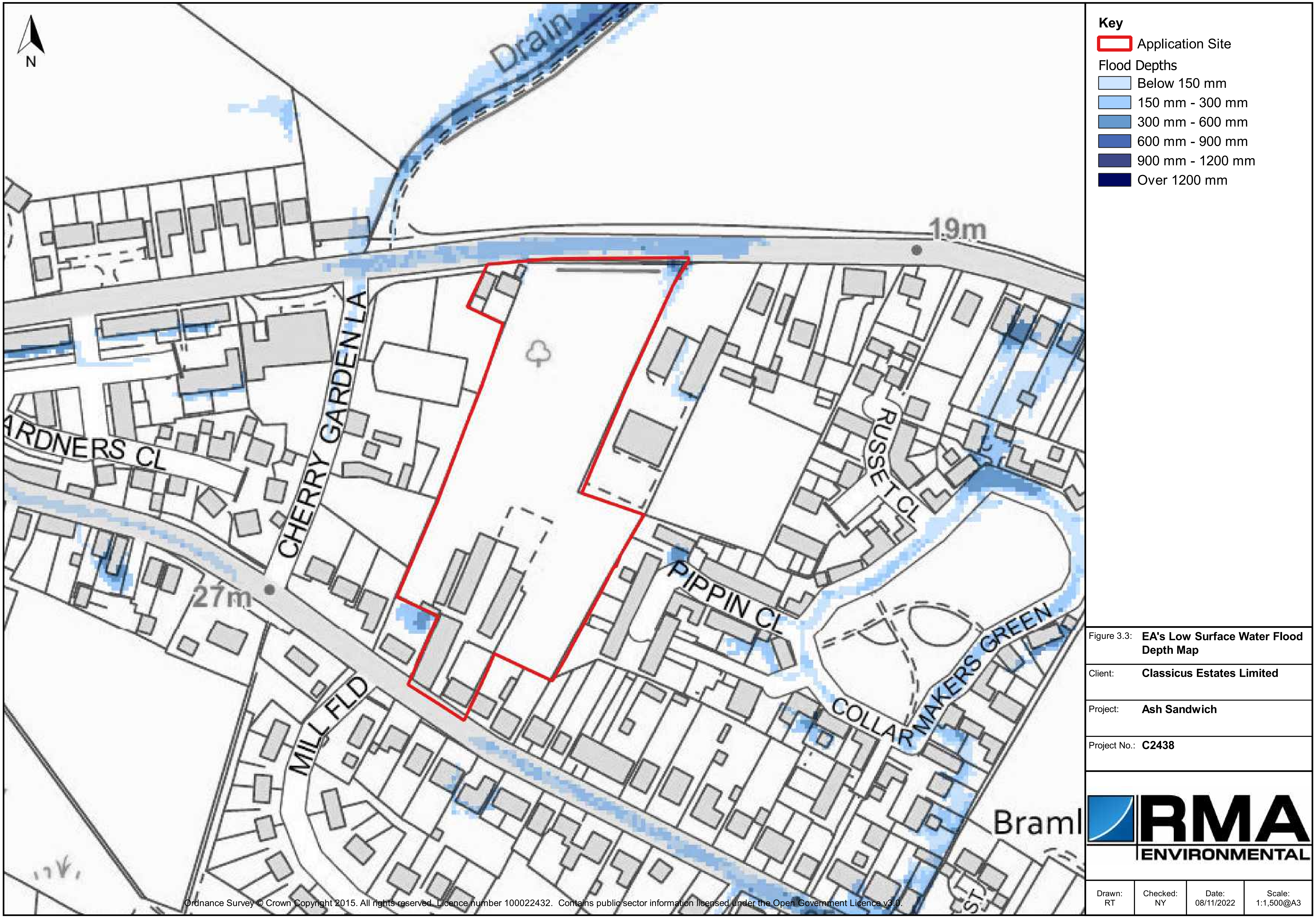

Figure 3.3:	**EA's Low Surface Water Flood Depth Map**
Client:	**Classicus Estates Limited**
Project:	**Ash Sandwich**
Project No.:	**C2438**

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Drawn:	Checked:	Date:	Scale:
RT	NY	08/11/2022	1:1,500@A3

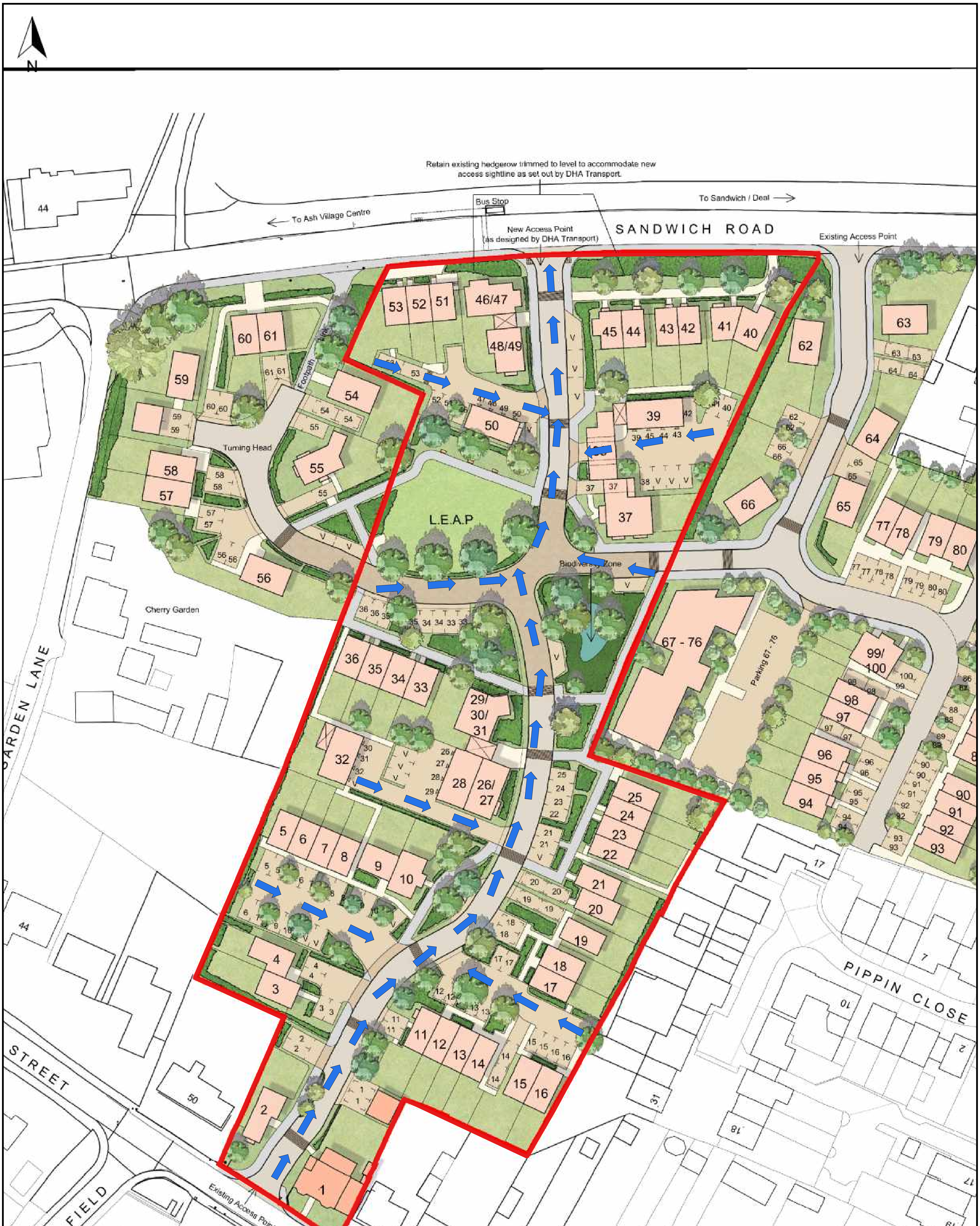
Key

- Application Site
- Geo-cellular Storage
- Basin
- Indicative Discharge
- Bio-retention Area/ Rain Garden/ Tree Pits
- Permeable Paving

Figure 4.1:	**Outline Drainage Plan**
Client:	**Classicus Estates Limited**
Project:	**Ash Sandwich**
Project No.:	**C2432**

RMA ENVIRONMENTAL

Drawn:	Checked:	Date:	Scale:
RT	NY	08/11/2022	1:750@A3



Key

Application Site | Exceedance Route

Figure 4.2:	**Exceedance Plan**
Client:	**Classicus Estates Limited**
Project:	**Ash Sandwich**
Project No.:	**C2432**

RMA ENVIRONMENTAL

Drawn:	Checked:	Date:	Scale:
RT	NY	08/11/2022	1:750@A3

Appendix A:
Proposed Development Layout

N
W E
S

0m 5.0m 15.0m 30.0m
2.5m 10.0m 20.0m
Scale Bar (in metres)

Indicative Schedule of Accommodation

Unit No.	Size	Type
1	-	Existing Dwelling
2	93	3Bed 5Person House
3	93	3Bed 5Person House
4	115	4Bed 7Person House
5	93	3Bed 5Person House
6	93	3Bed 5Person House
7	93	3Bed 5Person House
8	93	3Bed 5Person House
9	79	2Bed 4Person House
10	115	4Bed 7Person House
11	121	4Bed 7Person House (2.5)
12	121	4Bed 7Person House (2.5)
13	121	4Bed 7Person House (2.5)
14	121	4Bed 7Person House (2.5)
15	115	4Bed 7Person House
16	115	4Bed 7Person House
17	93	3Bed 5Person House
18	93	3Bed 5Person House
19	93	3Bed 5Person House
20	93	3Bed 5Person House
21	93	3Bed 5Person House
22	99	3Bed 5Person House (2.5)
23	99	3Bed 5Person House (2.5)
24	99	3Bed 5Person House (2.5)
25	99	3Bed 5Person House (2.5)
26	50	1Bed 2Person Flat G.F. - Affordable
27	70	2Bed 4Person Flat F.F. - Affordable
28	70	2Bed 4Person Flat F.F. - Affordable
29	70	2Bed 4Person Flat G.F. - Affordable
30	70	2Bed 4Person Flat F.F. - Affordable
31	70	2Bed 4Person Flat S.F. - Affordable
32	70	2Bed 4Person Flat (F.O.G.) - Affordable
33	121	4Bed 7Person House (2.5)
34	121	4Bed 7Person House (2.5)
35	121	4Bed 7Person House (2.5)
36	121	4Bed 7Person House (2.5)
37	115	4Bed 7Person House
38	70	2Bed 4Person Flat (F.O.G.)
39	70	2Bed 4Person Flat (F.O.G.)
40	79	2Bed 4Person House
41	79	2Bed 4Person House
42	79	2Bed 4Person House
43	79	2Bed 4Person House
44	79	2Bed 4Person House
45	79	2Bed 4Person House
46	70	2Bed 4Person Flat G.F. - Affordable
47	70	2Bed 4Person Flat F.F. - Affordable
48	70	2Bed 4Person Flat G.F. - Affordable
49	70	2Bed 4Person Flat F.F. - Affordable
50	61	2Bed 3Person Flat (F.O.G.) - Affordable
51	79	2Bed 4Person House - Affordable
52	79	2Bed 4Person House - Affordable
53	79	2Bed 4Person House - Affordable

Total = 4703 sqm gia (50,624 sqft gia)

Summary :
1no. 1Bed Flat
13no. 2Bed Flats
10no. 2Bed Houses
15no. 3Bed Houses
13no. 4Bed Houses

52no. New Homes + Existing Dwelling (Plot1) = 53 Total

Suggested Affordable - 15no. dwellings - Plots 26-32 and 46-53
(1 x 1 bed and 14 x 2 beds)

54 - 61 : Adjacent Site - Illustrative Layout for 8no. Dwellings
62 - 76 : Outline Planning Submission by ON Architecture (20/00284)
77 - 100 : Detailed Planning Submission by ON Architecture (20/00284)

REV.		BY	CH'K'D	DATE
A	Junctions Updated	RT	NDT	25.10.22
-	Original Issue	RT	NDT	20.10.22

Taylor Roberts Limited

Taylor Roberts Ltd.
Suite 3, Franklin House,
10 Best Lane,
Canterbury,
Kent CT1 2JB
Tel:
01227 45 75 45
E-mail:
enquiries@taylorroberts.co.uk
Web:
www.taylorroberts.co.uk

PROJECT: 52 New Street, Ash, Nr. Canterbury, Kent.

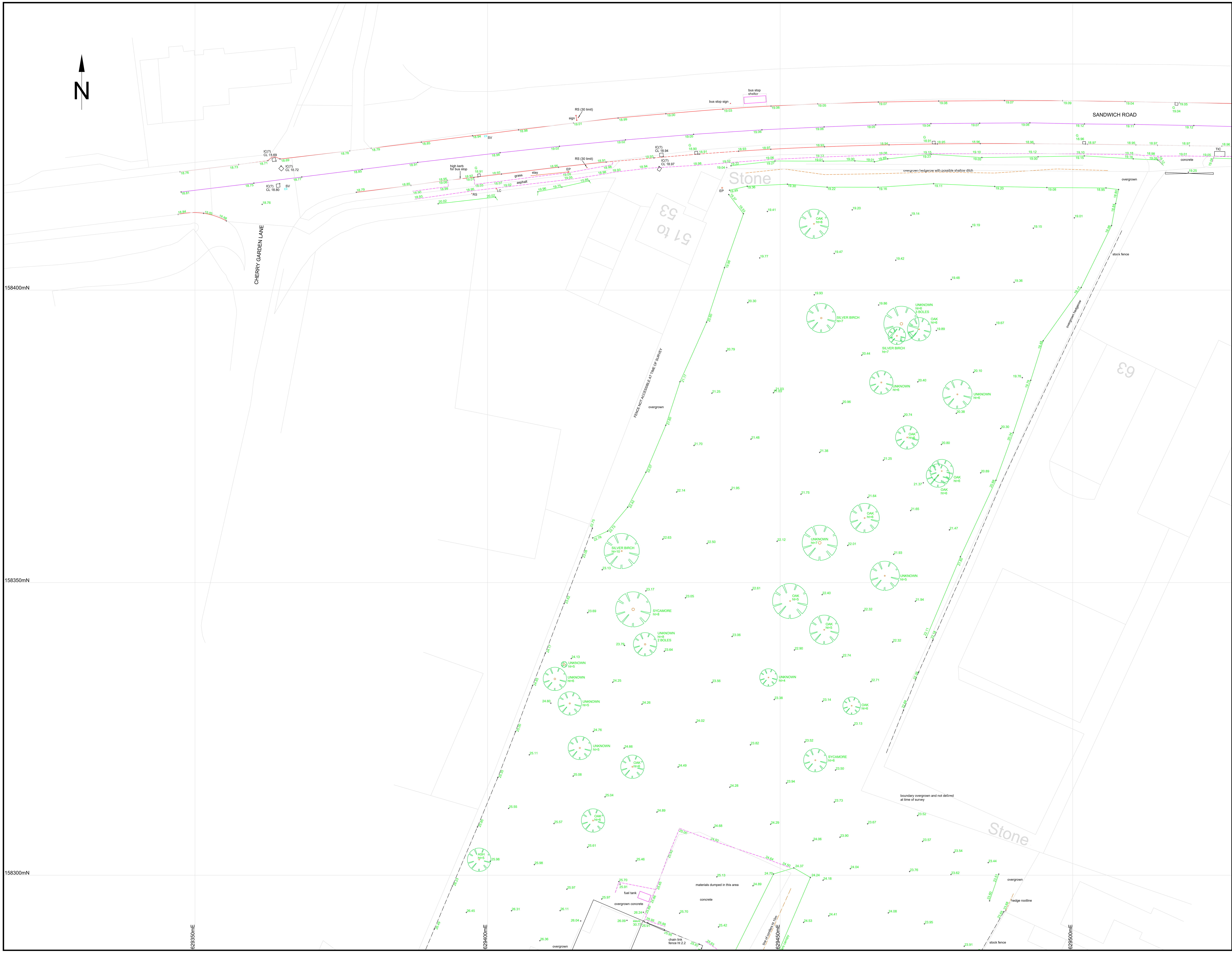
CLIENT: Classicus Estates Ltd.

DRAWING: Proposed Site Plan Colour, Showing All Land Parcels, Option 1.

SCALE(SHEET SIZE):	JOB NO.:	REV.:
1:500 (A1)	22/23/05	A

Proposed Site Plan
1:500

Appendix B: Topographical Survey



LEGEND

AV	AIR VALVE
B	BOLLARD
BL	BASE LEVEL
CATV	CABLE TV INSPECTION COVER
CL	COVER LEVEL
DP	DOWN PIPE
EIC	ELECTRICAL INSPECTION COVER
EP	ELECTRICITY POLE
FH	FIRE HYDRANT
FL	FLOOR LEVEL
G	GULLY
GIC	GAS SERVICE INSPECTION COVER
IC	INSPECTION COVER
IL	INVERT LEVEL
JB	JUNCTION BOX
LC	LIGHTING COLUMN
MH	MANHOLE COVER
	(S) STORM, (F) FOUL, (C) COMBINED
MK	SERVICES MARKER
P	POST
RE	RODDING EYE
RNP	ROAD NAME PLATE
RS	ROAD SIGN
RWP	RAINWATER PIPE
SC(G)	STOP COCK (GAS)
SC(W)	STOP COCK (WATER)
STN	SURVEY CONTROL STATION WITH LEVEL
SU	STEP UP
SV	STOP VALVE
SVP	SOIL VENT PIPE
THL	THRESHOLD LEVEL
TIC	TELECOM INSPECTION COVER
TOW	TOP OF WALL
TP	TELECOM POLE
WIC	WATER SERVICE INSPECTION COVER
WM	WATER METER
WO	WASH OUT

TREE DESCRIPTION

SYCAMORE	=SPECIES
ht=12m	= TREE HEIGHT
2 boles	= EXTRA INFORMATION

NOTES

1. ALL LEVELS RELATED TO ORDNANCE SURVEY DATUM DERIVED FROM GPS OBSERVATIONS.
2. SURVEY GRID IS RELATED TO ORDNANCE SURVEY DATUM DERIVED FROM GPS OBSERVATIONS WITH A SCALE FACTOR OF 1.
3. NO RESPONSIBILITY CAN BE TAKEN FOR THE INCORRECT IDENTIFICATION OF TREE, HEDGE OR VEGETATION SPECIES.
4. TREE BOLE AND CANOPY SPREADS HAVE BEEN SHOWN TO SCALE AND WHERE POSSIBLE THE EXTENT OF TREE CANOPIES HAVE BEEN SURVEYED.

SURVEY STATIONS

Name	Easting	Northing	Height	Remark
1	629428.141	158282.770	26.261	Survey Nail
2	629410.843	158248.871	27.285	Survey Nail
3	629404.443	158234.855	27.551	Survey Nail
4	629401.732	158229.153	27.654	Survey Nail
5	629395.879	158218.267	27.636	Survey Nail
8	629414.230	158231.378	27.483	Survey Nail
6	629408.433	158200.326	27.404	Survey Nail
7	629376.230	158221.205	28.379	Survey Nail

ORDNANCE SURVEY DIGITAL DATA SHOWN IN GREY

ANSurveys Ltd
3 Sleigh Road, Sturry, Kent, CT2 0HR
Tel. 01227 710316
email. alan@ansurveys.co.uk
WWW.ansurveys.co.uk

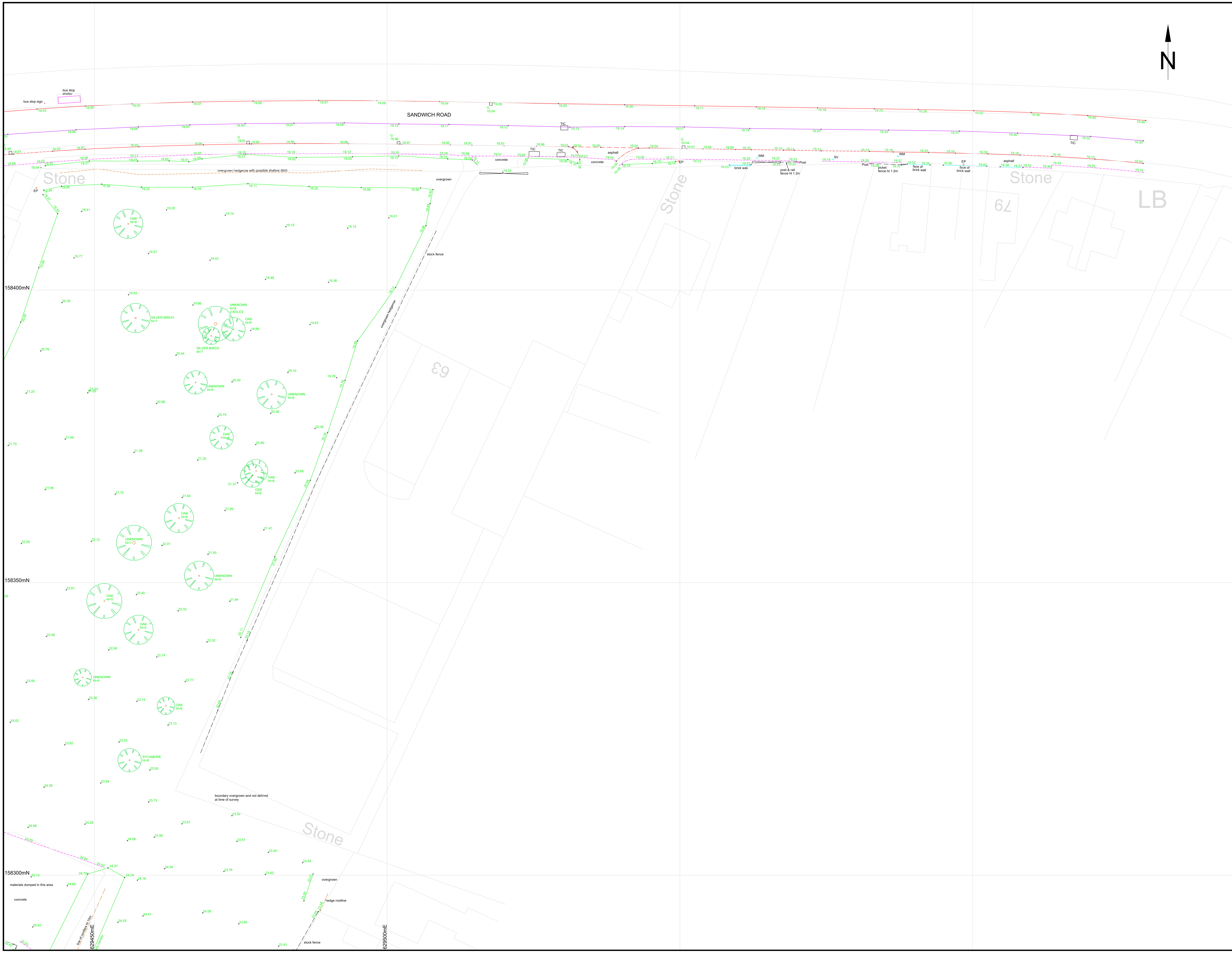
Drawing Title

TOPOGRAPHICAL SURVEY OF LAND AT
52 NEW STREET ASH, KENT, CT3 2BN

Client

CLASSICUS ESTATES

Drawing Number	2
Original Sheet Size and Scale	A0 AT 1/200
Drawn By: A.NICHOLSON	Cad Filename : NEW STREET ASH FINAL.dwg
Date : 6th August 2022	Revision :



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52 NEW STREET ASH, KENT, CT3 2BN

Client

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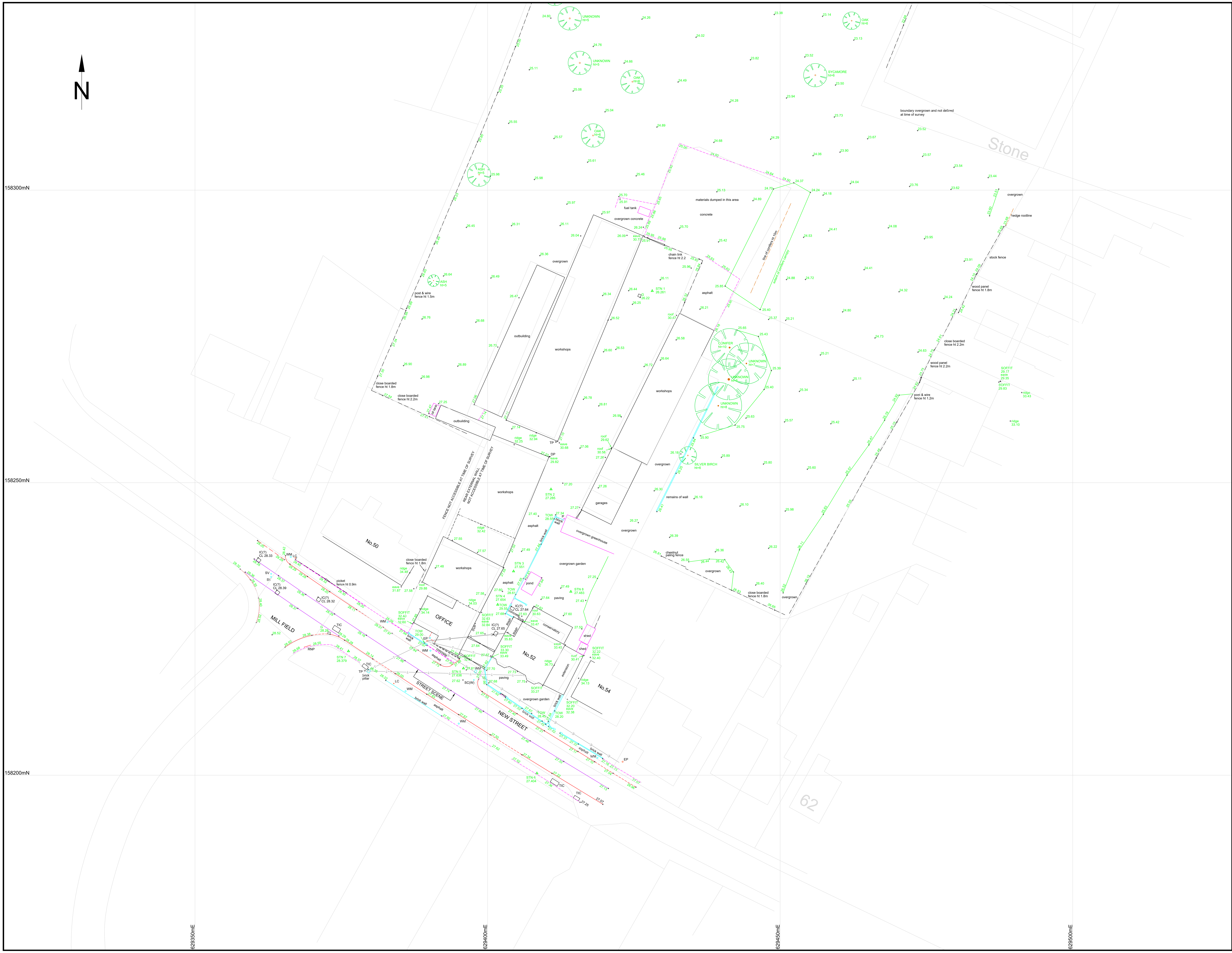

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Drawn By: A.NICHOLSON	Cad Filename : NEW STREET ASH FINAL.dwg
Date : 6th August 2022	Revision :

Appendix C: Greenfield Runoff Rates

Print Close Report

HR Wallingford
Working with water

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Rosie Tutton
Site name:	Ash
Site location:	Sandwich

Site Details

Latitude:	51.27761° N
Longitude:	1.28828° E
Reference:	3623128991
Date:	Sep 19 2022 19:27

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Runoff estimation approach FEH Statistical

Site characteristics

Total site area (ha): 1

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Specify BFI manually
HOST class:	N/A
BFI / BFIHOST:	0.615
Q_{MED} (l/s):	
Q_{BAR} / Q_{MED} factor:	1.14

Hydrological characteristics

	Default	Edited
SAAR (mm):	638	638
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):		1.73
1 in 1 year (l/s):		1.47
1 in 30 years (l/s):		3.98
1 in 100 year (l/s):		5.53
1 in 200 years (l/s):		6.48

Appendix D:
Micro Drainage Estimates

Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 1545 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	18.560	0.260	0.0	5.4	5.4	253.1	O K
30 min Summer	18.640	0.340	0.0	5.4	5.4	330.9	O K
60 min Summer	18.719	0.419	0.0	5.4	5.4	408.0	O K
120 min Summer	18.798	0.498	0.0	5.4	5.4	484.9	O K
180 min Summer	18.852	0.552	0.0	5.4	5.4	537.2	O K
240 min Summer	18.895	0.595	0.0	5.4	5.4	579.2	O K
360 min Summer	18.967	0.667	0.0	5.4	5.4	649.7	O K
480 min Summer	19.024	0.724	0.0	5.4	5.4	705.3	Flood Risk
600 min Summer	19.068	0.768	0.0	5.4	5.4	747.5	Flood Risk
720 min Summer	19.101	0.801	0.0	5.4	5.4	779.7	Flood Risk
960 min Summer	19.142	0.842	0.0	5.4	5.4	819.6	Flood Risk
1440 min Summer	19.165	0.865	0.0	5.4	5.4	842.0	Flood Risk
2160 min Summer	19.150	0.850	0.0	5.4	5.4	827.2	Flood Risk
2880 min Summer	19.115	0.815	0.0	5.4	5.4	793.8	Flood Risk
4320 min Summer	19.030	0.730	0.0	5.4	5.4	711.2	Flood Risk
5760 min Summer	18.940	0.640	0.0	5.4	5.4	623.3	O K
7200 min Summer	18.846	0.546	0.0	5.4	5.4	531.7	O K
8640 min Summer	18.769	0.469	0.0	5.4	5.4	456.3	O K
10080 min Summer	18.702	0.402	0.0	5.4	5.4	391.5	O K
15 min Winter	18.591	0.291	0.0	5.4	5.4	283.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	148.762	0.0	231.4	19
30 min Summer	97.866	0.0	304.9	34
60 min Summer	61.068	0.0	407.7	64
120 min Summer	37.081	0.0	495.5	124
180 min Summer	27.897	0.0	558.7	182
240 min Summer	22.925	0.0	610.9	242
360 min Summer	17.603	0.0	697.8	362
480 min Summer	14.712	0.0	765.0	482
600 min Summer	12.806	0.0	806.3	602
720 min Summer	11.424	0.0	814.6	722
960 min Summer	9.479	0.0	798.7	960
1440 min Summer	7.162	0.0	763.2	1312
2160 min Summer	5.283	0.0	1293.3	1668
2880 min Summer	4.205	0.0	1364.7	2072
4320 min Summer	3.002	0.0	1394.6	2896
5760 min Summer	2.350	0.0	1551.6	3744
7200 min Summer	1.938	0.0	1599.3	4464
8640 min Summer	1.656	0.0	1637.3	5184
10080 min Summer	1.449	0.0	1666.8	5856
15 min Winter	148.762	0.0	259.8	19

Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	18.681	0.381	0.0	5.4	5.4	371.2	O K
60 min Winter	18.770	0.470	0.0	5.4	5.4	458.1	O K
120 min Winter	18.861	0.561	0.0	5.4	5.4	546.0	O K
180 min Winter	18.923	0.623	0.0	5.4	5.4	606.5	O K
240 min Winter	18.973	0.673	0.0	5.4	5.4	655.5	O K
360 min Winter	19.055	0.755	0.0	5.4	5.4	735.1	Flood Risk
480 min Winter	19.120	0.820	0.0	5.4	5.4	798.6	Flood Risk
600 min Winter	19.171	0.871	0.0	5.4	5.4	848.3	Flood Risk
720 min Winter	19.211	0.911	0.0	5.4	5.4	887.1	Flood Risk
960 min Winter	19.263	0.963	0.0	5.4	5.4	937.7	Flood Risk
1440 min Winter	19.299	0.999	0.0	5.4	5.4	972.6	Flood Risk
2160 min Winter	19.275	0.975	0.0	5.4	5.4	949.3	Flood Risk
2880 min Winter	19.232	0.932	0.0	5.4	5.4	907.3	Flood Risk
4320 min Winter	19.117	0.817	0.0	5.4	5.4	795.2	Flood Risk
5760 min Winter	18.994	0.694	0.0	5.4	5.4	676.0	O K
7200 min Winter	18.851	0.551	0.0	5.4	5.4	536.9	O K
8640 min Winter	18.736	0.436	0.0	5.4	5.4	424.4	O K
10080 min Winter	18.643	0.343	0.0	5.4	5.4	333.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	97.866	0.0	340.0	33
60 min Winter	61.068	0.0	457.1	62
120 min Winter	37.081	0.0	554.7	122
180 min Winter	27.897	0.0	624.3	180
240 min Winter	22.925	0.0	680.7	240
360 min Winter	17.603	0.0	770.4	356
480 min Winter	14.712	0.0	823.0	474
600 min Winter	12.806	0.0	827.5	590
720 min Winter	11.424	0.0	820.4	704
960 min Winter	9.479	0.0	805.8	932
1440 min Winter	7.162	0.0	784.4	1370
2160 min Winter	5.283	0.0	1443.2	1748
2880 min Winter	4.205	0.0	1513.3	2192
4320 min Winter	3.002	0.0	1453.6	3116
5760 min Winter	2.350	0.0	1737.9	4040
7200 min Winter	1.938	0.0	1791.6	4824
8640 min Winter	1.656	0.0	1834.9	5528
10080 min Winter	1.449	0.0	1869.1	6152

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 629442 158341 TR 29442 58341
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time Area Diagram

Total Area (ha) 0.920

Time From:	(mins) To:	Area (ha)
0	4	0.920

Model Details

Storage is Online Cover Level (m) 19.300

Cellular Storage Structure

Invert Level (m)	18.300	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	1025.0	0.0	1.000	1025.0	0.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0109-5400-1000-5400
Design Head (m)	1.000
Design Flow (l/s)	5.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	109
Invert Level (m)	18.300
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	5.4
Flush-Flo™	0.298	5.4
Kick-Flo®	0.643	4.4
Mean Flow over Head Range	-	4.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.8	1.200	5.9	3.000	9.0	7.000	13.5
0.200	5.2	1.400	6.3	3.500	9.7	7.500	13.9
0.300	5.4	1.600	6.7	4.000	10.3	8.000	14.4
0.400	5.3	1.800	7.1	4.500	10.9	8.500	14.8
0.500	5.1	2.000	7.5	5.000	11.5	9.000	15.2
0.600	4.7	2.200	7.8	5.500	12.0	9.500	15.6
0.800	4.9	2.400	8.1	6.000	12.5		
1.000	5.4	2.600	8.4	6.500	13.0		

Appendix E:
SuDS Maintenance Schedule

Table E1: Detention Basin/Balancing Pond Operation and Maintenance Requirements

Schedule	Required Action	Frequency
Regular maintenance	Litter, debris and trash removal.	Monthly.
	Grass cutting – for landscaped areas, spillways and access routes.	Monthly (during growing season), or as required.
	Grass cutting – meadow grass in and around basin.	Half yearly (spring before nesting season and Autumn).
	Manage other vegetation and remove nuisance plants.	Monthly (at start, then as required).
	Tidy all dead growth before start of growing season.	Annually.
	Remove sediment from inlets, outlets and forebay.	Annually (or as required).
	Manage wetland plants in outlet pool – where provided.	Annually.
Occasional maintenance	Re-seed areas of poor vegetation growth.	Annually, or as required.
	Prune and trim trees and remove cuttings.	2 years, or as required.
	Remove sediment from pre-treatment system when 50% full.	As required.
	Remove sediment from micropools if volume reduced by >25%.	3 – 10 years, or as required.
Remedial actions	Repair of erosion or other damage by re-seeding or re-turfing.	As required.
	Realignment of rip-rap.	As required.
	Repair/rehabilitation of inlets, outlets and overflows.	As required.
	Re-level uneven surfaces and reinstate design levels.	As required.
Monitoring	Inspect inlets, outlets and overflows for blockages and clear if required.	Monthly.
	Inspect banksides, structures, pipework etc for evidence of physical damage.	Monthly.
	Inspect inlets and and pre-treatment systems for silt accumulation. Establish appropriate silt removal frequencies.	Half yearly.
	Check penstocks and other mechanical devices.	Half yearly.

Table E2: Geocellular Storage Operation and Maintenance Requirements

Schedule	Required Action	Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance).	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/or internal forebays.	Annually or as required
Remedial Actions	Repair/rehabilitate inlets, outlets, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Table E3: Permeable Paving Operation and Maintenance Requirements

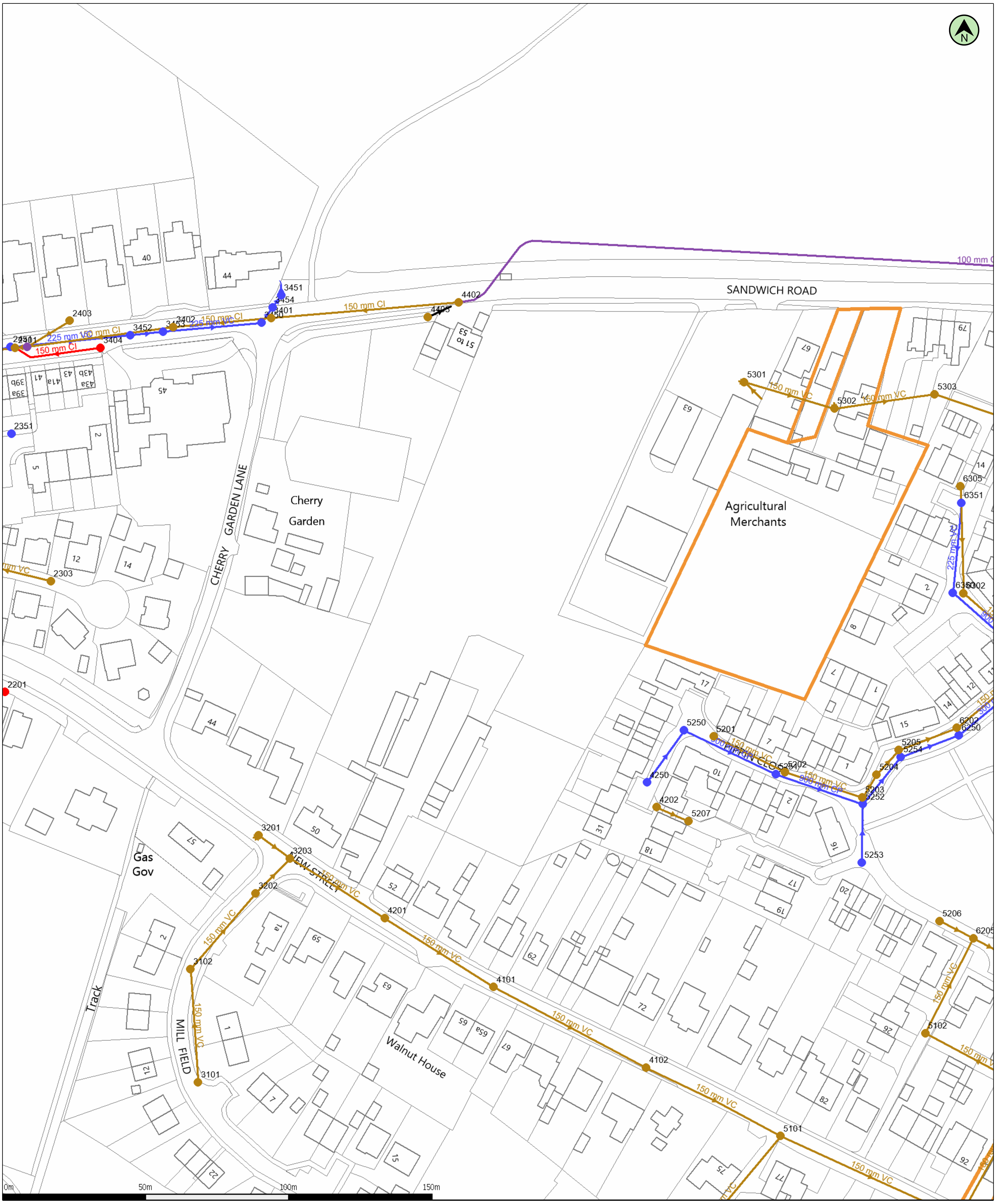
Schedule	Required Action	Frequency
Regular maintenance	Brushing and vacuuming.	Three times per year or as required based on observations or manufacturers' recommendations.
Occasional maintenance	Stabilise and mow contributing and adjacent areas.	As required.
	Removal of weed.	As required.
Remedial actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving.	As required.
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users.	As required.
	Rehabilitation of surface and upper sub-structure	As required (if infiltration performance is reduced as a result of significant clogging).
Monitoring	Initial inspection	Monthly for three months after installation.

Schedule	Required Action	Frequency
	Inspect for evidence of poor operation and/or weed growth. If required take remedial action.	3-Monthly, 48 hours after large storms.
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually.
	Monitor inspection chambers	Annually.

Table E4: Bioretention (Rain Garden) Operation and Maintenance Requirements

Schedule	Required Action	Frequency
Regular inspections	Check operation of underdrains by inspection of flows after rain.	Annually
	Inspect infiltration surface for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary.	Quarterly
	Assess plants for disease infection, poor growth, invasive species etc. and replace as necessary.	Quarterly
	Inspect inlets and outlets for blockage.	Quarterly
Regular maintenance	Remove litter and surface debris and weeds.	Quarterly (or more frequently for tidiness or aesthetic reasons)
	Replace any plants, to maintain plant density.	As required
	Remove sediment, litter and debris build-up from around inlets or from forebays.	Quarterly to biannually
Occasional maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required.	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch.	As required
Remedial actions	Remove and replace filter medium and vegetation above.	As required but likely to be > 20 years

Appendix F:
Southern Water Map



Data updated: 21/07/22

Scale: 1:1250

Map Centre: 629443,158319

Date: 17/08/22

Our Ref: 928590 - 2

Wastewater Plan A3

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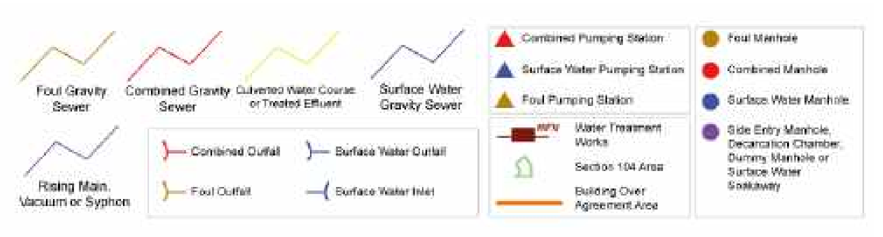

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WATER for LIFE

from Southern Water

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WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

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