
LAND AT NORTH STEVENAGE
ROAD, HITCHIN, HERTS SG4 7JX

Flood Risk Assessment and Drainage Strategy

34653/CS

November 2025



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29.10.2025	0.1	Final
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Disclaimer

It should be noted that any discrepancies in calculations are a result of rounding and therefore the individual figures may not directly add up to the total.

The findings, recommendations and conclusions of this report are based on information obtained from a variety of external sources which are understood to be reputable. DHA Environment cannot guarantee the reliability of any data from third parties and no liability can be accepted for any erroneous information or the conclusions drawn from it.

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1 EXECUTIVE SUMMARY

1.1 OVERVIEW

- 1.1.1 The detailed planning proposal comprises of the construction of 50 dwellings on a greenfield site on Land North of Stevenage Road, Hitchin, Herts SG4 7JX.
- 1.1.2 The site-specific flood risk assessment determined that the area of the site to be developed spans flood Zones 1,2 and 3; low to high risk of flooding from rivers however, following development, all built form will be located entirely within Flood Zone 1 so the residual risk will be low.
- 1.1.3 Site is not at risk from any other source of flooding.
- 1.1.4 NPPF Annex 3: "Flood Risk Vulnerability Classification", states that sites used for residential use can be classified as "more vulnerable".
- 1.1.5 Given all the development will be located withing Flood Zone 1, the site is considered to have passed the Sequential Test. More vulnerable development is appropriate in Flood Zones 1, 2 and 3 and an Exception Test is not required.
- 1.1.6 The online British Geological Survey maps indicate that the site is underlain by superficial deposits comprising of sand and gravel over bedrock comprising of the Holywell Nodular Chalk Formation and New Pit Chalk Formation.
- 1.1.7 Site specific testing showed that whilst shallow infiltration could be an option when groundwater levels are low, there is concern that these features would not adequately function, either when groundwater levels are high, or when the Ash Brook is in flood conditions. It is therefore not considered that the site will be suitable for the use of infiltration-based SuDS.
- 1.1.8 A Sustainable urban Drainage System (SuDS) has been provided as part of the surface water drainage layout to deal with the surface water generated from the development to ensure that flood risk is not increased elsewhere. Roof areas will drain direct to adjacent areas of private hardstanding constructed as an unlined porous pavement. These will discharge to a network of gravity surface water sewers into an above ground attenuation basin with a controlled discharge of 6.8/s into the Ash Brook located to the East of the site.
- 1.1.9 The foul drainage for the development has been shown draining to a proposed foul water pumping station with a connection to the existing foul water drainage network where available capacity can be provided.

2 INTRODUCTION

2.1 GENERAL

- 2.1.1 This Flood Risk Assessment (FRA) has been prepared by DHA on behalf of Bugler Homes Limited in support of a detailed planning application, for the erection of 50 dwellings on Land North of Stevenage Road, Hitchin, Herts SG4 7JX.

2.2 SCOPE AND OBJECTIVES

- 2.2.1 The site-specific flood risk assessment determined that the area of the site to be developed spans flood Zones 1,2 and 3; low to high risk of flooding from rivers. The site is not at risk from any other source of flooding.
- 2.2.2 This FRA has been carried out in accordance with the National Planning Policy Framework (NPPF). The NPPF requires an FRA to be prepared for all developments located in Flood Zones 2 and 3 and for sites located in Flood Zone 1 with a site area greater than one hectare.
- 2.2.3 The proposals are classed as major development and as such this report has been prepared to outline the surface water drainage for the site to support the detailed planning application.
- 2.2.4 This report provides the following information.
- (a) An assessment of the flood risk to the site based upon flood data and the flood maps provided by the Environment Agency and Strategic Flood Risk Assessment.
 - (b) An assessment of the impact of the proposed development in terms of surface water runoff.
 - (c) Proposals for measures to mitigate the generation of surface water runoff from the proposed development in the form of a surface water drainage strategy incorporating SuDS.
 - (d) Details of the disposal of foul water from the development; and
 - (e) Proposals to mitigate any residual flood risks to the development.

3 EXISTING CONDITIONS

3.1 SITE LOCATION

- 3.1.1 The site is located on Land North of Stevenage Road, Hitchin, Herts SG4 7JX and is centred on approximate grid reference 520127,227942. The site occupies a total area of 3.78 hectares. At present, the site comprises entirely of fields.

3.2 EXISTING SITE

- 3.2.1 A topographical survey of the site is shown on drawing 34653-TS-01 contained within **Appendix A**.
- 3.2.2 The site falls from a high point of 75.5m AOD on the western boundary to a low point of between 65.3m AOD and 64.3m AOD on the eastern boundary adjacent the Ash Brook. The site has the following boundary conditions:
- North - Fields.
 - East - Watercourse (Ash Brook).
 - South - Access to Kingshott School with Stevenage Road beyond.
 - West - Kingshott School.

3.3 EXISTING DRAINAGE REGIME AND SURFACE WATER RUN-OFF

- 3.3.1 There is no positive surface water outfall from the site, so any rainfall will infiltrate to ground with any residual surface water flowing overland from the southwest to northeast into the Ash Brook that runs from South to North on the eastern boundary.
- 3.3.2 Reference has been made to paragraph 3.19 of the National Standards for Sustainable Drainage Systems (SuDS) dated July 2025 which sets out the maximum allowable discharge rates from the site when runoff volumes are greater than the existing.
- 3.3.3 The guidance states that the peak allowable discharge rate from the development for the 1 in 100-year rainfall event shall be limited to the 1 in 2-year greenfield runoff rate or 3l/s/ha, whichever is the greater. The 1 in 2-year greenfield runoff rate can be considered equivalent to the calculated QBAR (mean annual flood) for the site.
- 3.3.4 The entire development area that could potentially drain to the proposed surface water drainage system in an extreme rainfall event including both permeable and impermeable surfaces has been used for the calculation of the greenfield rate.
- 3.3.5 Based on a development area 2.27 hectares and a greenfield rate of 3l/s/hectares, the peak greenfield runoff rate can be calculated as 6.8/s.

- 3.3.6 The existing green field (pre-development) peak discharge rates have been calculated by using the Flood Studies Report ICP (SuDS) method based on the site area contributing to the proposed drainage of 2.27 hectares. The calculations can be seen in **Appendix B** and have been summarised in table 3.1 below:

Catchment Reference	Area	Qbar (l/s)	1 in 1 year	1 in 30 years	1 in 100 years
Catchment A	2.27	4.4	3.7	9.9	13.9

TABLE 3.1 – PPG GUIDANCE SUMMARY OF PRE-DEVELOPMENT GREENFIELD RUNOFF RATE

- 3.3.7 Based on the above, the greater greenfield rate of 6.8l/s will be used in the design of the surface water drainage system.

3.4 EXISTING PUBLIC SEWERS

- 3.4.1 Reference has been made to Anglian Water asset plans found at **Appendix C** which indicate the location of any public sewers in the area. These records do not indicate any private drainage that may be present.
- 3.4.2 In October 2011 the ownership of any private sewer serving more than one property was automatically transferred to the Water Authority although many of these sewers are yet to be recorded on the asset plans.

Foul Water Sewers

- 3.4.3 Anglian Water asset plans show there to be the following foul water sewers in the site vicinity.
- Foul Water Sewer draining from the northeast to the southwest located approximately 700m to the southeast of the site.
 - Foul water sewer draining Kingshott School which drain to the combined sewer described below.

Surface Water Sewers

- 3.4.4 Anglian Water asset plans show there to be no surface water sewer either within the site or general vicinity. The nearest surface water sewer is 225mm in diameter draining from the southwest to the northeast which drains the housing development to the North which outfalls to a watercourse to the North of the site.

Combined Water Sewers

- 3.4.5 Anglian Water asset plans show there to be no combined water sewers within the site or general vicinity. The nearest combined sewer 225mm is diameter draining from the southwest to the northeast which drains the housing development to the North.

Geology and Hydrogeology

- 3.4.6 The online British Geological Survey maps indicate that the site is underlain by superficial deposits comprising of sand and gravel over bedrock comprising of the Holywell Nodular Chalk Formation and New Pit Chalk Formation.
- 3.4.7 Site specific infiltration testing was carried out by Avrion in November 2025 a copy which is contained within **Appendix D**. Testing was carried in three locations at depths of between 0.6 and 1.4m below ground. Geology was found to comprise of a varying layer of silt and sand. Infiltration rates of between 9.5×10^{-5} m/s (0.34m/hr) to 2.2×10^{-6} m/s (0.007m/hr) were obtained in these tests.
- 3.4.8 Based on the infiltration rates obtained in the testing, shallow infiltration could be an option when groundwater levels are low, however there is concern that these features would not adequately function either when groundwater levels are high, or when the Ash Brook is in flood conditions.
- 3.4.9 There is also the risk that a minimum unsaturated zone of 1m could not be provided between the base of the SuDS feature and the maximum groundwater level. Groundwater monitoring is to be carried out between November and March
- 3.4.10 Based on this geology it is not considered that the site will be suitable for the use of infiltration-based SuDS.
- 3.4.11 The site is located outside any Source Protection Zone.

4 SITE SPECIFIC FLOOD RISK ASSESSMENT

4.1 PROPOSED DEVELOPMENT

- 4.1.1 The proposals comprise of the construction of 50 dwellings on a greenfield site on Land North of Stevenage Road, Hitchin, Herts SG4 7JX. A proposed site layout is contained in **Appendix E**.

4.2 FLOOD RISK ZONES

- 4.2.1 The National Planning Policy Framework provides guidance on assessing flood risk and seeks to guide development away from areas at risk of flooding from all sources. Planning Practice Guidance defines several Flood Zones based on the probability of flooding and provides guidance on the most appropriate form of development within each zone. The flood risk zones can be summarised in table 4.1 as follows:

Zone	Annual probability in any year	
	River Flooding	Sea Flooding
Zone 1 : Low probability	Less than 1:1000 (<0.1%)	Less than 1:1000 (<0.1%)
Zone 2: Medium probability	Between 1:1000 and 1 in 100 (0.1% -1%)	Between 1:1000 and 1 in 200 (0.1% - 0.5%)
Zone 3a : High probability	Greater than 1:100 (>1%)	Greater than 1:200 (>0.5%)
Zone 3b: Functional floodplain	Greater than 1 in 20 (>5%)	N/A

TABLE 4.1 – PPG GUIDANCE ON FLOOD ZONES

- 4.2.2 Reference has been made to the Environment Agency flood risk maps, a copy of which is contained within **Appendix F**. This shows the area of the site to be developed to span flood Zones 1,2 and 3; low to high risk of flooding from rivers. The Environment Agency have confirmed that they do not have detailed flood level information for the site.
- 4.2.3 The Environment Agency flood mapping has been overlaid on the proposed site layout and is shown on drawing 34653-TS-02 contained within **Appendix F**. This shows that following some minor changes in levels in the southeast corner of the site that all development will be located entirely within Flood Zone 1; low risk of flooding from rivers.

4.3 OTHER SOURCES OF FLOODING

- 4.3.1 Reference has been made to the Environment Agency flood risk maps which provide references on the risk of flooding from all sources including fluvial, surface water, groundwater, and artificial sources.

Surface water flooding

- 4.3.2 The Environment Agency surface water flooding maps shows the site to be at very low risk from surface water flooding.

Groundwater

- 4.3.3 Groundwater flooding occurs as excess water emerges at the ground surface. The Environment Agency online mapping indicates that flooding from groundwater is unlikely in the area.

Flooding from artificial sources

- 4.3.4 Flooding from reservoirs is extremely unlikely. An area is considered at risk if peoples' lives could be threatened in the event of a dam or reservoir failure. Reference has been made to the Environment Agency online mapping which indicate that flooding from reservoirs is considered unlikely.

4.4 VULNERABILITY CLASSIFICATION

- 4.4.1 NPPF Annex 3: "Flood Risk Vulnerability Classification", states that sites used for residential use can be classified as "more vulnerable".

4.5 SEQUENTIAL TEST

- 4.5.1 The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk).
- 4.5.2 All though the southeast corner of the site is currently shown to be in Flood Zone 2, following development which will include some local land raising, all built development will be entirely within Flood Zone 1.
- 4.5.3 Based on the above, it is considered that the Sequential Test has been passed.
- 4.5.4 Residential development is appropriate in Flood Zones 1 and 2 and an Exception Test is not required.

5 MANAGEMENT OF SURFACE AND FOUL WATER ON THE DEVELOPMENT

5.1 PROPOSED DEVELOPMENT

- 5.1.1 The proposals comprise of the construction of 50 dwellings on a greenfield site on Land North of Stevenage Road, Hitchin, Herts SG4 7JX.

5.2 AIMS

- 5.2.1 Sustainable urban Drainage Systems (SuDS) techniques will be used to deal with the surface water generated by the development. This will replicate the existing drainage regime by dealing with the surface water at source, to prevent increasing the risk of downstream flooding.

5.3 PROPOSED SURFACE WATER DRAINAGE STRATEGY

- 5.3.1 The proposed drainage scheme is shown on drawing 34653-D-01 contained in **Appendix G**.
- 5.3.2 Roof areas will drain direct to adjacent areas of private hardstanding constructed as an unlined porous pavement. These will discharge to a network of gravity surface water sewers into an above ground unlined detention basin with a controlled discharge of 6.8/s into the Ash Brook located to the East of the site.
- 5.3.3 The surface water drainage strategy for the site has been based on the seven-core standards and 11 underpinning principles set out in the National standards for Sustainable Drainage Systems (SuDS) dated July 2025.
- 5.3.4 Compliance to the seven standards can be summarised as follows.

STANDARD 1 : RUNOFF DESTINATIONS

- 5.3.5 This standard states, that runoff from the development should be discharged to the following final destinations, to the maximum extent practicable, in accordance with the following hierarchy:

Priority 1: collected for non-potable use.

Priority 2: infiltrated to ground.

Priority 3: discharged to an above ground surface water body.

Priority 4: discharged to a surface water sewer, or another piped surface water drainage system.

Priority 5: discharged to a combined sewer.

Priority 1

- 5.3.6 Water butts will be provided to store rainfall to be used for private irrigation. This has not been considered as part of the surface water calculations.

Priority 2

- 5.3.7 Site specific infiltration testing showed that whilst based on the infiltration rates that shallow infiltration could be an option when groundwater levels are low, there is concern however that these features would not adequately function, either when groundwater levels are high, or when the Ash Brook is in flood conditions. There is also the risk that a minimum unsaturated zone of 1m could not be provided between the base of the SuDS feature and the maximum groundwater level
- 5.3.8 Based on this geology it is not considered that the site will be suitable for the use of infiltration-based SuDS to entirely drain the surface water from the site however any shallow features will be unlined to encourage infiltration when possible.

Priority 3

- 5.3.9 As described in Section 3.3.1 the Ash Brook runs along the eastern boundary to which the site currently drains. It is proposed that any water not draining via infiltration will discharge into Ash Brook as existing.
- 5.3.10 Based on the above, a mixture of priority 1, 2 and 3 measures will be used to dispose of the surface water on the site and as such it is considered that this standard has been met.

STANDARD 2: MANAGEMENT OF EVERYDAY RAINFALL (INTERCEPTION)

- 5.3.11 The proposed impermeable areas are shown on drawing 34653-D-02 contained in **Appendix F**. This shows that of the total site area of 3.78 hectares; the total impermeable area is 1.14 hectares which can be seen to be made up of the following elements.

• Road	4,005m ²
• Porous paving (Communal)	944m ²
• Porous paving (Private)	1,843m ²
• Roof areas (Private)	4,007m ²
	<u>11,396m²</u>

- 5.3.12 An urban creep uplift factor of 10% has been applied to the area of the impermeable area within the property curtilages (private areas).
- 5.3.13 The total impermeable area to be considered in the surface water design can be seen to be 1.14 hectares.

- 5.3.14 A simple approach has been applied to demonstrate that the first 5mm of rainfall from the development has been accommodated on site. Table 5.1 summaries the varies SuDS features and that the impermeable area that can be accommodated.

SuDS Component	Area	Infiltration Rate	Maximum area the could drain	Actual area draining
Unlined Porous Paving	2,787m ²	1 x 10 ⁻⁶ or greater	13,935m ²	4,012m ²
Unlined swale/basin	1,212m ²	1 x 10 ⁻⁶ or greater	30,375m ²	4,005m ²

TABLE 5.1 – SUMMARY OF SUDS FEATURES DEALING WITH FIRST 5MM

- 5.3.15 The area of the proposed unlined porous paving has an infiltration rate of greater than 1 x 10⁻⁶ and as such can accommodate an additional 13,935m² of impermeable area into it (5 times its area). The proposed roof area totals 4,007m² which is considerably less than the area that could be accommodated, so the first 5mm of rainfall for both the roofs and porous paving can be dealt with via the provision of porous paving alone.
- 5.3.16 The proposed attenuation basin has a base area of 1,212m² and an infiltration rate of greater than 1 x 10⁻⁶ and as such can accommodate 30,375m² of impermeable area into it (25 times its area). This area is greater than the total impermeable area of 1.14 hectares. It can therefore be demonstrated that the attenuation basin alone can accommodate the first 5mm of rainfall for the whole site.
- 5.3.17 Based on the above it has been demonstrated that the first 5mm of rainfall has been dealt with onsite, so this standard has been met in full.

STANDARD 3: MANAGEMENT OF EXTREME RAINFALL AND FLOODING

- 5.3.18 The following standards will be adopted in the design of the surface water drainage.
- No flooding for the 1 in 30-year event.
 - Flooding managed for events between 1 in 30 and the 1 in 100-year event + climate change.
 - Reference has been made to the Environment Agency's online mapping guidance for peak rainfall allowance for climate change and shows the site to be located within the Upper and Bedford Ouse Management Catchment. Given the proposed development is to have a design life beyond 2100, a 40% allowance for climate change needs to be considered in the design of the surface water drainage system for the 1 in 100-year event, and 35% allowance for the 1 in 30-year rainfall event. This is based on the upper end allowance for the 2070's epoch.
 - A peak allowable discharge rate of 6.8l/s based on 3l/s/ha as set out in section 3.3.

- FEH 2022 rainfall parameters have been used in the design of the surface water drainage system

5.3.19 The drainage system has been modelled using Windes to accommodate all return periods up to and including the 1 in 100 year + 40% climate change. Calculations are shown in **Appendix G**. Features have been designed to half drain within 24 hours.

5.3.20 Based on the above it has been demonstrated that this standard has been met in full.

STANDARD 4 : WATER QUALITY

5.3.21 Reference has been made to the SuDS manual (Cira document 753) to ensure water quality has been considered and suitable water management train provided for within the development that will control water quality to the required standard.

5.3.22 Table 26.2 from the SuDS shows residential roofs to have a very low pollution risk and residential roads and driveways to have a low risk and sets out pollution hazard indices for various pollution sources. An extract on the table has been shown in Figure 5-2 below.

TABLE 26.2 Pollution hazard indices for different land use classifications				
Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways ¹	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways ¹	High	0.8 ²	0.8 ²	0.9 ²

Notes

FIGURE 5.2 – TABLE 26.2 FROM SUDS MANUAL (CIRIA DOCUMENT 753)

5.3.23 Table 26.3 from the SuDS manual show the mitigation that is provided from each pollution source by various drainage components.

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters			
Type of SuDS component	Mitigation indices¹		
	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4 ²	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond ⁴	0.7 ³	0.7	0.5
Wetland	0.8 ³	0.8	0.8
Proprietary treatment systems ^{5,6}	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Notes

FIGURE 5.3 – TABLE 26.3 FROM SUDS MANUAL (CIRIA DOCUMENT 753)

- 5.3.24 From the above it can be seen that the provision of permeable pavement for the drainage of the roofs and areas of hardstanding along with the swale and detention basin will adequately mitigate the pollution risks generated.
- 5.3.25 Based on the above it has been demonstrated that this standard has been met in full.

STANDARD 5: AMENITY

- 5.3.26 The design of the surface water drainage system has been integrated into the landscape and masterplan and contributes to placemaking and environmental enhancement by keeping surface water runoff at or close to the ground surface.
- 5.3.27 The adopted SuDS approach maximises benefits for amenity by incorporating into the masterplan via a network of footpath to create multi-functional places and landscapes.
- 5.3.28 Based on the above it has been demonstrated that this standard has been met in full.

STANDARD 6 : BIODIVERSITY

- 5.3.29 The scheme will be designed to comply with the BNG requirements. An unlined attenuation basin has been provided to comply with Standard 2 which with add to Biodiversity however not possible to provide a permanently wet basin.

STANDARD 7: DESIGN OF DRAINAGE FOR CONSTRUCTION, OPERATION, MAINTENANCE, DECOMMISSIONING AND STRUCTURAL INTEGRITY

- 5.3.30 The SuDS proposed on this scheme comprise of porous pavement and shallow swale and detention basin along site standard gravity sewers.
- 5.3.31 These are considered standard features which can be easily and safely be constructed, operated and maintained. The works will be constructed as a single phase with the detention basin being constructed early in the programme to ensure runoff is controlled during construction.

- 5.3.32 A maintenance plan is included in **Appendix H** which shows the tasks and responsibilities for the various drainage components.

6 FOUL WATER DRAINAGE

6.1 PROPOSED FOUL WATER DRAINAGE

- 6.1.1 A peak foul water flow of 0.45 l/s has been calculated for a development of 50 residential units. This is based on 50 dwellings at 125 litres/head/day with an occupancy rate of 2.4 person/dwelling using 10% infiltration and DWF of 2.5.
- 6.1.2 The foul drainage for the development has been shown draining to a proposed foul water pumping station with a connection to the existing foul water drainage network where available capacity can be provided.
- 6.1.3 A foul water capacity check will be made to Anglian Water regarding the available capacity within the existing network.
- 6.1.4 Any reinforcement of the existing network will be covered by the Infrastructure Charge required for the connection of each property.
- 6.1.5 There are no plans to construct treatment works on the site, nor to discharge any effluent treated or not, to ground water.

7 CONCLUSIONS AND RECOMMENDATIONS

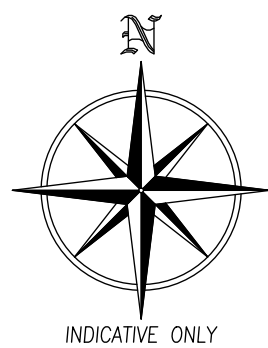
- 7.1.1 The detailed planning proposal comprises of the construction of 50 dwellings on a greenfield site on Land North of Stevenage Road, Hitchin, Herts SG4 7JX.
- 7.1.2 The site-specific flood risk assessment determined that the area of the site to be developed spans flood Zones 1,2 and 3; low to high risk of flooding from rivers however, following development, all built form will be located entirely within Flood Zone 1 so the residual risk will be low. Site is not at risk from any other source of flooding.
- 7.1.3 NPPF Annex 3: "Flood Risk Vulnerability Classification", states that sites used for residential use can be classified as "more vulnerable".
- 7.1.4 The site is considered to have passed the Sequential Test. More vulnerable development is appropriate in Flood Zones 1, 2 and 3 and an Exception Test is not required.
- 7.1.5 The online British Geological Survey maps indicate that the site is underlain by superficial deposits comprising of sand and gravel over bedrock comprising of the Holywell Nodular Chalk Formation and New Pit Chalk Formation.
- 7.1.6 Site specific testing showed that whilst shallow infiltration could be an option when groundwater levels are low there is concern however these features would not adequately function either when groundwater levels are high, or when the Ash Brook is in flood conditions. Based on this geology it is not considered that the site will be suitable for the use of infiltration-based SuDS.
- 7.1.7 A Sustainable urban Drainage System (SuDS) has been provided as part of the surface water drainage layout to deal with the surface water generated from the development to ensure that flood risk is not increased elsewhere.
- 7.1.8 Roof areas will drain direct to adjacent areas of private hardstanding constructed as an unlined porous pavement. These will discharge to a network of gravity surface water sewers into an above ground attenuation basin with a controlled discharge of 6.8/s into the Ash Brook located to the East of the site.
- 7.1.9 The foul drainage for the development has been shown draining to a proposed foul water pumping station with a connection to the existing foul water drainage network where available capacity can be provided.
- 7.1.10 This report demonstrates that the development proposals can be suitably drained and will not increase the risk of flooding either on or off site. As such the proposals accord with the requirements of the NPPF, PPG and the National standards for sustainable drainage systems (SuDS) in respect of securing a suitable and sustainable drainage strategy for the development.

APPENDIX

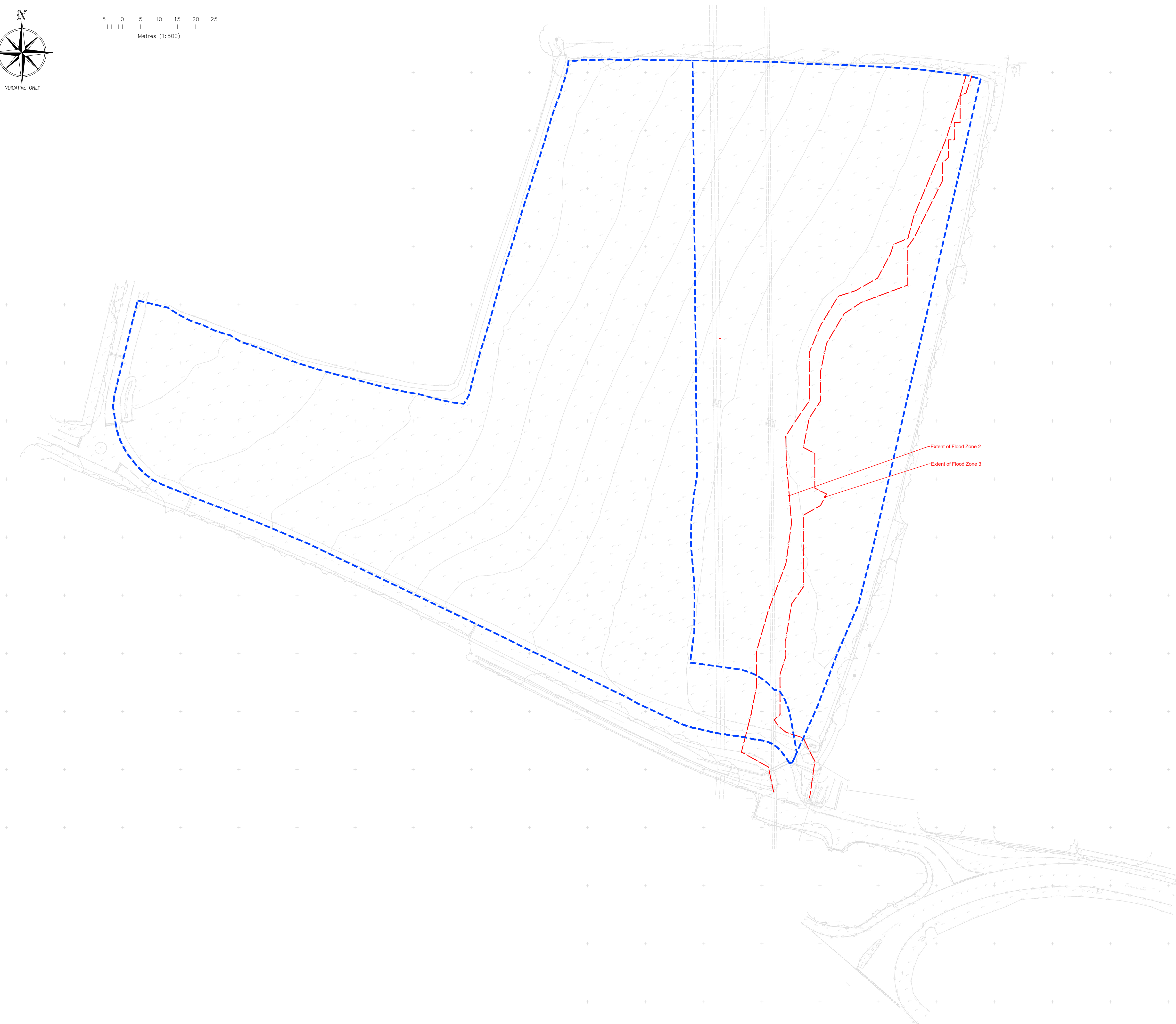
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Topographical Survey



5 0 5 10 15 20 25
Metres (1:500)



NOTES

P1	FIRST ISSUE	29.10.25	CS
REV	AMENDMENTS	DATE	CHK

Client
BUGLAR HOMES LTD

Project
LAND NORTH OF STEVENAGE ROAD,
HITCHIN

Title
TOPOGRPAHICAL SURVEY

Drwg 34653-TS-01	Rev P1	Scale 1:500@A1	Date 29.10.25
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Eclipse House, Eclipse Park, Sittingbourne Road
Maidstone, Kent. ME14 3EN
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e: info@dhaplanning.co.uk w: www.dhaplanning.co.uk

CAD Reference: A1

APPENDIX B



Existing Greenfield Runoff Rates

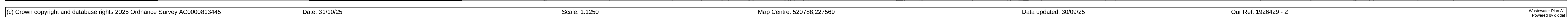
DHA Transport Ltd		Page 1
Eclipse House Sittingbourne Road Maidstone ME14 3EN	Stevenage Road, Hitchin	
Date 29/10/2025 11:06 File	Designed by Chris Checked by	
Causeway	Source Control 2019.1	
ICP SUDS Mean Annual Flood Input Return Period (years) 100 Soil 0.300 Area (ha) 2.270 Urban 0.000 SAAR (mm) 733 Region Number Region 6 Results l/s QBAR Rural 4.4 QBAR Urban 4.4 Q100 years 13.9 Q1 year 3.7 Q30 years 9.9 Q100 years 13.9		
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APPENDIX

C



Anglian Water Asset Plans





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Date: 31/10/25

Scale: 1:1250

Map Centre: 519847,228112

Data updated: 30/09/25

Our Ref: 1926429 - 3

Wastewater Plan A1
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Foul Sewer		Outfall*
Surface Sewer		
Combined Sewer		
Final Effluent		Inlet*
Rising Main*		
Private Sewer*		
Decommissioned Sewer*		Manhole*

	Sewage Treatment Works
	Public Pumping Station
	Decommissioned Pumping Station
*(Colour denotes effluent type)	

chris.smoker@dhatransport.co.uk
2



Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert
3101	519367	228190	C	68.121	66.621	1.5
3103	519344	228165	C	69.038	66.888	2.15
3201	519336	228206	C	72.42	71.36	1.06
3202	519338	228218	C	72.62	71.92	0.7
5102	519521	228190	C	64.878	63.398	1.48
5103	519504	228179	C	66.238	63.478	2.76
6205	519600	228247	C	64.134	62.844	1.29
6206	519649	228281	C	63.767	62.547	1.22
6311	519699	228317	C	63.557	62.247	1.31
7302	519723	228340	C	63.6	62.22	1.38
7305	519778	228389	C	62.829	61.759	1.07
7306	519790	228400	C	62.614	61.664	0.95
3001	519361	228090	F	66.961	66.151	0.81
3002	519344	228099	F	67.287	66.377	0.91
3003	519382	228100	F	66.703	65.863	0.84
3004	519397	228048	F	-	-	-
3005	519395	228053	F	-	-	-
3006	519395	228050	F	-	-	-
3007	519386	228047	F	-	-	-
3008	519379	228045	F	-	-	-
3009	519376	228051	F	-	-	-
3107	519395	228106	F	66.809	65.719	1.09
3108	519395	228130	F	66.481	65.571	0.91
3113	519399	228123	F	-	-	-
3203	519334	228220	F	73.911	72.321	1.59
3301	519353	228366	F	79.532	78.032	1.5
3800	519348	227811	F	69.418	66.568	2.85
3804	519337	227874	F	68.78	67.34	1.44
3805	519334	227888	F	-	-	-
4101	519414	228130	F	66.096	65.436	0.66
4102	519419	228128	F	65.947	65.327	0.62
4103	519426	228125	F	65.958	65.078	0.88
4108	519480	228157	F	65.26	64.33	0.93
4109	519466	228147	F	65.357	64.437	0.92
4110	519458	228137	F	65.436	64.496	0.94
4111	519452	228126	F	65.256	64.656	0.6
4112	519442	228139	F	65.675	64.775	0.9
4201	519489	228296	F	69.61	68.22	1.39
4203	519493	228248	F	65.421	64.981	0.44
4206	519500	228252	F	65.396	64.846	0.55
4207	519433	228277	F	-	-	-
4208	519460	228278	F	69.511	69.031	0.48
4209	519491	228246	F	-	-	-
4301	519499	228308	F	71.155	69.265	1.89
4302	519492	228300	F	69.727	68.537	1.19
4303	519495	228393	F	80.682	78.552	2.13
4304	519474	228390	F	80.64	79.38	1.26
4305	519448	228395	F	82.057	80.427	1.63
4405	519423	228408	F	83.707	81.427	2.28
5201	519537	228226	F	64.223	63.603	0.62
5202	519546	228233	F	64.143	63.563	0.58
5203	519530	228237	F	64.428	63.858	0.57
5204	519554	228238	F	64.098	63.458	0.64
5205	519560	228243	F	64.031	63.411	0.62
5206	519573	228252	F	63.976	63.366	0.61
5207	519595	228268	F	63.843	63.133	0.71
5208	519588	228264	F	63.907	63.197	0.71
5209	519525	228218	F	64.246	63.766	0.48
5210	519578	228256	F	63.863	63.292	0.571
5211	519519	228248	F	65.182	63.912	1.27
5212	519514	228254	F	65.338	64.208	1.13
5214	519510	228261	F	66.008	64.438	1.57
5215	519550	228285	F	65.27	64.64	0.63
5216	519565	228296	F	64.938	64.398	0.54
5217	519501	228278	F	68.289	65.749	2.54
5301	519506	228333	F	73.049	71.599	1.45
5302	519502	228330	F	72.683	70.933	1.75
5303	519521	228343	F	73.296	71.996	1.3
5304	519576	228382	F	74.12	72.94	1.18
5305	519597	228362	F	71.523	68.913	2.61
5306	519590	228392	F	73.868	72.108	1.76
5307	519577	228348	F	71.759	69.419	2.34
5308	519559	228335	F	71.175	68.895	2.28
5309	519542	228321	F	70.612	68.342	2.27
5310	519534	228314	F	69.604	67.454	2.15
5311	519538	228308	F	68.294	66.334	1.96
5312	519577	228304	F	64.95	64.28	0.67
5313	519584	228309	F	65.012	64.242	0.77
5314	519595	228317	F	64.956	64.086	0.87
5315	519519	228397	F	79.927	77.807	2.12
5316	519535	228353	F	73.84	72.43	1.41
5317	519548	228362	F	73.9	72.81	1.09
5318	519562	228372	F	74.13	73.21	0.92
5403	519560	228422	F	79.08	77.02	2.06
5404	519541	228410	F	79.62	77.44	2.18
5411	519581	228436	F	78.045	76.345	1.7
6201	519629	228293	F	63.635	62.915	0.72
6202	519623	228288	F	63.691	62.961	0.73
6203	519612	228281	F	63.727	63.037	0.69
6204	519606	228276	F	63.751	63.091	0.66
6301	519681	228330	F	63.776	62.606	1.17
6302	519675	228325	F	63.796	62.616	1.18
6303	519693	228338	F	63.745	62.495	1.25
6304	519646	228305	F	63.758	62.828	0.93
6305	519664	228318	F	63.811	62.731	1.08
6306	519662	228320	F	63.71	62.91	0.8
6307	519656	228328	F	64.022	63.002	1.02
6308	519641	228301	F	63.696	62.866	0.83
6309	519699	228343	F	63.599	62.449	1.15
6310	519658	228313	F	63.763	62.763	1
6312	519680	228379	F	65.696	65.086	0.61
6313	519689	228386	F	65.759	63.449	2.31
6315	519602	228322	F	64.892	64.062	0.83

Anchorhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert
6316	519631	228343	F	64.995	63.745	1.25
6317	519619	228335	F	65.03	63.96	1.07
6319	519640	228349	F	65.803	63.703	2.1
6320	519614	228372	F	70.726	68.136	2.59
6321	519622	228376	F	70.124	67.834	2.29
6322	519613	228330	F	65.003	64.033	0.97
6323	519628	228365	F	68.629	65.649	2.98
6324	519699	228377	F	65.089	62.699	2.39
6325	519661	228316	F	-	-	-
6326	519656	228324	F	-	-	-
6402	519604	228403	F	73.262	71.312	1.95
6403	519616	228411	F	72.463	70.533	1.93
6404	519620	228415	F	71.46	70.25	1.21
6405	519642	228411	F	70.138	68.868	1.27
6406	519651	228416	F	69.599	68.349	1.25
6407	519657	228419	F	69.307	68.027	1.28
6408	519674	228402	F	67.57	65.75	1.82
7100	519778	228188	F	-	-	-
7200	519752	228230	F	-	-	-
7201	519732	228263	F	-	-	-
7301	519724	228341	F	63.6	62.13	1.47
7303	519714	228354	F	63.756	62.316	1.44
7304	519709	228350	F	63.698	62.408	1.29
7412	519713	228407	F	-	-	-
8103	519887	228199	F	-	-	-
8104	519893	228192	F	-	-	-
8205	519810	228213	F	-	-	-
8206	519832	228230	F	-	-	-
8207	519839	228235	F	-	-	-
8208	519851	228245	F	-	-	-
8209	519872	228221	F	-	-	-
8210	519881	228210	F	-	-	-
8211	519887	228209	F	-	-	-
9200	519904	228221	F	-	-	-
3051	519352	228084	S	67.14	66.43	0.71
3052	519364	228036	S	67.36	66.33	1.03
3053	519390	228037	S	66.99	66	0.99
3151	519389	228185	S	67.12	66.28	0.84
3153	519393	228105	S	66.71	65.97	0.74
3154	519342	228105	S	67.41	66.67	0.74
3156	519356	228192	S	68.51	66.24	2.27
3157	519369	228193	S	67.85	65.57	2.28
3351	519336	228370	S	80.38	78.62	1.76
3352	519395	228307	S	72.963	71.223	1.74
3451	519389	228438	S	85.78	83.87	1.91
3452	519352	228440	S	86.06	84.25	1.81
3851	519346	227814	S	69.425	-	-
3857	519335	227875	S	-	-	-
4053	519409	228086	S	66.35	65.56	0.79
4054	519404	228087	S	66.4	65.6	0.8
4151	519485	228192	S	66.29	64.32	1.97
4152	519433	228162	S	66.44	65.54	0.9
4153	519429	228141	S	66.24	65.34	0.9
4154	519480	228188	S	65.99	64.34	1.65
4155	519454	228193	S	65.95	64.3	1.65
4156	519408	228193	S	66.77	64.48	2.29
4251	519453	228232	S	67.15	65.32	1.83
4451	519460	228419	S	83.21	81.63	1.58
5151	519503	228176	S	66.26	64.19	2.07
5251	519550	228256	S	64.44	63.48	0.96
5252	519539	228273	S	65.09	63.69	1.4
5351	519512	228308	S	69.61	67.46	2.15
5352	519515	228325	S	72.02	69.46	2.56
5451	519535	228433	S	81.26	79.77	1.49
6251	519605	228296	S	64.16	63.16	1
6351	519674	228345	S	64.55	62.86	1.69
6352	519638	228397	S	69.37	66.97	2.4
6353	519661	228361	S	65.5	62.96	2.54
6451	519620	228401	S	71.71	69.43	2.28
7351	519704	228367	S	64.77	62.76	2.01
7453	519760	228409	S	-	-	-

APPENDIX

D



Site Investigation



Report prepared at
Land at Stevenage Road
Hitchin
SG4 7JY

On behalf of
Bugler Homes Limited

Report reference
25-268.01
Version 2

Report date
December 2025

Prepared by
Aviron Associates Limited

Report Quality Management			
Project Name	Land at Stevenage Road, Hitchin, SG4 7JY		
Project Title	Preliminary Risk Assessment		
Client	Bugler Homes Limited		
Project Number	25-268.01		
Version	2 (updated development plan)		Date
Prepared by	Vanessa Bell BSc (Hons) MSc	Geo-Environmental Consultant	18/12/2025
Prepared by	Orlando Blackwell BEng (Hons) MSc (Eng)	Principal Engineer	18/12/2025
Approved by	James Burkitt BEng (Hons) CEnv MRICS	Managing Director	18/12/2025

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5	Proposed Development Plan

Appendices

I	Envirocheck Maps and Database Reports
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1.0 PROJECT AND SITE INFORMATION

1.1 APPOINTMENT

Aviron Associates Limited (Aviron) was retained by Bugler Homes Limited (the “Client”) to prepare a tier 1 Preliminary Risk Assessment (PRA) of the following premises:

Land at Stevenage Road, Ashbrook, Hitchin, SG4 7JY (hereafter referred to as the “site”).

The PRA associated with the residential development of the site, forms a tier 1 assessment by completing a desk-based study with site walkover to identify potential areas of contaminative concern associated with the redevelopment. The PRA will then form a preliminary Conceptual Site Model (CSM) with recommendations for any further investigation or risk assessment if required.

In addition, geotechnical issues shall be assessed to provide recommendations for new foundations, drainage and pavement design, if required.

Aviron has relied upon information received from the Client and their agents as accurate, unless contradicted by written documentation or site observations.

1.2 THE SITE

Table 1.2 provides a summary of site details and surrounding area.

Table 1.2: Site Details	
Site Location	The site is located on Stevenage Road, in Ashbrook, 1.7 kilometres (km) south-east of Hitchin town centre and 3km north-west of Stevenage. The site is accessed via Stevenage Road, off the A602 that runs parallel with the site access road. Figure 1 is presented as the Site Location Plan.
National Grid Ref.	Centred at approximately 520120, 227940.
Current Land Use	The site currently comprises a large, grassed field. Figures 2 and 3 are presented as the Existing Site Layout Plans, using an aerial view and topographical survey, showing the positions of the walkover photographs. Figure 4 is presented as the Site Photographs.
Surrounding Land Use	The site is almost entirely surrounded by leisure facilities (e.g. football pitches that are associated with the school nearby), isolated residential buildings, roads and a stream.
Proposed Land Use	The proposed scheme comprises the erection of 50no. residential dwellings (including affordable housing), new public open space, associated parking, landscaping and access. Figure 5 is presented as the Proposed Development Plan.

1.3 SITE WALKOVER SURVEY

A site walkover survey was undertaken on 14 October 2025 and included an inspection of the site and surrounding area, where safe and accessible. The purpose of the survey is to identify any potential on-site or nearby contaminative activities or potential sources of land contamination.

Additionally, as part of the survey any features which may affect site re-development in terms of physical site and ground conditions were noted.

Table 1.3 provides a description of site features observed during the walkover survey and also current Ordnance Survey maps made available at the time of report writing.

Table 1.3: Summary of Site Walkover Survey	
Physical Site Characteristics	
Existing Structures	No buildings on-site. There is a locked gate at the site access point on the south-eastern part of the site. There are overhead cables running across the east of the site in a north-south direction.
Basements	None observed.
Visual Topography and Site Surfacing	The site comprises a large, grassed field which slopes gently downwards in an east-south-easterly direction.
Retaining Structures and Slopes	The site slopes gently downwards in an east-south-easterly direction. An overgrown bank up to approximately 2 metres (m) in height is located within the north-western site boundary, creating a level amenity space for the adjacent sports pitches.
Drainage Issues	The land along the eastern boundary, which is the lowest part of the site contains lush vegetation and is slightly boggy. There could therefore become a drainage issue at this location, especially in wetter months.
Surface Waters	Softened ground surface following prolonged rain, particularly in the eastern part of the site.
Trees and Hedges	Numerous young, semi-mature and mature trees, shrubs and hedges line the site boundaries.
Made and Infilled Ground	No significant made ground or infilled ground is anticipated. Made ground may however be encountered locally as unmade surfacing at the site entrances, and within the overgrown bank inside the north-western boundary.
Contaminative Characteristics	
Above (AST) or Underground (UST) Storage Tanks and Drums	None observed.
Fuel Interceptors	None observed.

Table 1.3: Summary of Site Walkover Survey

Waste Storage and Disposal	None observed.
Hazardous Material Storage and Use	None observed.
Asbestos Containing Materials (ACMs)	None observed.
Boiler Houses	None observed.
Sub-stations	None observed.
Surface Staining	None observed.
Potentially Contaminative Activities	No significant evidence of potentially contaminative activities observed at the site.

1.3.1 Summary of Physical Site Characteristics

Consideration should be made towards the make-up and competency of the underlying strata and the influence of trees on any proposed building.

1.3.2 Summary of Contaminative Site Characteristics

No significant evidence of potentially contaminative activities observed at the site.

2.0 DESK STUDY REVIEW

Historical Ordnance Survey (OS) maps were obtained as part of the Envirocheck database search within report package reference 387546325 dated 9 October 2025, and included within **Appendix I**. Database information within the Envirocheck report also includes reference to the hydrogeology, hydrology and ground gas hazards in the site area and is summarised in the following sections.

A summary of the ground hazards for construction purposes is also included.

2.1 HISTORICAL REVIEW

Historical Ordnance Survey (OS) maps were reviewed within the Envirocheck report, and the historical development of the site and the surrounding land is summarised in the following table.

Table 2.1: History of the Site and Surrounding Land		
Date	Site History	Surrounding Land History
1881 (1:2,500) 1884 (1:10,560) 1898 (1:2,500) 1899 (1:10,560)	The site is shown to have comprised undeveloped agricultural land or pasture intersected by a path and surrounded by field boundaries, tracks or roads. Ash Brook shown to have formed the eastern site boundary at this time, flowing in a northerly direction.	The site is shown to have been surrounded by agricultural land or pasture in all directions. It is bound by a road to the south-west. A small settlement at Ashbrook is located approximately 100–250m E, and Ippollitts is around 800m SW. A railway line is present approximately 500m NE. Off-site features include gravel pits (500m, 700m, and 900m NW), a chalk pit (900m NW), a gravel pit (800m SE), and an iron foundry (900m SW).
1924 (1:2,500) 1924 (1:10,560) 1924-25 (1:10,560)	No notable changes identified at the site. The track that bounds to the southwest is called Hambridge Way.	A pumping house is shown 250m NW. No notable changes are identified in the surrounding area.
1946 (1:10,560) 1947-50 (1:10,560)	No notable changes identified at the site.	No notable changes identified in the surrounding area.
1960 (1:10,000) 1964 (1:10,000) 1965 (1:2,500) 1966-81 (1:2,500) 1976 (1:10,000) 1981-82 (1:10,000) 1984 (1:2,500) 1986 (1:2,500)	No notable changes identified at the site.	The pumping house previously identified approximately 250m NW is labelled as “Kingshott.” By the time of the 1981–1982 mapping edition, a large area from around 500m NW had been developed with residential housing, and a school had been constructed approximately 150m to the NW. A sewage works was present about 250m S. The gravel pit located 500m SE had expanded during the early 1960s but was recorded as disused by 1981–1982.

Table 2.1: History of the Site and Surrounding Land

Date	Site History	Surrounding Land History
1992-93 (1:2,500) 1992 (1:10,000) 1993 (1:2,500) 1999 (1:10,000) 1993 (aerial photograph) 2000 (aerial photograph) 2006-2016 incl (1:10,000)	No notable changes identified at the site.	No notable changes are identified in the surrounding area with the exception of an additional school building or structure being constructed adjacent to the site between 2006-2025, and a small depot to the south-east by 1992.
2025 (1:10,000) 2025 walkover	Site is used for agriculture or pastoral purposes. No structures present aside from overhead cables.	Land use in the immediate vicinity is a mix of agriculture, leisure and housing. To the east and south-east there are a small number of dwellings. To the west there are school sports pitches.
Note: All distances are approximate.		

2.1.1 Anecdotal Evidence

No anecdotal evidence available at the time of reporting.

2.1.2 Summary of Historical Landuses

The site has remained undeveloped throughout the available mapping history.

No significant industrial or commercial landuses shown in the surrounding area. A number of gravel pits were shown; the nearest was 500m (SW). One of the gravel pits was extended in the early 1960s (500m SE) but by 1981-1982 had become disused and possibly infilled. Small depot noted to the south-east by 1992.

2.2 GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

2.2.1 Anticipated Geology

Relevant geological information has been sourced using the British Geological Survey (BGS) extract sheet 221 of Hitchin and is summarised in table 2.1.1 below.

Table 2.2.1: Anticipated Geology				
Stratum	Age	Possible Thickness (m)	Typical Description	Aquifer Status
Artificial/Made Ground None indicated on site	N/A	N/A	N/A	N/A
Superficial Glaciofluvial Deposits, Mid Pleistocene - majority of the site	Cromerian	Not recorded	Sand and gravel	Secondary aquifer - A
Superficial Alluvium - strip along the south-east of the site, associated with Ash Brook	Holocene	Not recorded	Clay, silt, sand and gravel	Secondary aquifer - A
Superficial Head Deposits - triangular area in SE, between the Glaciofluvial deposits and Alluvium	Holocene	Not recorded	Clay, silt, sand and gravel	Secondary aquifer - A
Solid Holywell Nodular Chalk Formation and New Pit Chalk Formation	Cenomanian - Turonian	100-115m	Undifferentiated Chalk	Principal aquifer

An area of artificial ground – ‘worked ground, undivided – void’ is marked 84m to the north of the site.

The BGS website indicates that there are no references to faults recorded on site or within 500m of the site.

2.2.2 Ground Conditions – BGS Borehole and Trial Pit Records

The nearest BGS borehole log(s) for drilling or excavation works undertaken within circa 250m of the site, and a summary of the ground conditions encountered to approximate depths in metres (m) below ground level (bgl), are presented in table 2.2.2.

Table 2.2.2: Summary of Local BGS Borehole Logs

Unit	Description	From (bgl)	To (bgl)
TL22NW306 – OLE - W3 - INVESTIGATION – 31m east			
Topsoil	Topsoil	0.0	0.1
Possibly Drift	Sandy CLAY	0.1	0.6
	SAND and GRAVEL	0.6	3.4
	Silty CLAY	3.4	4.6
Groundwater	N/A – seepages	4.6	
TL22NW47 – HILLCREST, ASHBROOK, IPPOLLITTS– 178m east			
Drift	Tough, hard, CLAY	0.0	9.5
	Red SAND (water bearing)	9.5	12.5
	Blue CLAY	12.5	17.7
Solid	CHALK (hard thin layer)	17.7	39.6
	CHALK (sticky)	39.6	45.7
Groundwater	9.1m (drift) and 20.7m (chalk)		
TL22NW62 - PROP.BYPASS AT LITTLE A602 WYMONOLEY BH6 – 175m south-east			
Topsoil	Topsoil	0.0	0-3
Drift	Silty sandy CLAY	0.3	1.4
Solid	White structureless CHALK	1.4	8.0
	Unweathered CHALK with occasional flints	8.0	21.5
	Hard to very hard medium hard in part, brittle blocky CHALK	21.5	25.0
Groundwater	14.6m		

2.2.4 Hydrogeology

The hydrogeology of the site has been determined by the superficial geology of the Glaciofluvial Deposits, Head Deposits and Alluvium, which are classified by the Environment Agency as a secondary aquifer – ‘A’, undifferentiated’ and ‘A’ respectively, and the Chalk bedrock which is classified as a principal aquifer.

Secondary A aquifers are described 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.*

Secondary (undifferentiated) aquifers have been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

Principal aquifers are described as *layers of rock or drift deposits that have high intergranular and/or fracture permeability. They usually provide a high level of water storage and may support water supply and/or river base flow on a strategic scale. In most cases, these aquifers were previously classified as major aquifers.*

The combined classification groundwater vulnerability beneath the site is noted as 'secondary aquifer - high vulnerability'.

Both the Envirocheck report and the Environment Agency website (October 2025) indicate that the site is not located within an Environment Agency source protection zone (SPZ).

The Envirocheck report indicates that there are references to groundwater abstraction licences for premises within 1000m of the site. At least four records between 674-682m SE relate to private water supply from a well or borehole. A record 890m N is for General Farming and Domestic purposes. An abstraction for Public Water Supply is situated 1525m to the SE.

The BGS groundwater flooding susceptibility for the site is shown as follows: in the north-west – 'Limited Potential for Groundwater Flooding to Occur', in the centre – 'Potential for Groundwater Flooding of Property Situated Below Ground Level', and in the east – 'Potential for Groundwater Flooding to Occur at Surface'.

2.2.5 Hydrology

The Envirocheck report indicates that the nearest surface water feature is located on site. The historical mapping shows that Ash Brook flows in a northerly direction along the eastern boundary and near the northern boundary. In addition, there is Ippollitts Brook 480m to the north-west.

The Envirocheck report indicates that there is three 'Discharge Consents' for premises within 250m of the site. The records relate to discharges of final/treated effluent (137m SE and 202m S) and storm overflow (216m SE).

The Envirocheck report indicates that there are three records of 'Pollution Incidents to Controlled Waters'

within 500m. A release of unknown pollutant (431m NW), Crude Sewage (446m N and 462m W). All three incidents were categories as significant.

There are no 'Local Authority Pollution Prevention and Controls' for premises within 250m of the site. The nearest record is related to iron, steel and non-ferrous metal foundry processes 933m to the southwest.

The eastern section of the site, presumably associated with Ash Brook, is located in an area that is at risk of 'extreme flooding' and 'flooding' from rivers without defences. The site is not located in a flood water storage area, nor does it benefit from flood defences.

A strip of land inside the eastern boundary falls within areas of 1 in 30, 1 in 100 and 1 in 1000 year flood extents.

2.3 LANDFILLS AND BIO-GROUND GAS

2.3.1 Landfills, Waste Management Facilities and Infilled Ground

The Envirocheck report indicates that there no historical landfill sites, Local Authority recorded landfill sites, registered landfill sites, or waste facilities within 250m of the site.

There are also no references to potentially infilled land (non-water or water) within 250m of the site.

2.3.2 Preliminary Risk Assessment (PRA) – Bio-Ground Gas

Table 2.3.2 summarises the gas risk for the site, based on the above information gained through the desk-based research.

In accordance with current guidance (CIRIA C665), the gas generation potential for each source has been individually assessed, with references to potential gassing risk made according to the following definitions: Negligible, Very Low, Low, Moderate, High and Very High.

The definitions are explained in Section 10.0 of the guidance. The objective of this exercise is to determine if potentially unacceptable bio-ground gas risks exist, and whether further investigation and assessment is necessary.

Table 2.3.2: Preliminary Risk Assessment (PRA) – Bio-Ground Gas

Potential Source	Risk	Risk Rating	Rationale
Made Ground (CO ₂ + CH ₄)	Human health Explosion	Very Low	The site has remained undeveloped. Although Made Ground may be encountered locally at site entrance points and within the overgrown bank in the north-west. Significant organic biodegradable material is not expected.
Alluvial Strata (CO ₂ + CH ₄)	Human health Explosion	Low	Alluvial deposits on-site associated with Ash Brook. The Alluvial deposits are located along the eastern boundary.
Landfills (CO ₂ + CH ₄)	Human health Explosion	Negligible	No landfill sites noted within 250m of the site.
Infilled Ground + Burial Sites (CO ₂ + CH ₄)	Human health Explosion	Negligible	No significant infilled ground recorded within 250m of the site.
Coal and Mining (CO ₂ + CH ₄)	Human health Explosion	Negligible	The risk in connection with 'non-coal mining area(s) of Great Britain' is noted to be 'rare'.
Soil Vapours	Human health Explosion	Very Low	No evidence of fuel storage.
COMBINED RISK RATING = LOW			

A combined Low risk from ground gas ingress and explosion is considered and ground gas monitoring is considered necessary. Gas monitoring would be advised during future ground investigation.

2.4 RADON GAS

The Envirocheck Report indicates that the site is split between a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level), and an Intermediate probability radon area where 1% to 3% of homes are affected by Radon. It is indicated that no radon protective measures are necessary in the construction of new dwellings or extensions.

A Radon report is recommended immediately prior to any re-development plans as radon guidance periodically changes and the above advice may be outdated by the time of any re-development.

The HSA website (ukradon.org) can be used to purchase radon reports, where an address-specific radon report may be obtained. It should however be noted that for redevelopment sites, a GeoReport provided by the British Geological Survey may be more appropriate.

2.5 GROUND STABILITY, NATURAL CAVITIES AND MINING HAZARDS

Table 2.5 indicates potential ground stability, natural cavities and mining hazards identified within the Envirocheck report for the site.

These will be considered in terms of the proposed development and detailed in the following section 2.5, Preliminary Ground Hazards Summary.

Table 2.5: Ground Stability, Natural Cavities and Mining	
Hazard	Ground Stability and Natural Cavities Hazard Potential
Potential for Collapsible Ground Stability	Very Low for the western two-thirds of the site.
Potential for Compressible Ground Stability	Moderate for the eastern section of the site associated with the Alluvium.
Potential for Ground Dissolution	Very Low.
Landslides	Very Low.
Running Sands	Very Low for the western two-thirds of the site. Low for the eastern section of the site associated with the Alluvium.
Shrink-Swell Clay	Very Low in the south-eastern section of the site associated with the Head Deposits.
Hazard	Mining Hazard Potential
Non coal mining areas of Great Britain	Risk noted as 'rare'.

Table 2.5: Ground Stability, Natural Cavities and Mining	
Coal Mining Affected Areas	Not located in an area affected by coal mining.
Infilled Land	No potentially infilled land (non-water or water) within the site extents or immediate vicinity.
Other mining/quarrying	None noted on the historical mapping within the site. Artificial ground noted 84m to the north.

The site is not located in a coal mining affected area. The risk associated with 'non-coal mining area(s) of Great Britain' is noted to be 'rare'.

The risk of compressible soils is noted to be 'moderate' and running sand as 'low' for the Alluvium in the east of the site. The risk of shrink/swell clays is noted to be 'very low' for the south-eastern section of the site.

The risk of ground dissolution of soluble rocks is noted to be 'very low' for the site and the surrounding area.

2.6 PRELIMINARY GROUND HAZARDS SUMMARY

The following Table 2.6 provides a summary of the preliminary ground hazards identified with the ground and groundwater conditions and historical site use as determined from the desk-based information accumulated within the PRA. The following key plan should be considered in regard of plausible risk:

○ - Further action required. Potentially plausible hazard.

○ - Unlikely to represent a hazard, no further consideration required.

Table 2.6: Preliminary Ground Hazards Summary		
Ground Hazard	Plausible	Description
Topographic		
Site constraints	○	Restricted site access. The site is almost entirely soft surfaced; however, overhead cables run through the east of the site north-south. The land along the eastern boundary, which is the lowest part of the site contains lush vegetation and is slightly boggy.
Slopes, embankments, cuttings	○	The site is slightly sloping to the east-south-east, with an overgrown bank some 2m in height inside the north-western boundary. Foundation type and construction difficulties. Remedial measures to stabilise slopes, embankments and cuttings, and mitigate risks of landslides.

Table 2.6: Preliminary Ground Hazards Summary

Ground Hazard	Plausible	Description
Man-made		
Filled ground/ made ground/ infilled basements	○	Foundation type and construction difficulties associated with the overgrown bank in the north-west of the site.
Existing foundations and below ground structures	○	Foundation type and construction difficulties. Obstructions to new construction. Influence of existing and adjacent foundations to new construction. Vibration associated with the construction technique.
Mining instability	○	Foundation type and construction difficulties. Appropriate mining investigation.
Ground chemistry	○	Made Ground is heterogenous and subject to composition may present a risk of sulphate and sulphide attack on buried concrete.
Unexploded Ordnance	○	Detailed unexploded ordnance (UXO) risk assessment did not form part of our project instruction.
Geological		
Frost action	○	Susceptibility of soils affected at pavement and foundation formation. Provision of non-frost susceptible materials.
Lateral soil instability	○	Foundation type and construction difficulties. Provision of temporary works – shoring.
Soft clays, silts and compressible soils	○	Foundation type and construction difficulties. Sufficient bearing resistance to support the proposed construction.
Shrinkable soils	○	Foundation type and construction difficulties. Influence of trees on foundation depths. Potential for desiccation to have occurred and heave protection. NHBC Standards Chapter 4.2, Building Near Trees.
Ground dissolution of soluble rocks	○	The risk of ground dissolution of soluble rocks is noted to be 'very low'. Foundation type and construction difficulties. Dynamic probing, torque readings.
Ground chemistry	○	Natural soils may present a risk of sulphate and sulphide attack on concrete.
Hydrogeological/Hydrological		
Elevated or rising groundwater	○	Foundation type and construction difficulties. Provision of temporary works – dewatering (possibly well-points) in shallow excavations due to surface water flooding.

Table 2.6: Preliminary Ground Hazards Summary

Ground Hazard	Plausible	Description
		Provision of temporary works – shoring. Reduced bearing resistance. Effectiveness of soakaway drainage. Sufficient freeboard required to enable effective infiltration. Secondary Aquifers anticipated
Fluvial or coastal scour/erosion	○	Ash Brook along the eastern boundary, not considered a significant risk. Foundation type and construction difficulties. Remedial or preventative measures.
○ - Further action required. Potentially plausible hazard. ○ - Unlikely to represent a hazard, no further consideration required.		

The available mapping history indicates that the site has remained undeveloped with the exception of overhead cables and the overgrown bank in the north-west. The site therefore is not expected to be overlain by significant thicknesses of made ground.

Any proposed new construction will need to consider the required bearing resistance of the proposed buildings, the influence of trees and groundwater, as well as temporary works.

A conventional shallow foundation solution may be feasible; however, a suitable ground investigation would confirm an appropriate foundation solution.

Shallow soakaway drainage may be successful locally given the anticipated soils at shallow depth. Soil infiltration testing and groundwater monitoring are however recommended.

Groundwater may be expected at shallow depth in the east of the site, and perched water or water held in coarse soils may be encountered following periods of heavy rainfall.

3.0 REGULATORY INFORMATION, CONSULTATIONS AND OTHER

Unless otherwise stated regulatory database information has been obtained from the Envirocheck report included as **Appendix I**.

3.1 STATUTORY REGISTERS AND AUTHORISATIONS

Table 3.1 includes the statutory registers and authorisations that relate to the site and surrounding area. Pertinent registers and authorisations will be used in conjunction with the desk-based review to determine the preliminary environmental risk.

Table 3.1: Statutory Registers and Authorisations		
Item	Number of entries 0 – 250m	Number of entries 251 – 500m
Contaminated Land Register Entries and Notices	0	0
Records of Licensed Discharge Consents	24 (three locations)	5
Prosecutions Relating to Controlled Waters	0	1
Enforcements and Prohibition Notices	0	0
Integrated Pollution Controls	0	0
Integrated Pollution Prevention and Control	0	0
Local Authority Integrated Pollution Prevention and Control	0	0
Local Authority Pollution Prevention and Controls	0	0
Local Authority Pollution Prevention and Control Enforcements	0	0
Pollution Incidents to Controlled Waters	0	3
Substantiated Pollution Incident	0	0
Prosecutions Relating to Authorised Processes	0	1
Registered Radioactive Substances	0	0
Records of Water Industry Act Referrals	0	0

Table 3.1: Statutory Registers and Authorisations		
Item	Number of entries 0 – 250m	Number of entries 251 – 500m
Explosive Sites	0	0
Planning Hazardous Substance Consents/Planning Hazardous Substance Enforcements	0	0
Notification of Installations Handling Hazardous Substances (NIHHS) Facilities and Control of Major Accident Hazards Facilities (COMAH)	0	0
Fuel Stations	0	0
Contemporary Trade Directory Entries	Contemporary Trade Directory Entries within 250m of the site: 145m SE – Electrical Engineers (inactive) 148m SE - Garage Services (active) 158m SE - Distribution Services (inactive) 171m E - Crane Hire, Sales & Service (inactive)	
Commercial Services Entries	Relevant Commercial Services Entries within 250m of the site. 148m SE - Vehicle Repair, Testing and Servicing 171m E - Vehicle Repair, Testing and Servicing	
Manufacturing and Production	Relevant Manufacturing and Production Entries within 250m of the site: 177m NW – tank (generic)	
National Grid High Voltage Underground Electricity Transmission Cables	0	0
National Grid High Pressure Gas Transmission Pipelines	0	0
Item	Immediate Vicinity	
Sensitive Land Uses	Site located in an area of Adopted Green Belt and in an Area of Outstanding Natural Beauty.	

3.2 CONSULTEES

3.2.1 Local Authority - Contaminated Land Officer

The Local Environmental Health Department has not been contacted as part of our project instruction.

3.2.2 Local Authority - Building Control Officer

The Local Authority Building Control Officer has not been contacted as part of our project instruction.

3.2.3 Local Authority - Petroleum Officer

The Local Authority Petroleum Officer has not been contacted as part of our project instruction.

3.2.4 Local Authority - Archaeological Officer

The Local Authority Archaeological Officer has not been contacted as part of our project instruction.

3.2.5 Environment Agency - Contaminated Land and Groundwater

The Contaminated Land and Groundwater Team of Environment Agency has not been contacted as part of our project instruction.

3.2.6 Coal Authority and Mining Searches UK

The Coal Authority and Mining Searches UK have not been contacted as part of our project instruction.

4.0 PRELIMINARY RISK ASSESSMENT

4.1 METHODOLOGY

A tier 1 PRA and CSM have been prepared in accordance with the technical approach on Land Contamination Risk Management (LCRM), which replaced 'CLR11'. Possible hazards identified by a potential source of contamination and sensitive receptors have been assessed via a source-pathway-receptor (SPR) model in accordance with current UK protocols. A risk may only exist where a plausible SPR linkage is viable and where the quantity or concentration of a contaminant (source) is sufficient to cause harm. Under the statutory definition "Contamination" may only exist where contaminants pose a risk of harm to a receptor. Risk may be defined as a function of the likelihood and severity of any adverse effects resulting from a contamination event in accordance with CIRIA C552. A summary of how risk is derived and the associated definition is presented in tables 4.1.1 and 4.1.2.

Table 4.1.1: Risk Ratings Matrix				
	Consequence			
Probability	Severe	Medium	Mild	Minor
High Likelihood	Very high risk	High risk	Moderate Risk	Moderate/low risk
Likely	High risk	Moderate Risk	Moderate/low risk	Low risk
Low Likelihood	Moderate Risk	Moderate/low risk	Low risk	Very low risk
Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

Table 4.1.2: Risk Ratings Definition	
Risk Rationale	Definition
Very high risk	A high probability that severe harm could occur to determined receptor from identified contaminant - OR - evidence exists that severe harm to receptor is currently occurring. Urgent investigation and remediation should be considered. If demonstrated this risk is likely to result in substantial liability.
High risk	Harm is likely to occur to determined receptor from identified contaminant. Urgent investigation and short-term risk minimisation remediation followed by longer term fit for purpose remediation should be considered. If demonstrated this risk is likely to result in substantial liability.
Moderate Risk	It is possible that harm could occur to a determined receptor from identified contaminant. It is relatively unlikely that any harm would be severe or should harm occur it is likely to be relatively mild.
Moderate/low risk	It is possible that harm could occur to a determined receptor from identified contaminant. It is unlikely that any harm would be severe or should harm occur it is probable to be relatively mild.
Low risk	It is possible that harm could occur to a determined receptor from identified contaminant. It is unlikely that such harm, if indeed present, would at worst be mild.
Very low risk	There is a low possibility that harm could occur to a receptor. In such event the harm would not be severe.

4.2 POTENTIAL SOURCES OF CONTAMINATION

Based on the desk-study and walkover survey completed, table 4.2 presents a summary of the potential sources identified.

Table 4.2: Potential Sources			
Source	Key Contaminants of Concern	Description	Plausible?
1. Site-wide soil contamination	Metals, hydrocarbons (TPH/PAH), asbestos.	Limited risk of soil contamination within the site associated likely limited presence of Made Ground	Yes
2. Local soil contamination	Metals, hydrocarbons (TPH/PAH), asbestos.	Limited risk of soil contamination. No structures, aside from track.	Yes
3. Asbestos	Asbestos	Limited risk of Asbestos Containing Soils (ACS) and Asbestos Containing Materials (ACMs). No buildings.	No
4. Groundwater	Groundwater is not anticipated at shallow depth beneath the site.	Site is underlain by secondary aquifers above a principal aquifer. Not located in an SPZ.	Yes
5. Surface Water	Ash Brook along eastern site boundary.	Ash Brook flowing in a northerly direction along the eastern site boundary.	Yes
6. Ground gases/vapours	Hazardous bio-ground gas. Complete routine bio-ground gas monitoring.	Alluvial deposits noted along the eastern boundary. Other significant hazardous ground gas sources are not anticipated on-site.	Yes

4.3 PATHWAYS

A pathway is one or more routes or means that a receptor can be exposed to, or affected by, a contaminant.

Table 4.3: Plausible Pathways
On-Site and Locally
Direct contact; to humans and infrastructure
Underlying geology/ <i>hydrogeology</i> ; Superficial strata comprising secondary aquifers above solid geology comprising a principal aquifer.
Inhalation and ingestion
Surface run-off/drainage

4.4 RECEPTORS

A receptor is either a living organism, a group of organisms, an ecological system, controlled waters or property that could be harmed or polluted by a contaminant. Table 4.4 examines the potential receptors.

Table 4.4: Potential Receptors			
Receptor	Description	Comments	Plausible
Construction workers	Groundworkers and general construction works.	Construction works proposed within the site.	Yes
End users	Occupants of the proposed development.	Gardens areas proposed at the site.	Yes
Adjacent land users	Occupants of surrounding residencies.	Adjacent residential dwellings (limited) which could be affected by run-off or migration.	Yes
Soft landscaping	Areas of new planting including lawns.	Landscaped areas proposed around the site.	Yes
Water supply pipes	Plastic pipework for potable water supply may be affected if laid in contaminated soils.	New supply required for redevelopment.	Yes
Buildings & infrastructure	Buried concrete for new foundations may be in contact with aggressive ground (sulphur attack).	New building works proposed.	Yes
Groundwater	Controlled waters (aquifers) beneath the site.	Site underlain by secondary aquifers above a principal aquifer. No public water supply boreholes within 1000m of the site. The site is not located in an SPZ.	Yes
Surface waters	Controlled water such as lakes, streams, rivers or coastal waters.	Ash Brook flows along the eastern site boundary.	Yes
Ecological receptors	Sensitive areas of ecological significance defined under Part 2A of EPA 1990.	Site located in a Nitrate Vulnerable Zone which is relevant to agriculturalists (not developers). Also, in an area of Adopted Green Belt.	Yes

4.5 SUMMARY OF POLLUTANT LINKAGES FOR PROPOSED LAND USE - INITIAL CSM

The initial CSM is based upon the proposed site end use and the information currently consulted relating to various risk sources and plausible pollutant linkages and is presented within table 4.5.

Table 4.5: Initial Conceptual Site Model (for plausible pollutant linkage pathways)

Source	Receptor	Pathway	Probability	Consequence	Risk & Justification	Linkage No.
Sources 1 and 2 Site-wide and local soil contamination	Construction workers	Direct contact	Unlikely	Mild	Very Low <i>Note 1.</i> Site in use as agricultural land or pasture. It is not occupied with buildings. Very limited potential for made ground and contaminants that may normally be associated with any buildings locally.	1
	End users	Direct contact	Low Likelihood	Mild	Low <i>See Note 1.</i>	2
	Adjacent land users	Direct contact via run-off	Unlikely	Mild	Very Low <i>Note 2.</i> Secondary aquifers beneath the site, overlying a principal aquifer bedrock. Domestic buildings off-site to the SE. Site predominantly soft surfaced.	3
	Soft landscaping	Root uptake	Low Likelihood	Mild	Low <i>Note 3.</i> No evidence of made ground following walkover and desk based study. Vegetation is well established with no signs of die-back.	4
	Water supply pipes	Direct contact	Low Likelihood	Mild	Low <i>Note 1.</i>	5
	Buildings & infrastructure	Direct contact	Low Likelihood	Mild	Low <i>Note 1.</i>	6
	Groundwater	Vertical migration through hydrogeology	Unlikely	Mild	Very Low <i>Note 4.</i> Secondary A aquifer beneath the site, overlying a Principal aquifer bedrock. The site is not located in an SPZ. No evidence of significant potential contamination sources made ground following walkover and desk	7

Table 4.5: Initial Conceptual Site Model (for plausible pollutant linkage pathways)

Source	Receptor	Pathway	Probability	Consequence	Risk & Justification	Linkage No.
					based study	
	Surface water	Run-off	Unlikely	Mild	Very Low <i>See Note 4.</i>	8
	Ecology	Direct contact via run-off	Unlikely	Mild	Very Low <i>See Note 4.</i>	9
Source 3 Asbestos	Construction workers	Inhalation	Low likelihood	Minor	Very Low <i>Note 5. No potential for ACMs due to absence of existing buildings.</i>	10
	End users	Inhalation	Low likelihood	Minor	Low <i>See Note 5.</i>	11
	Adjacent land users	Inhalation	Unlikely	Mild	Very Low <i>See Note 5.</i>	12
Sources 4 and 5 Groundwater	Construction workers End users Adjacent land users Water supply pipes	Direct contact	Unlikely	Mild	Very Low <i>Note 6. Secondary A aquifer beneath the site, overlying a Principal aquifer bedrock.</i> Groundwater and surface water contamination from site unlikely as risk of soil contamination is low.	13
	Soft landscaping	Root uptake	Unlikely	Mild	Very Low <i>See Note 6.</i>	14
	Groundwater Surface water Ecology	Lateral migration through hydrogeology	Unlikely	Mild	Very Low <i>See Note 6.</i>	15
Source 6 Ground gases and Soil vapours (on/off site source)	Construction workers	Inhalation of vapours/gas	Low likelihood	Minor	Very Low <i>Note 7. Alluvium is potential source of ground gas identified within the site. Made ground possible in the overgrown bank in the north-west. Possible made ground at site entrance points.</i>	16
	End users	Inhalation of vapours/gas	Low likelihood	Mild	Low	17

Table 4.5: Initial Conceptual Site Model (for plausible pollutant linkage pathways)

Source	Receptor	Pathway	Probability	Consequence	Risk & Justification	Linkage No.
					<i>See Note 7.</i> Perceived risk increased due to long-term occupancy.	

The overall environmental risk classification for the site is considered to be generally **LOW – VERY LOW**.

Due to the sensitivity of the proposed land use and site investigation and suitable risk assessment should be completed, to include:

1. Complete precautionary site-wide soil contamination testing of overlying soils to determine the presence or absence of contaminants. Additionally, pH, sulphate and sulphur testing should be completed to enable design of buried concrete.
2. Complete ground gas monitoring to provide quantification to the qualitative risk assessment.

To assess the risk, the following analysis should be completed:

- 
 Aviron's "ES-1" of laboratory analysis shall be applied to future site investigations which includes; arsenic, barium, cadmium, total chromium, copper, nickel, zinc, lead, mercury, selenium, water soluble boron, total cyanide, total sulphate, water soluble sulphide, speciated Polycyclic Aromatic Hydrocarbons (PAH), speciated Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) and Methyl Tert-Butyl Ether (MTBE), organic matter, total phenols, pH and asbestos. **Provides broad analysis of common soil contaminants.**

The listed suite of analysis is considered suitable and will provide a screening for the majority of commonly found soil contaminants.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This PRA comprising a Desk Study review was undertaken for environmental and geotechnical purposes. Through evaluating all the relevant information Avron have been able to assess the relevant linkages in terms of risk and identified any area where further information may be required to increase the certainty in the recommendations.

5.1 ENVIRONMENTAL

Through evaluating the relevant and commercially available desk-based information Avron have been able to assess the relevant pollutant linkages in terms of risk the 'source – pathway – receptor' method. Accordingly, an initial Conceptual Site Model was prepared for relevant pollutant linkages with through qualitative means has determined a LOW – VERY LOW risk. The contaminative risk principally emanates from the use of the site as farmland.

An increase in certainty in the risk assessment can be achieved by the collection of quantitative data, typically by means of site investigation, which should target pollutant linkages considered to be of greater risk than low. Accordingly, site investigation is recommended to refine the risk assessment. Table 5.1 summarises the pertinent environmental risks providing advice on further works and assessment.

Table 5.1: Environment Risk Summary			
Medium	Item	Risk Description	Comments/Recommendations
Soils	1	Generally Very Low soil contamination risk to construction workers, end users, new planting, new water mains, buried concrete, groundwater, surface water and ecology.	Complete precautionary site-wide investigation and collect suitable soil samples for chemical analysis to complete risk assessment.
Ground Gas	2	Low risk of ingress of hazardous ground gases (CH ₄ + CO ₂) and soil vapours into new buildings and depleted oxygen; as a result of potentially organic alluvial strata nearby.	Install monitoring wells during site investigation to complete gas/vapour monitoring to quantify the risk assessment.

Once the above risks have been investigated the corresponding linkages within the CSM can be revaluated and the environmental risk assessment refined.

5.2 NEW FOUNDATIONS AND DRAINAGE SUMMARY

5.2.1 New Foundations

Ordinarily the overlying superficial strata of the Glaciofluvial Deposits and the Head Deposits would be expected to provide the required bearing resistance to support lightly loaded buildings on conventional shallow foundations. However, the extent of Alluvium may influence the foundation solution locally.

Typically, mixed soil types including low to high volume change potential Clay should be expected of the superficial strata. Therefore, the suitability of conventional footings would be subject to, though not limited to:

-  the required bearing resistance to support the proposed buildings.
-  the volume change potential of the overlying soils and the proximity of trees to new buildings in accordance with NHBC Chapter 4.2.
-  elevated groundwater, implications for reduced bearing resistance and temporary works: dewatering and excavation stability.

A suitable site investigation would confirm an appropriate foundation solution and should include in-situ and laboratory soil strength and material property testing.

5.2.2 Soakaway Drainage

Shallow soakaway drainage may be successful outside of the flood zone associated with the Alluvium in the east of the site, however soil infiltration testing and groundwater monitoring is recommended to confirm the drainage strategy for the site.

Alternative means for disposal include the possibility of utilising Ash Brook along the eastern boundary, as well as other forms of sustainable drainage.

5.2.3 Pavement Design

A low California Bearing Ratio (CBR) value should be anticipated, likely in the order of 2-5% for any overlying soils at shallow depth.

6.0 PROJECT INSTRUCTION AND LIMITATIONS

6.1 SCOPE OF WORKS

The following scope of work was undertaken to an agreed brief set out in Aviron's proposal and involved the following:

-  Site reconnaissance survey, to include inspection of the infrastructure and potential discussions with the owner or occupant regarding site activities.
-  Procurement of available historical mapping editions, geo-environmental sensitivity data and British Geological Survey (BGS) borehole records.
-  Identification of potential areas of environmental concern relating to current and/or historic site use and surroundings to prepare a refined CSM.
-  Preparation of suitable conclusions and recommendations with regard to the site's suitability for use or the requirement for further assessment and site investigation on the basis of the CSM.

Aviron has relied upon information received from the Client and their agents as accurate, unless contradicted by written documentation or site observations.

6.2 PUBLISHED GUIDANCE

This report follows the technical approach presented on Land Contamination Risk Management (LCRM), accessed on gov.uk website. The guidance replaced the Contaminated Land Report 11 (CLR11) "Model Procedures for the Management of Land Contamination" prepared by the Environment Agency in 2004. CLR11, which was withdrawn in 2020, provided guidance on the application of management processes when assessing potentially contaminated land.

This project and report have been designed to fulfil the information requirements set out in LCRM.

This report is additionally prepared in accordance with current guidance notes, standards and practices as set out by the Environment Agency and statutory organisations in order to establish potential and significant contaminant linkages as defined in Part IIA of the Environmental Protection Act 1990.

6.3 LIMITATIONS

The conclusions and recommendations made in this report are limited to those that can be made on the basis of the information review and current landuse. The results of the work should be viewed in the context of the range of data sources consulted, the number of locations where the ground was sampled previously and the number of soil gas or groundwater samples tested. No liability can be accepted for the information in other data sources or conditions not revealed by the sampling or testing. Any comments made on the basis of information obtained from the client or other third parties are given in good faith on the assumption that the information is accurate.

Changes in legislation, statutory requirements or industry practices may mean that this the conclusions of this report should be reviewed.

7.0 REFERENCES AND OTHER SOURCES OF INFORMATION

Landmark Envirocheck database search report package reference 387546325 dated 9 October 2025.

Land Contamination Risk Management (LCRM) - LCRM: Stage 1 risk assessment - GOV.UK (www.gov.uk)

British Geological Survey. Solid and drift edition sheet BGS map 221 - Hitchin

British Geological Survey Website. www.bgs.ac.uk and <https://mapapps2.bgs.ac.uk/geoindex/home.html>

Environment Agency Website: www.environment-agency.gov.uk

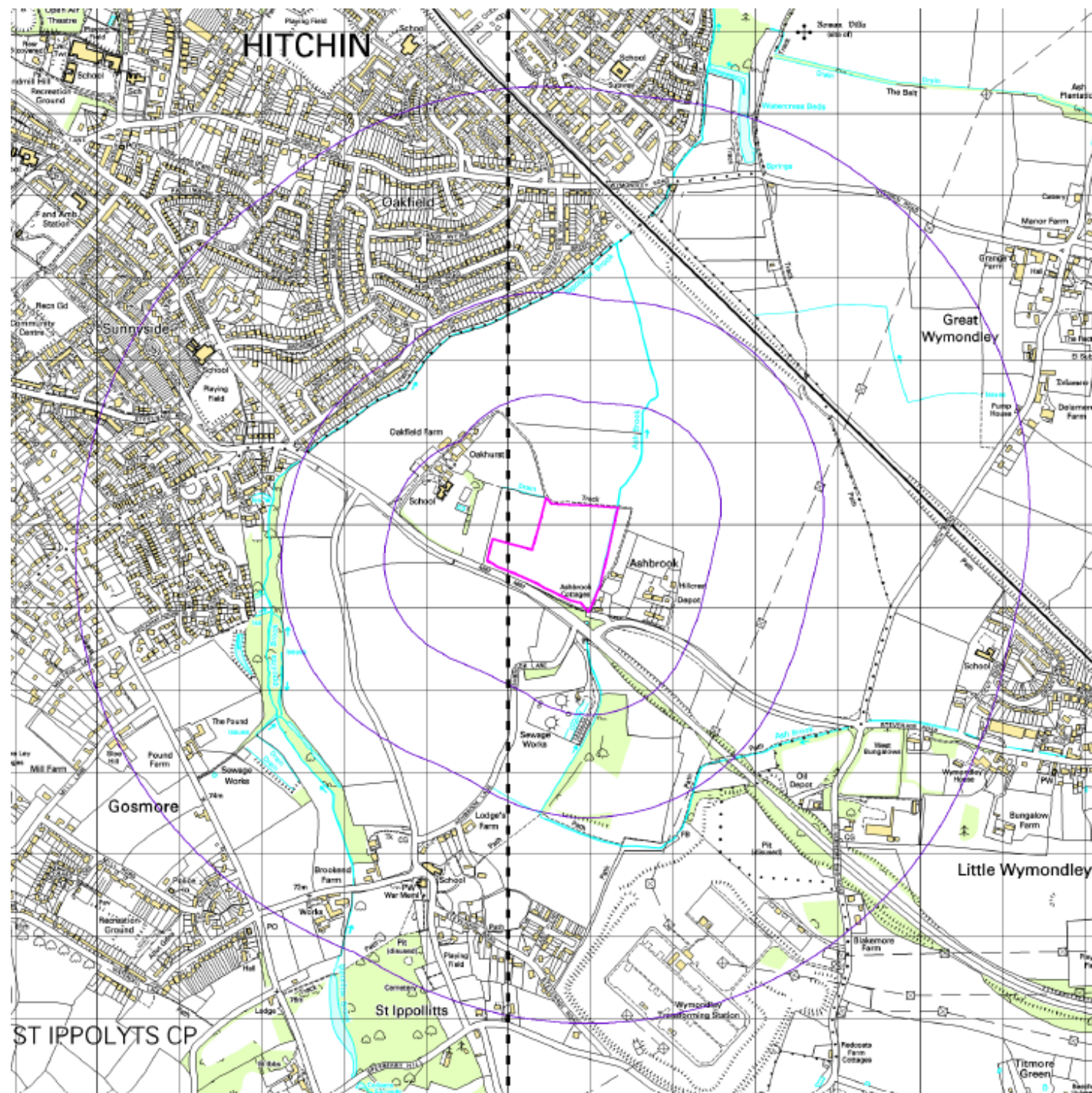
BS 10175:2011+A2:2017. British Standards Institute, Investigation of Potentially Contaminated Land - Code of Practice.

Environment Agency. July 2005. Guidance on Requirements for Land Contamination Reports.

CIRIA. C552. Contaminated Land Risk Assessment. A Guide to Good Practice. January 2001.

Figures

- | | |
|---|---|
| 1 | Site Location Plan |
| 2 | Existing Site Layout Plan – Aerial View |
| 3 | Existing Site Layout Plan – Topographical |
| 4 | Site Photographs |
| 5 | Proposed Development Plan |



Legend

— Approximate Site Boundary

Notes

Drawing supplied by Client

Figure 1

Drawing Title

Site Location Plan

Project Number 25-268.01

Project Title

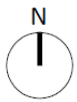
Land at Stevenage Road, Hitchin, SG4 7JY

Drawn by DN

Checked by JB

Scale NTS





Legend

— Approximate Site Boundary

Notes

Figure 2

Drawing Title

Existing Site Layout Plan - Aerial View

Project Number 25-268.01

Project Title
Land at Stevenage Road, Hitchin, SG4 7JY

Drawn by DN

Checked by JB

Scale NTS





Legend

- Approximate Site Boundary
- Photo Direction

Notes

Drawing supplied by Client

Figure 3

Drawing Title

Existing Site Layout Plan - Topographical

Project Number 25-268.01

Project Title

Land at Stevenage Road, Hitchin, SG4 7JY

Drawn by DN

Checked by JB

Scale NTS





Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9

Legend

Notes

Figure 4

Drawing Title

Site Photographs

Project Number 25-268.01

Project Title
Land at Stevenage Road, Hitchin, SG4 7JY

Drawn by DN

Checked by JB

Scale NTS





Legend

— Site Boundary

Notes

Drawing supplied by Client

Figure 5

Drawing Title

Proposed Development Plan

Project Number 25-268.01

Project Title

Land at Stevenage Road, Hitchin, SG4 7JY

Drawn by DN

Checked by JB

Scale NTS



Appendices

I	Envirocheck Maps and Database Reports
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AVIRON ASSOCIATES LIMITED

is a dynamic company of Chartered Environmental Surveyors and Geotechnical Engineers.

We continuously work hard to ensure our services are the most technically competent, efficient and viable in our market place. Our years of experience of vastly varied sites and projects compliment our ability to deliver assured and effective Ground Investigations and Risk Assessments of both Brownfield, Greenfield and Currently Developed Land.

Our clients choose Aviron to plan, design and manage their Ground Investigations and Land Remediation Schemes assisting in land procurement to deliver engineering requirements, discharge planning and ensure their sites are suitable, developable and sustainable.

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APPENDIX E



Proposed Masterplan