

**Flood Risk Assessment
and SuDS Report
February 2024**



**Temple Dinsley Estate
Preston
Hitchin**

The Door PHC Ltd

Document History

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The content of this report is based on information available as of February 2025, the validity of the statements made may therefore vary over time as planning guidance / policies and the evidence base change.

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1 Introduction

- 1.1 EAS has been commissioned to provide a Flood Risk Assessment and SuDS report to inform a planning application for the proposed development at Temple Dinsley, Preston, Hitchin SG4 7RT (hereafter referred to as 'the site').
- 1.2 At present, the site within the red-line boundary comprises of the grounds of a former day and boarding school including several existing buildings, access roads and amenity areas. A site location plan map is included in **Appendix A** and the development plans are included in **Appendix B**.
- 1.3 The proposals were presented at committee in January 2025. The committee agreed a 'resolution to approve' subject to flood risk being resolved with the Lead Local Flood Authority and Section 106 agreed.
- 1.4 The site is in Flood Zone 1, which is defined as having less than 0.1% annual probability of river flooding.
- 1.5 The site is mainly at very low risk of surface water flooding, with areas of low, medium and high risk of surface water flooding to the north of the site. There is no risk of reservoir flooding.
- 1.6 This FRA includes a SuDS Strategy to demonstrate compliance with national and local policy requirements.
- 1.7 The contents of this FRA are based on the advice set out in the National Planning Policy Framework (NPPF) published in December 2023, Annex 3: Flood risk vulnerability classification, also from the NPPF and PPG 'Guidance for Flood Risk and Coastal Change', updated in August 2022.
- 1.8 This report is based on the Environment Agency flood maps, geology mapping, OS mapping, topographic survey, Strategic Flood Risk Assessment and local policy.
- 1.9 This document includes the following sections:
 - Section 2 – describes any relevant local and national planning policy;
 - Section 3 – provides a site description and background information
 - Section 4 – review any potential sources of flooding;
 - Section 5 – details the proposed drainage strategy;
 - Section 6 – outlines the maintenance and management plan; and
 - Section 7 – summarises and concludes the report.

2 Consultee Comments

- 2.1 As the acting Lead Local Flood Authority (LLFA), Hertfordshire County Council (HCC) were invited to comment on the proposed development on flood risk and drainage grounds. HCC have since reviewed the submitted information to accompany the planning application including the Flood Risk Assessment dated 9th July 2024.
- 2.2 Based on the information available, HCC have issued a response dated 14th November stating that they object to the planning application due to an absence of acceptable supporting information. The comments received from the LLFA have been summarised below, with evidence of how each of their comments have been overcome also included. The full response from the LLFA has been included at **Appendix C**.

*“We **object** to this planning application in the absence of an acceptable supporting information relating to:*

Appendices I, J, K and L of the Flood Risk Assessment and SuDS Report could not be located. It is recommended that the applicant provide the above data and resubmit, so we are able to review the proposed SuDS design and calculations.

The applicant must provide an exceedance flow path plan.

Reason

To prevent flooding in accordance with National Planning Policy Framework paragraphs 173, 175 and 180 by ensuring the satisfactory management of local flood risk, surface water flow paths, storage and disposal of surface water from the site in a range of rainfall events and ensuring the SuDS proposed operates as designed for the lifetime of the development.

We will consider reviewing this objection if the following issues are adequately addressed.

- 1. All the aforementioned missing data/information is provided.*
 - 2. General Arrangement drawings, pipe and chamber schedules, standard detail drawings (if any) and catchment plan are provided.”*
- 2.3 Appendix I, J, K and L containing Greenfield Runoff Rate & Volume Calculations, Proposed SuDS Strategy Causeway Flow Output, Proposed SuDS Layout & Exceedance Plan respectively were included within the original Flood Risk Assessment however, the FRA was split into multiple parts due to the size of the document and it would appear that the third and final part of the document including these appendices was not uploaded by the LPA to the planning portal and was therefore not available.
- 2.4 All the requested information is therefore included within this subsequent revision of the FRA and all parts will be submitted for review to ensure the LLFA have all the documents required to complete their review.

3 Policy Context

Introduction

3.1 This section sets out the policy context. This report is based on the advice set out in the National Planning Policy Framework (NPPF) last updated December 2024 and the Planning Practice Guidance (PPG) updated in August 2022.

3.2 Paragraph 181 of the NPPF discusses the use for site-specific flood-risk assessments and what the assessment should demonstrate:

“When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment⁶³. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;

b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;

c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;

d) any residual risk can be safely managed; and

e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.”

3.3 Paragraph 181 footnote 63 of the NPPF states:

“A site-specific flood risk assessment should be provided for all developments in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.”

3.4 The flood zones are defined as:

- Flood Zone 1 - less than a 0.1% (1 in 1000) annual probability of river or tidal flooding.
- Flood Zone 2 - between a 0.1% and 1% (1 in 1000 and 1 in 100) annual probability of river flooding; or between a 0.1% and 0.5% (1 in 1000 and 1 in 200) annual probability of flooding from tidal sources.

- Flood Zone 3a- This zone comprises land assessed as having a 1% (1 in 100) or greater annual probability of river flooding; and for tidal flooding at least a 0.5% (1 in 200) annual probability of flooding from tidal sources.
- Flood Zone 3b - This zone comprises land where water has to flow or be stored in times of flood. This classification is usually classified as land which had a 3.33% (1 in 30) annual probability of flooding.

3.5 Paragraph 170 discusses the suitability of development location, particularly with regards to future risks induced by climate change:

“Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere”.

3.6 Paragraph 182 of the NPPF discusses the application of sustainable drainage systems:

“Applications which could affect drainage on or around the site should incorporate sustainable drainage systems to control flow rates and reduce volumes of runoff, and which are proportionate to the nature and scale of the proposal. These should provide multifunctional benefits wherever possible, through facilitating improvements in water quality and biodiversity, as well as benefits for amenity. Sustainable drainage systems provided as part of proposals for major development should:

- a) take account of advice from the Lead Local Flood Authority;*
- b) have appropriate proposed minimum operational standards; and*
- c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development.”*

3.7 The site is shown to be located within the Flood Zone 1 on the Flood Map for Planning. Flood Zone 1 is defined as having a less than 0.1% annual probability of river flooding. The EA Flood Map has been enclosed in **Appendix D**.

North Hertfordshire Local Plan 2011-2031

3.8 Adopted in November 2022, the North Hertfordshire Local Plan outlines the strategies for ensuring sustainable growth within the district, providing a better quality of life for its' residents. The policies relevant to flood risk and sustainable drainage are shown below.

3.9 Policy NE7: Reducing Flood Risk

Planning permission for development proposals will be granted provided that (as applicable):

- a) Development is located outside of medium and high-risk flood areas (flood zone 2 and 3) and other areas affected by other sources of flooding where possible;*

- b) Where (a) is not possible, application of the sequential and exception tests is demonstrated where development is proposed in areas of flood risk using the Strategic Flood Risk Assessment (SFRA) and Environment Agency flood maps;*
- c) An FRA has been prepared in accordance with national guidance that considers the lifetime of the development, climate change impacts and safe access and egress; North Hertfordshire Local Plan 2011-2031 159*
- d) It will be located, designed and laid out to ensure the risk of flooding is reduced whilst not increasing flood risk elsewhere;*
- e) The impact of any residual flood risk will be minimised through flood resistant, resilient design and construction;*
- f) Any flood protection and mitigation measures necessary will not cause harm to nature conservation, heritage assets, and/ or landscape and recreation and, where possible, will have a positive impact in these respects; and*
- g) Overland flow routes and functional floodplain areas are protected from all development other than that which is "water compatible" and this must be designed and constructed to remain operational and safe for users during flood events, resulting in no net loss of flood plain storage and not impeding water flows or increasing flood risk elsewhere.*

3.10 Policy NE8: Sustainable Drainage Systems

Planning permission for development will be granted provided that:

- a) The most appropriate sustainable drainage solution is used taking into account technical, viability and design issues to reduce the risk of surface water flooding, enhance biodiversity, water quality and provide amenity benefits;*
- b) It aims to mimic the natural drainage patterns and processes as far as possible; and*
- c) Drainage solutions follow the SuDS hierarchy.*

North Hertfordshire District Council Strategic Flood Risk Assessment (Sep 2016)

- 3.11 The North Hertfordshire SFRA was updated in 2016 as a result of improved accuracy of mapping information following the 2008 document.
- 3.12 Appendix E shows the site is in Flood Zone 1 and is outside the extents of the 20yr, 100yr+CC and 1000yr modelled fluvial events.

Hertfordshire Interactive Flood Risk Management Viewer

- 3.13 Hertfordshire provides an interactive mapping website, which displays the difference sources of flood risk across Hertfordshire County. The result of this mapping in relation to the proposed site is outlined below.
- 3.14 The nearest Ordinary Watercourse is located 2.0km to the east of the site.

- 3.15 Areas of surface water flooding are present in from the centre and west of the site in the 3.33%, 1% and 0.1% annual exceedance probability (AEP) events, with depths up to 900mm. This is associated with a hazard rating of mainly between 0.5-0.75 with some areas with a rating of 0.75-1.25 and 1.25-2.0.
- 3.16 The site is shown as not being within a Surface Water Management Plan Hotspot.
- 3.17 The site is not shown to be susceptible to groundwater flooding.
- 3.18 The site is shown to be in Flood Zone 1.
- 3.19 The Hertfordshire Level 1 Strategic Flood Risk Assessment Map 7 shows the site to be at very low risk of flooding from groundwater.

4 Existing Site Assessment

Site Description

- 4.1 The site is located at Temple Dinsley, Preston, Hitchin SG4 7RT (TL 18213 24826). The location plan is included in **Appendix A**.
- 4.2 The site covers an area of approximately 277,945m², consisting of five existing school buildings along with amenity areas, with an associated access road.
- 4.3 The proposed development includes the conversion of the main school building and teaching block to flatted residential buildings. The other existing buildings to the north of the main building are to be demolished as part of the proposals and replaced with further residential dwellings. Two smaller existing buildings to the north east and south east of the main building are also to be converted to residential dwellings.
- 4.4 The proposal comprises the redevelopment of the old Princess Helena Boarding School to a residential scheme. Accordingly, the existing main building and teaching block will be converted into 43 apartments, formed of 12 x one-bedroom, 25 x two-bedroom, 5 x three-bedroom and 1 x four-bedroom units.
- 4.5 Further to this, it is also proposed that 22 houses will be provided in five residential blocks (Edwin, Violet, Sadleir, Ithel and Templar), located around the main building and teaching block. These will offer 2 x two-bedroom, 14 x three-bedroom and 6 x four-bedroom units.
- 4.6 Four detached houses, located away from the main building and teaching block are also proposed, with 2 x three-bedroom houses (Tank House and Pump House) located in the south of the site, and 2 x five-bedroom houses (Summer House and Harwood House) located in the north of the site.
- 4.7 The proposed development plans are included in **Appendix B**.

Local Watercourses

- 4.8 There are not any watercourses within the immediate vicinity of the site. The nearest watercourse is the Ippollitts Brook located approximately 2.0km east of the site.
- 4.9 The Ippollitts Brook is not considered a Main River by the Environmental Agency.

Site Levels

- 4.10 A topographical survey is enclosed in **Appendix E**. Levels to the southern side of the site are generally quite flat however, there is a slight fall from south to north. The highest levels at the site are found along the southern boundary and rise to 147.83mAOD.

- 4.11 Towards the centre of the site the gradient begins to increase with levels beginning to fall more steeply from both the southwest and southeast towards the centre of the site. Levels then fall from the centre of the site towards the northern boundary. Levels reach lows of 125.52mAOD at the centre of the northern boundary of the site.

Geology

- 4.12 With reference to the British Geological Survey online mapping (www.bgs.ac.uk), the site is located within an area with a bedrock of Lewes Nodular Chalk Formation and Seaford Chalk Formation – chalk. Given the size of the site the geology varies across the site, the majority of the site is shown to have superficial deposits of Clay with Flints Formation – Clay, Silt, Sand and Gravel with some areas of the site shown to have superficial deposits of Lowestoft Formation – Diamicton.
- 4.13 The nearest borehole records Ref. TL12SE63 indicates a geology of stiff orange brown clay to a depth of 6.0m below ground level followed by firm chalk with flint to a depth of 92.0m. The groundwater rest level is shown to be 70.5m below ground level.
- 4.14 The DEFRA Magic Map shows the site is located within Source Protection Zone III – Total Catchment.
- 4.15 The DEFRA Magic Map shows the site is in an area with a Principal bedrock aquifer and Secondary (undifferentiated) superficial drift aquifer.
- 4.16 The DEFRA Magic Map shows the site is in mainly a low groundwater vulnerability area with some areas of the site located in a medium to high groundwater vulnerability are. The entirety of the site is shown have a soluble rock risk.

Sewer Records

- 4.17 Anglian Water sewer records are enclosed in **Appendix F**. There are no surface water sewers located within the vicinity of the site. There is a foul water sewer to the west of the site located within School Lane. The sewer continues north, entering Preston Road before heading north east.

Existing Drainage

- 4.18 A site visit was undertaken to gather information on the existing drainage system at the site. The site visit found an existing surface water drainage system serves the main building along with the smaller buildings to the north of the main building.
- 4.19 The existing drainage system directs surface water runoff from the existing buildings to a seasonal ditch located towards the north of the site at an unrestricted rate.

5 Potential Source of Flooding

Fluvial

- 5.1 A copy of the Environment Agency's Flood Map for Planning is enclosed in **Appendix D**.
- 5.2 The site is in Flood Zone 1. Flood Zone 1 is defined as having less than 0.1% annual exceedance probability (AEP) of river flooding.
- 5.3 The risk of fluvial flooding is considered low.

Surface Water

- 5.4 Surface water flooding refers to flooding caused when the intensity of rainfall, particularly in urban areas, can create runoff which temporarily overwhelms the capacity of the local drainage systems or does not infiltrate into the ground. The water ponds on the ground and flows towards low-lying land. This source of flood risk is also known as 'pluvial'.
- 5.5 The Long-Term Flood Map and the risk of flooding from surface water (RoFSW) data was updated in January 2025.
- 5.6 The RoFSW products are an assessment of where surface water flooding may occur when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead. It includes information about flooding extents and depths. Risk is displayed as one of three likelihood categories:
 - High - greater than or equal to 1 in 30 (3.3%) chance of flooding in any year
 - Medium – Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of flooding in any given year
 - Low – Less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) chance of flooding in any given year
- 5.7 As well as present day risk of flooding from surface water, climate change scenarios have been produced to indicate the predicted impacts of climate change on future flood risk. The climate change allowances are based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative Concentration Pathway (RCP) 8.5. A near-term epoch (2040 – 2060 "2050s" epoch) and central allowances are being used initially.
- 5.8 For the purpose of this flood risk assessment, the RoFSW the Climate Change 1 2040-2060 data set has been used.
- 5.9 Within this dataset the EA long term risk maps (available on the GOV.UK website) show the site is at low, medium and high risk of surface water flooding towards the north of the site. The EA long term risk maps are included in **Appendix G**.

- 5.10 More accurate, Defra surface water flooding data for a 0.1% AEP storm event, was analysed in QGIS and overlaid with the topographical survey and proposed development layout - as included in **Appendix G**. The Defra surface water overlay shows the predicted depths of flooding at 300mm intervals, which is more precise than the EA long term flood risk maps.
- 5.11 Surface water flooding is shown in isolated areas within the proposed development, with depths from 0mm-900mm. This consists of flooding of up to 600mm deep within the location of the existing Sports Hall building, with very small areas shown with depths up to 900mm and flooding of up to 300mm within the garden area to the west of the main building.
- 5.12 These maximum flood depths are in the low risk, greater than 1% AEP and up to 0.1% AEP event, allowing for climate change. In the design flood event, indicated by the medium risk, the depths fall within the area of the existing sports hall and adjacent to the main building, to generally below 200mm.
- 5.13 Mitigation measures to manage these flood risks are discussed in Section 6.

Reservoir

- 5.14 The EA long term risk maps also display the risk from reservoirs. The site is shown to not be in a reservoir flood risk area; therefore, the risk of reservoir flooding is low.

Groundwater

- 5.15 Based on Hertfordshire's interactive mapping, the site is not susceptible to groundwater flooding. The Hertfordshire Level 1 SFRA indicates a low risk.

6 Flood Risk Mitigation Measures

- 6.1 New buildings are proposed to replace the existing Sports Hall and Science Block. Drawing on the characteristics and materials of 19th century model farms, these buildings sit at the service end of the Main Building, giving much-improved views to and from the house and gardens. For these reasons, although this area is at risk of surface water flooding the proposed buildings cannot be located elsewhere on the site.
- 6.2 As such, the following mitigation measures will be implemented for these buildings.

Finished Floor Levels

- 6.3 As outlined within Section 5, the Defra surface water flood risk mapping shows maximum flood depths within the low risk event, of mainly up to 600mm within the vicinity of the existing sports hall building.
- 6.4 The finished floor level of the sports hall building is currently at 130.0mAOD. Therefore, to sufficiently mitigate against this flood risk, the finished floor levels of all buildings within this area will be raised to 130.6mAOD. Flood depths for a medium risk event which is in line with the design flood event show depths of up to 0.2m within the vicinity of the proposed buildings. Therefore, raising the finished floor level of the proposed buildings within this area to 130.6mAOD also achieves a freeboard of greater than 300mm from the flood level of the design flood event.
- 6.5 The footprint the proposed buildings within the area at risk of surface water flooding is less than the existing buildings within this area. As such displacing flood water is not an issue and floodplain compensation is not required.
- 6.6 There are very small areas of flood risk at the northeast corner of the sports hall building shown to have flood depths of over 600mm. When reviewing the topographical survey of the site it can be seen that there is a ridge caused by a rise in ground levels between the sports hall building and the ditch to the north. This rise in levels prevents surface water from being able to flow from the sports hall building area to the ditch which has resulted in the greater flood depths. As part of the proposed on-site works this ridge is to be removed with a constant fall to the ditch implemented to not restrict the flow of surface water runoff. This will reduce the flood depths of these small areas.

Mitigation for Surface Water Flooding Against Existing Historic Building

- 6.7 Section 5 also highlighted an area of flooding with depths up to 300mm within the garden area to the west of the main existing building at the site. This building is proposed to remain within the development and be converted to residential use across all floors.

- 6.8 Both the garden area known as the Jekyll Rose Garden and the section of the building known as Lutyens are Grade II* Listed. As such, mitigation measures that can be implemented are limited.
- 6.9 All building walls within the vicinity of the flood risk area are solid brick with all window sill heights of 0.8m or greater. There is a double door opening, 1.070 m wide, with a threshold level, flush with the internal finished floor level of 140.12mAOD, approx. 0.16 m above the external ground level. Given the flood depth within this area is shown to be up to 300mm this would result in potential flood depths of up to 140mm within the existing building.
- 6.10 Given the Listed nature of both the building and the garden area finished floor levels are not able to be raised. Therefore, in order to mitigate against the flood risk within this area the existing glass double doors will be replaced with flood doors, with detail design to accord with the Grade II* Listed heritage context.
- 6.11 This will ensure that no flood waters are able to enter the building and will be contained within the garden area until the flood water dissipate.
- 6.12 An outline sketch of the potential mitigation measures has been included at **Appendix H**.

Flood Resilience Measures

- 6.13 Due to the potential for surface water flooding, it is proposed that flood resilience measures be considered for any new dwellings identified to be potentially at risk of surface water flooding. There are many flood resilience construction methods available, which are detailed in the publication by DEFRA entitled 'Improving the Flood Performance of New Buildings.' It is recommended that the architect alongside the structural engineer reviews this document for further details. However, some flood resilience measures which could be utilised are discussed below.
- 6.14 Advice is given on foundations, walls, fitting and fixtures and services, some flood resilience/resistant measures which could potentially be applied are:
- Concrete Supported Floors
 - A suitable Damp Proof Membrane (DPM)
 - Floor insulation of a closed cell type Floor and internal wall types of either water resistant or easily replaceable materials
 - Raise or cover air vents/bricks
 - Durable fittings/fixtures should be used that are not significantly affected by flood water and can be easily cleaned.
 - Electrical appliances, gas oven etc. should be placed on plinths as high as practicable above the floor while still complying with building regulations, to ensure they are above the flood level.

Services:

- Pipework: Closed cell insulation should be used for pipes.
- Drainage services: non-return valves are recommended in the drainage system to prevent back-flow.
- Water, electricity and gas meters: should be located above predicted flood level.
- Electrical services: electrical sockets should be installed above flood level.
- Electric ring mains should be installed at first floor level with drops to ground floor sockets and switches.
- Heating systems: boiler units and ancillary devices should be installed above predicted flood level.
- Communications wiring: wiring for telephone, TV, Internet and other services should be protected by suitable insulation agreed with relevant service.

6.15 Further details on these methods and more information on flood resilient design is provided in Chapter 6 of the DEFRA document and can be downloaded here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7730/flood_performance.pdf

Flood Warning and Safe Access

6.16 Flood warnings for surface water flooding are not available. However, the MET office provides updates on weather conditions. Residents are advised to sign up to MET Office weather warning service which can be found here:

<https://www.metoffice.gov.uk/weather/warnings-and-advice/uk-warnings#?date=2024-07-12>

6.17 Should surface water begin to build up within the site, before safe access is lost, it is recommended that residents exit the site via the main access road to the south of the main building, which is outside of the surface water flood risk area.

Flood Plan

6.18 It is proposed that all residents be provided with a Flood Plan, which details the risk of flooding, flood warning measures and evacuation options. It is proposed that the Flood Plan could be conditioned as part of a planning permission.

7 Proposed SuDS Strategy

Relevant SuDS Policy

- 7.1 SuDS mimic natural drainage patterns and provide a method of surface water drainage which can decrease the quantity of water discharged, and hence reduce the risk of flooding. SuDS design should meet the “four pillars” of SuDS of: water quantity, water quality, amenity and biodiversity, wherever possible.
- 7.2 In decreasing order of preference, the preferred means of disposal of surface water runoff is:
- Discharge to ground.
 - Discharge to a surface water body.
 - Discharge to a surface water sewer.
 - Discharge to a combined sewer.

Site Specific SuDS

- 7.3 The various SuDS methods need to be considered in relation to site-specific constraints. Several SuDS options are available to reduce or temporarily hold back the discharge of surface water runoff. Table 7.1 outlines the constraints and opportunities to each of the SuDS devices in accordance with the hierarchical approach outlined in The SuDS Manual CIRIA C753. It also indicates what could and could not be incorporated within the development, based upon site-specific criteria.

Device	Description	Constraints / Comments	Appropriate
Living roofs (source control)	Provide soft landscaping at roof level which reduces surface water runoff.	Not suitable due to pitch of residential roof.	No
Infiltration devices & Soakaways (source control)	Store runoff and allow water to percolate into the ground via natural infiltration.	Infiltration is not viable at the site.	No
Pervious surfaces (source control)	Storm water is allowed to infiltrate through the surface into a storage layer, from which it can either infiltrate and/or slowly release to sewers.	Lined Permeable paving is proposed.	Yes

Rainwater harvesting (source control)	Reduces the annual average rate of runoff from the Site by reusing water for non-potable uses e.g. toilet flushing, recycling processes.	Not proposed at this stage. Some water saving features could be incorporated into the design by an M & E Engineer.	Possibly
Swales (permeable conveyance)	Broad shallow channels that convey / store runoff, and allow infiltration (ground conditions permitting).	No suitable location onsite.	No
Filter drains & perforated pipes (permeable conveyance)	Trenches filled with granular materials (to take flows from adjacent impermeable areas) that convey runoff while allowing infiltration.	No suitable location onsite.	No
Filter Strips (permeable conveyance)	Wide gently sloping areas of grass or dense vegetation that remove pollutants from run-off from adjacent areas.	No suitable location onsite.	No
Infiltration basins (end of pipe treatment)	Depressions in the surface designed to store runoff and allow infiltration.	Infiltration features not viable at the site.	No
Wet ponds & constructed wetlands (end of pipe treatment)	Provide water quality treatment & temporary storage above the permanent water level.	No suitable location onsite.	No
Attenuation Underground (end of pipe treatment)	Oversized pipes or geo-cellular tanks designed to store water below ground level.	Underground cellular storage tanks have been included within the proposed drainage system.	Yes
Raingardens	Rain gardens are relatively small depressions in the ground that can act as infiltration points for roof water and other 'clean' surface water.	Raingardens have been included within the proposals.	Yes

Table 7.1 Site Specific SuDS

Consideration of SuDS Hierarchy

- 7.4 Given the bedrock geology of Chalk at the site infiltration testing to BRE 365 standards was carried out the site to confirm if infiltration would be viable at the site. WDE consulting visited the site in June 2024 to carry out the infiltration testing. The testing consisted of two trial pits, one 3.0m in depth the other 3.1m in depth. The trial pits were dug as deep as possible in an attempt to enter the chalk strata and obtain the best rates.
- 7.5 Both trial pits failed the test with infiltration rates of below 1×10^{-6} m/s recorded. As such, infiltration is not considered viable at the site. An attenuation-based strategy has therefore been proposed with a restricted outfall to an existing ditch located to the north of the site, mimicking the existing drainage layout.

7.6 A report of the WDE infiltration testing is included at **Appendix I**.

Surface Water Drainage Parameters

7.7 The following best practice design parameters have been considered:

- The local 2070s 'Upper End' Climate Change allowance is 40% and has been applied to the hydraulic drainage network design.
- The Hydraulic Model has been for a 1:2yr Storm Event, 1:30yr Storm Event, 1:30yr + 40% Climate Change Event, 1:100yr Storm Event and 1:100yr + 40% Climate Change Storm Event.
- FEH22 rainfall data has been used.
- The CV Value for Winter and Summer storms has been set to 1.0.
- A 5min time of entry has been used.
- Total proposed impermeable area: 6084m². With 10% urban creep allowance applied to the roof area, the impermeable area to be allowed for is: 6214m². Urban Creep has not been applied to any of the Listed buildings that are to remain.
- Half-Drain Time – In line with Hertfordshire's LLFA Guidelines, lined devices (tanks and lined ponds, lined permeable paving) to half-drain within 48hrs (2880mins).
- Exceedance Routes – Exceedance routes shall be demonstrated.
- Surcharged Outfall - The drainage calculations has been modelled to include a surcharged outfall to the watercourse.
- Pre-and Post Runoff Rates – The proposals seek to offer a significant reduction on existing runoff rates.
- CIRIA's Susdrain Fact Sheet and SC030219 (Rainfall Runoff Management for Developments) sets out how post-development volumes that exceed pre-development volumes should be managed. As the post development discharge volume for a 1 in 100yr 360min Storm exceeds that of the Greenfield 1 in 100yr 360min Storm, the discharge from the site for all storms up to and including the 1 in 100yr + Climate Change Event has been discharged at a rate that does not adversely affect flood risk. This is in line with Policy S5 & S6 of the Non-Statutory Technical Guidance

Pre-Development Runoff Rates and Discharge Volumes

7.8 The site currently consists of approximately 0.99ha of impermeable area. Of this area, 0.33ha is to be developed as part of the proposals and therefore managed via the proposed drainage system, the remaining impermeable area is proposed to remain unchanged and continue using the existing drainage strategy (inclusive of the main buildings and some of the access roads). From observation surface water runoff from the site currently outfalls unrestricted and untreated

to a ditch located to the north of the site. No attenuation or treatment features serve the existing site.

- 7.9 To calculate the existing runoff rates, a 'dummy' existing drainage network, based on information from the topographical survey, has been modelled for a range of storm events using Causeway Flow. The runoff rates results are contained in **Appendix J** and include the brownfield runoff volume for a 1:100yr 360min Storm Event.
- 7.10 The output shows the existing runoff from the impermeable area that is to be redeveloped (excluding the main building and access roads to be retained) is 74.8 l/s for a 1 in 100 year plus 40% climate change storm, with the runoff volume for a 1:100yr 360min Storm Event shown to be 202.3m³

Post Development Runoff Rate

- 7.11 Greenfield runoff rates were estimated using the FEH method on the Causeway Flow software. The results of which are included in **Appendix K**. The proposed impermeable area of the site is 0.61ha, the following greenfield runoff rates for a range of storm events have been scaled accordingly:
- 1 in 1 year – 0.7 l/s/ha – 0.43 l/s
 - 1 in 2 year – 0.8 l/s/ha – 0.49 l/s
 - 1 in 30 year – 2.2 l/s/ha – 1.3 l/s
 - 1 in 100 year – 2.9 l/s/ha – 1.8 l/s
- 7.12 Causeway Flow Greenfield ReFH2 Method was used to calculate the 1:100yr 360min Storm Event Discharge Volume for 1ha. The results are included in **Appendix L** and show a discharge volume of 35m³ per hectare.
- 7.13 The proposals seek to match the 1 in 1 year Greenfield Runoff Rate for all storms up to and including the 1:100yr + 40% Climate Change Event. However, as per the Greenfield Runoff Rates calculated in paragraph 7.11 above, the 1 in 1-year greenfield runoff rate for the proposed impermeable area is 0.41 l/s. Restricting runoff from the site to this low of an outfall rate will very likely result in blockages. Also, restricting the runoff to such a low outfall rate results in storage devices within the drainage strategy having half drain times of over 2880 minutes.
- 7.14 As such, it is proposed to restrict outfall from the site to a maximum of 2.9 l/s. The existing runoff rate for an equivalent storm is 74.8 l/s as such this offers over a 96% reduction on existing maximum outfall rates from the site.

Proposed SuDS Strategy

- 7.15 As the external of the existing main building is to remain unchanged with only proposed changes to the internals of the building, the existing drainage system serving this building and the associated hardstanding's will also remain and will continue to collect and direct surface water runoff from the building to the ditch located to the north of the site. Other existing impermeable areas at the site that are proposed to remain unchanged such as part of the access road will also continue to drain as they do within the existing arrangement.
- 7.16 As outlined in Table 5.1 above, several SuDS Features shall be utilised to form the Surface Water Drainage Strategy to meet the 4 Pillars of SuDS.
- Water Quantity – Cellular Storage tank, Permeable Paving, Raingarden Planters and potentially Rainwater Harvesting Butts;
 - Water Quality – Permeable Paving.
 - Biodiversity – Raingarden Planters and existing basins at the site are proposed to remain.
 - Amenity – Raingarden Planters and existing basins at the site are proposed to remain.
- 7.17 It can be seen it is proposed to utilise several SuDS features with the proposed drainage strategy to adequately manage surface water runoff from the development. The proposed new access road and parking areas are to utilise a lined permeable paving construction. The sections of permeable paving have been split into two separate sections.
- 7.18 This will allow surface water runoff to permeate through the surface of the car and into the sub-base where it is stored. The outfall from each permeable paving section will be restricted via an orifice plate. The first section of permeable paving is the larger of the two located just south of the second section of permeable paving will be restricted to a maximum outfall rate of 1.6 l/s, with the second section of permeable paving restricted to 0.3 l/s.
- 7.19 Both sections of permeable paving will then outfall directly to an existing ditch located to the north of the site.
- 7.20 The surface water runoff from the roof areas of the proposed buildings along with the roof area from the other smaller existing building to remain is to be collected via a new proposed surface water network and directed to a cellular storage crate located towards the north of the site.
- 7.21 The new proposed access road to the east of the proposed buildings is too steep for permeable paving to work effectively, as such this section of the access road is to utilise a typical impermeable construction. The runoff from this section of the access road is to be collected via a series of road gulleys and directed to the cellular storage tank to the north of the site.
- 7.22 Surface water runoff from the development will be stored within the cellular storage crate before discharging to the existing ditch at the north of the site via the existing connection at a restricted rate of 1.0 l/s via a hydro brake. Along with the flows from the proposed sections of permeable paving this brings the total maximum runoff rate from the site to 2.9 l/s.

- 7.23 Causeway Flow was used to estimate the size required for each of the proposed SuDS devices to ensure adequate attenuation has been provided for rainfall events up to and including a 1 in 100 year plus 40% climate change storm. Causeway Flow estimated permeable paving section 1 requires a minimum sub-base depth of 556mm whilst section 2 of permeable paving requires a minimum sub-base depth of 450mm. Causeway Flow also estimated the tank would need to be sized at 10.0m x 12.0m x 1.98m deep to provide adequate attenuation.
- 7.24 Causeway Flow was used to estimate the half drain time of each of the three storage devices. The first section of permeable paving achieves a half drain time of 2850 minutes, the second section achieves a half drain time of 2250 minutes with the tank achieving a half drain time of 2415 minutes.
- 7.25 The Causeway Flow hydraulic calculations have been included in **Appendix M** with the proposed drainage layout for the attenuation-based strategy included at **Appendix N**.
- 7.26 There are four other existing smaller buildings at the site proposed to be converted to residential use. These buildings are located at various points of the site, two to the very south of the site with two to the very north of the site. As these buildings are existing and will be located within a very similar if not the same footprint surface water runoff from these areas have not been included within the main proposed drainage system.
- 7.27 Unlined permeable paving will be used within the construction of the driveways of each of these dwellings. Runoff from these proposed dwellings will be directed to the permeable paving and be allowed to slowly infiltrate to the ground naturally. In the event the permeable driveways overflows surface water runoff would runoff to the large greenfield areas surrounding each of the dwellings and continue to infiltrate to the ground.

Exceedance Event

- 7.28 The proposed surface water drainage strategy is designed to accommodate a 1:100yr + 40% Climate Change Storm Event. In the unlikely event that an exceedance event occurs, most flood waters would flow in a northerly direction towards the existing ditch at the north of the site. An Exceedance Route Plan is included in **Appendix O**.

Water Quality

- 7.29 Relating to runoff from low-trafficked roads: CIRIA 763 SuDS Manual Table 26.2 shows Low-Traffic Roads have a Pollution Hazard Level of LOW with pollution indices of TSS of 0.5, Metals 0.4 and Hydrocarbons 0.4. Although most low-traffic roads within the area of the site to be redeveloped are anticipated to comprise lined permeable paving there are some areas that are to utilise typical impermeable construction
- 7.30 Therefore, to provide adequate water quality for Surface water run-off from these sections of low traffic roads a downstream defender has also been proposed. Downstream defenders provide

mitigation for TSS at 0.5; Metals at 0.4 and Hydrocarbons at 0.5. The indices of various types of downstream defender have also been listed below.

Model	Downstream Defender® Select Mitigation Indices ^{(a)(b)}		
	Total Suspended Solids (TSS)	Metals	Hydrocarbons (Oils)
Vortex	0.3	0.2	0.2
Vortex Plus	0.5	0.4	0.5
Advanced Vortex	0.5	0.4	0.5

Notes:

(a) All mitigation indices supplied by Hydro International Ltd are calculated using the methods laid out in the British Water Hire To Guide: Applying the CIRIA SuDS Manual Simple Index Approach to Proprietary / Manufactured Stormwater Treatment Devices. The Advanced Vortex and Vortex Plus models have also been independently verified by the WRc, with the WRc Performance Declaration available on request.

(b) Mitigation indices quoted for the Downstream Defender® Select are valid when the unit is designed according to the Treatment Flow Rate (see Table 3).

SuDS Mitigation Indices for Downstream Defender® Select

- 7.31 The runoff from the section of permeable paving will not pass through the downstream defender however, the permeable paving itself will provide sufficient water quality mitigation indices. Permeable Paving alone provides mitigation for TSS at 0.7; Metals at 0.6 and Hydrocarbons at 0.7. Surface water run-off from low-traffic-road areas is more than sufficiently mitigated by use of Permeable Paving and Downstream Defender.
- 7.32 Relating to runoff from Residential Roofs: CIRIA 763 SuDS Manual Table 26.2 shows residential roofs have a Pollution Hazard Level of LOW. Table 26.2 shows Residential Roofs have TSS of 0.5 Metals 0.4 and Hydrocarbons 0.4. As such, this will also be adequately managed by the proposed Downstream Defender.

8 Maintenance of Development Drainage

- 8.1 The maintenance of both the existing and proposed SuDS features will remain the responsibility of the site owner.
- 8.2 Regular inspections and maintenance should be carried out for each of these elements, particularly after periods of heavy rainfall. Maintenance tasks and frequencies for permeable paving and raingarden planters are detailed in the CIRIA SUDS Manual (C753) and have been summarised in Table 8.1-8.2 below.

Maintenance Schedule	Required Action	Frequency
Regular maintenance	Brushing and vacuuming.	Three times per year at end of winter, mid-summer, after autumn leaf fall, or as required based on site specific observations of clogging or manufacturer's recommendations.
Occasional maintenance	Stabilise and mow contributing and adjacent areas.	As required.
	Removal of weeds.	As required.
Remedial actions	Remediate any landscaping which, through vegetation maintenance of soil slip, has been raised to within 50mm of the level of the paving.	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance of a hazard to the user.	As required
	Rehabilitation of surface and upper sub-surface.	As required (if infiltration performance is reduced as a result of significant clogging.)
Monitoring	Initial inspection	Monthly for 3 months after installation.
	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 8.1: Maintenance tasks for permeable paving (Source: CIRIA C753, The SUDS Manual)

Maintenance Schedule	Required Action	Typical Frequency
Regular Inspections	Inspect infiltration surfaces 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. Check operation of underdrains by inspection of flows after rain. Assess plants for disease infection, poor growth, invasive species etc and replace as necessary. Inspect inlets and outlets for blockage.	Quarterly. Annually. Quarterly. Quarterly.
Regular Maintenance	Remove litter and surface debris and weeds. Replace any plants, to maintain planting density. Remove sediment, litter and debris build-up from around inlets or from forebays.	Quarterly (or more frequently for tidiness or aesthetic reasons). As required. Quarterly or biannually.
Occasional Maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required. Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch.	As required. As required.
Remedial Actions	Remove and replace filter medium and vegetation above	As required but likely to be > 20 years.

Table 8.2: Maintenance tasks and frequencies for Bioretention Systems (i.e. Rain garden Planters) (The SUDS Manual C753, CIRIA)

- 8.3 Inspection chambers and manhole covers should be lifted each year to remove visible debris and check for blockages. It is suggested that this is undertaken every November after the heaviest leaf-fall has occurred.
- 8.4 Any control chambers/orifice plate filters should be regularly inspected (every 4 months) and cleared of silt and debris if necessary.
- 8.5 Should a blockage occur at any time, it is advised to seek professional help to jet the drainage system to clean and clear the system.

- 8.6 It is good practice to ensure that gutters and downpipes are occasionally inspected to ensure they are in good order and free of leaves & debris. Once every 6 months should be sufficient.

9 Conclusions

- 9.1 EAS has been commissioned to provide a Flood Risk Assessment and SuDS report to inform a planning application for the proposed development at Temple Dinsley, Preston, Hitchin SG4 7RT.
- 9.2 The site covers an area of approximately 277,945m², consisting of a former boarding school with several associated buildings across the site along with various access roads and large amenity areas.
- 9.3 The proposal comprises the redevelopment of the old Princess Helena Boarding School to a residential scheme. The existing main building and teaching block will be converted into 43 apartments, it is also proposed that 22 houses will be provided in five new residential blocks located around the existing main building and teaching block. Four detached houses, located away from the main building and teaching block are also proposed

Flood Risk

- 9.4 The site is located within Flood Zone 1 on the EA Flood Map for planning at low risk of flooding from fluvial sources and is also deemed at low risk from, groundwater, sewer and reservoir flooding.
- 9.5 The EA long term risk maps (available on the GOV.UK website) show the site is at low, medium and high risk of surface water flooding towards the north of the site. Defra surface water flood mapping was obtained in order to confirm the depths of flooding. The Defra mapping indicates depths of flooding mainly below 600mm.
- 9.6 Several dwellings are proposed within this flood risk area. As such, mitigation measures are required to adequately manage the surface water flood risk within these areas.
- 9.7 Proposed mitigation measures are summarised below:
 - Raising the finished floor level of the proposed buildings within the area of the existing sports hall by 600mm resulting in a finished floor level of 130.6mAOD.
 - Removing the existing ridge from located between the existing sports hall building and ditch to provide a constant fall from the sports hall building to the ditch to allow surface water to flow freely to the ditch
 - As the main building and garden are to the west are both Grade II Listed, finished floor levels cannot be raised. As such, a flood door is proposed to replace the existing door to prevent flood waters entering the building.
 - Due to the potential for surface water flooding, it is proposed that flood resilience measures be considered for any dwellings identified to be potentially at risk of surface water flooding. Some examples of flood residence measures have been included within this report.

- Flood warnings for surface water flooding are not available. However, the MET office provides updates on weather conditions. Residents are advised to sign up to MET Office weather warning service.
- Should surface water begin to build up within the site, before safe access is lost, it is recommended that residents exit the site via the main access road to the south of the main building, which is outside of the surface water flood risk area.
- Flood Plan - It is proposed that all residents be provided with a Flood Plan, which details the risk of flooding, flood warning measures and evacuation options. It is proposed that the Flood Plan could be conditioned as part of a planning permission.

SuDS Strategy

- 9.8 As the exterior of the main existing building is to remain unchanged, it is proposed to continue utilising the existing drainage system it is currently served by.
- 9.9 Given the bedrock geology of Chalk at the site infiltration testing to BRE 365 standards was carried out the site to confirm if infiltration would be viable at the site. However, failed to confirm a suitable infiltration rate.
- 9.10 An attenuation-based strategy has therefore been proposed. The attenuation-based strategy uses a combination of raingarden planters, lined permeable paving and below ground cellular storage tanks to provide the required attenuation at the site whilst meeting the four pillars of SuDS.
- 9.11 The outfall from the proposed drainage system is to discharge to an existing ditch located to the north of the site, replicating the existing arrangement. The outfall is proposed to be restricted to a maximum of 2.9 l/s for all rainfall events up to and including a 1 in 100 year + 40% climate change storm. This offers a 96% reduction on existing runoff rates for the same storm event.
- 9.12 The site owner/appointed management company will be responsible for maintaining all components of the existing and proposed drainage system including the raingarden planters permeable paving and cellular storage tank.

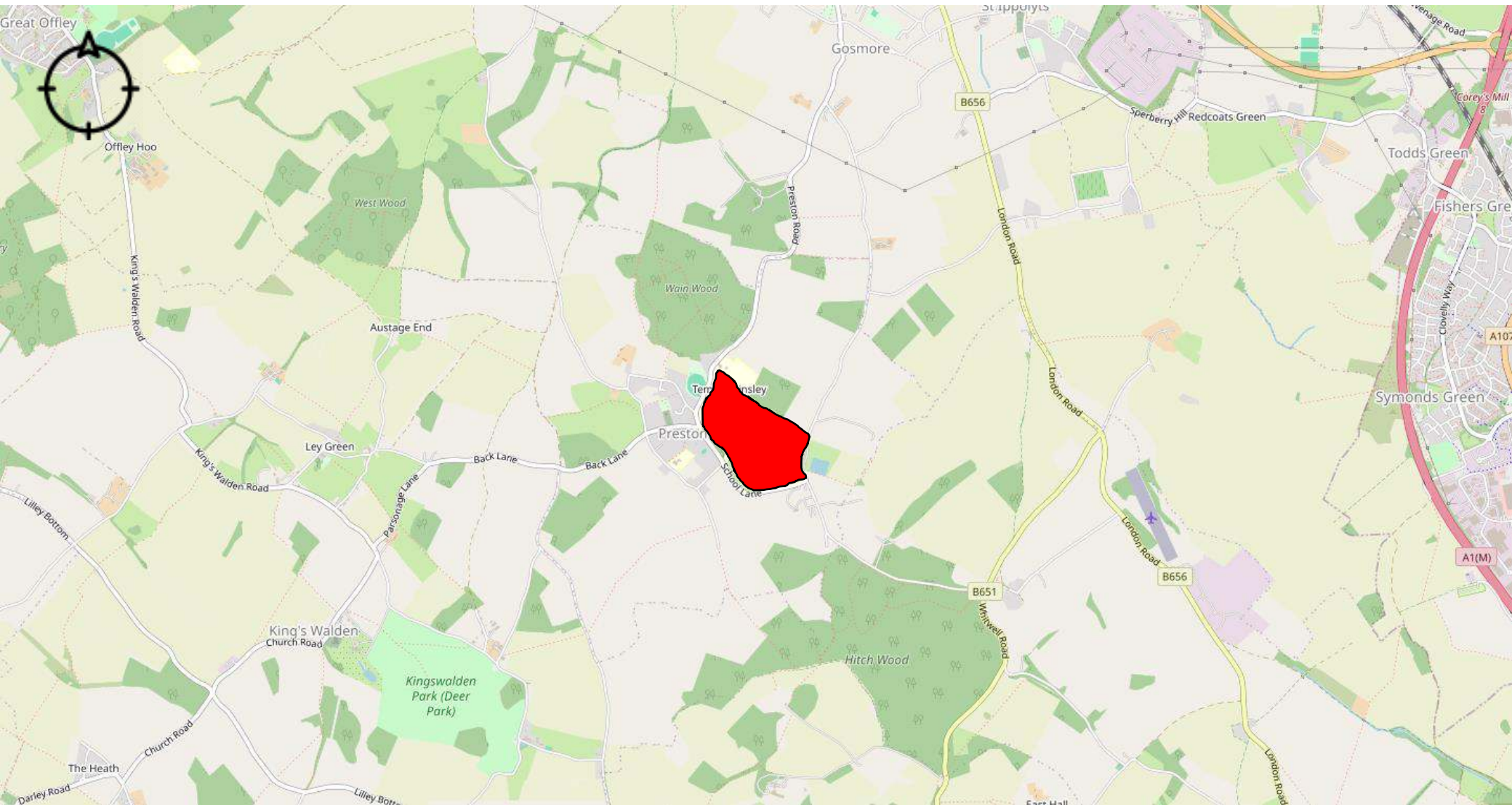
Conclusion

- 9.13 In conclusion, the surface water flood risk has been adequately mitigated against. A policy compliant SuDS layout has been proposed, which will reduce the amount of surface water runoff generated by the site.

Appendices:

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Appendix: A - Location Plans



Location Plan

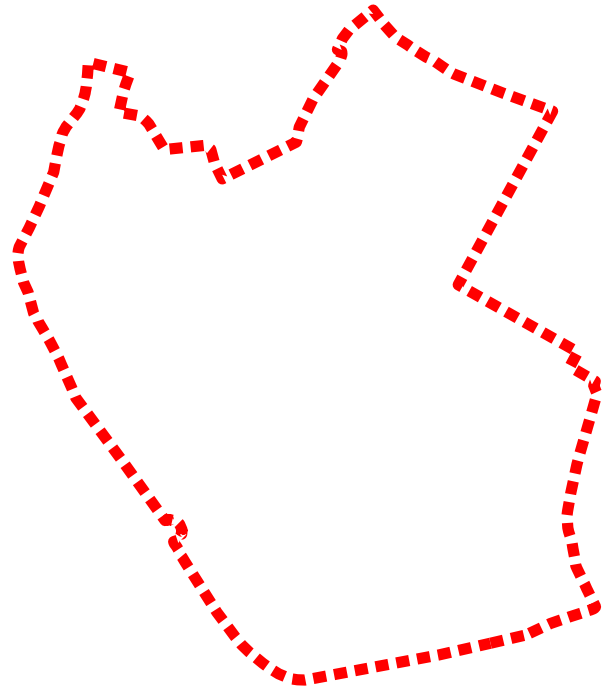


Site Location



Appendix: B – Development Site Plans

Site Area : 277945 sq.m (27.8 ha)



- 1. Main Building
- 2. Teaching Block
- 3. Edwin
- 4. Violet
- 5. Sadleir
- 6. Ithel
- 7. Templar
- 8. Summer House
- 9. Harwood House
- 10. Tank House

- 11. Pump House
- 12. Lodge Gate
- 13. Belvedere
- 14. Ice House
- 15. Piggery
- 16. Park Wall & Main Gate
- 16. Main Entrance & Occasional Exit

- 17. Paved Rose Garden
- 18. Herbaceous Garden
- 19. Small Herbaceous Garden
- 20. Rose Garden

- 21. Magnolia Steps
- 22* Cricket Pitch
- 23. North Tennis Court
- 24. Village Gate
- 25. Walled Parking Garden
- 26. Existing Parking
- 27. Visitor Parking
- 28. Summer House Plantation
- 29. East Tennis Courts
- 30. Pergola Garden, Tennis Lawn

- 31. Permissive Path (extended) & Estate Fencing
- 32. Permissive Path (new) to Dower House
- 32. with Post and Rail
- 33. Path to School Yard
- 34. St. Albans Road
- 35. East Avenue to Exit
- 36. Construction Traffic In and Out
- 36. Access to Cricket Pitch, Tennis Courts,
- 36. Summer House & Harwood House

- 37. Substation
- 38. New Cricket Pavilion and Equipment Store
- 39. Proposed Woodland Planting
- 40. Wildflower Meadows

- 42. Energy Centre in East Car Park
- 43. Central Bin Store in East Car Park

- Estate fence
- Post and Rail
- a Vehicle gate
- a1 Vehicle & pedestrian gate
- b Pedestrian gate with keypad
- c Pedestrian kissing gate
- d Cattle grid & pedestrain gate

Based on a TRICS assessment carried out by EAS, it is estimated that the proposals to develop 69 houses and apartments on site would generate circa 36 vehicle trips in both the AM and PM peak periods. This equates to a significant reduction of circa 280 vehicle trips in each of the network peak hours when related to the school operations at Princess Helena College.

* New **EIGHT-PITCH** natural grassed cricket square (or table), all eight pitches having an ECB senior cricket minimum boundary of 45.7m (50 yards).



DO NOT SCALE OFF THIS DRAWING
DO NOT SUBSTITUTE ANY OF THE PRODUCTS
OR MATERIALS.

1. This is a planning drawing and is intended for this use only; it must not be used for construction.
2. All dimensions are in MM and should be checked on site prior to commencement of work; do not scale off this drawing.
3. This drawing is to be read in conjunction with all other relevant information.
3.Discrepancies between drawings and information to be referred to Architect without delay.

P20	East Car Park and gate access notes	14.11.24
P19	Permissive path removed	06.11.24
P18	East Car Park & Cricket Pitch	05.11.24
P17	East Car Park & Cricket Pitch	29.10.24
P16	Post and Rail along with hedges added	16.10.24
P15	Main Gate and add Permissive Path	15.10.24
P14	Substation moved	08.10.24
P13	Updated Trees	XX.07.24
P12	Fences and gates	04.07.24
P11	Wildflower meadows added	01.07.24
P10	Permissive path alterations	01.07.24
P09	Issued for Planning	25.06.24
P08	Updated SH,HH and TH boundary fences	17.06.24
P07	Issued for BNG calculations	07.06.24
P06	Updated to latest design	29.05.24
P05	Coordination issue	20.05.24
Revision	Description	Date



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AY PILSBURY THOMAS ARCHITECTS

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AY PILSBURY THOMAS ARCHITECTS

HONEYLANDS RADWINTER SAFFRON WALDEN ESSEX

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Client
The Door UK Ltd

Project
Temple Dinsley
Preston, Hitchin, Hertfordshire,
SG4 7RT

Drawing title
Proposed Site Plan

Purpose of issue
Planning

Job no. Status Scale @ A0
641 S0 1:1000

Checked by
ST

Date Revision
28.03.24 P20

Drawing number
641-KS-03-XX-DR-A-10002

Appendix: C – Lead Local Flood Authority Consultee Comments

Peter Bull
Local Planning Authority
North Herts Council
PO Box 10613
Borehamwood
Hertfordshire
WD6 1WA

**Lead Local Flood Authority
Growth and Environment
Hertfordshire County Council
Post Point CHN 215
Farnham House
Six Hills Way,
Stevenage, Herts, SG1 2ST
www.hertfordshire.gov.uk**

Contact Flood Risk Management Team
Email FRMConsultations@hertfordshire.gov.uk

Date 14 November 2024

Dear Peter

RE: 24/01604/FP - Change of use of the Former Princess Helena College and associated land from a former all-girls boarding school to 69no. private residential dwellings (Use Class C3), including the conversion of the main Grade II* Listed House to 35no. new apartments, the conversion of the retained Teaching Block to provide 8 new apartments, the demolition of the existing sports hall building and science block and replacement with 20no. new houses and 2no. new apartments, the conversion of the Tank House and the Pump House buildings to provide 2no. detached dwellings and the erection of 2no. new dwellings located within the summerhouse plantation. The provision of a new carpark together with domestic storage units and covered parking bays to include solar PV Panels, and waste storage units and the provision of new driveways and associated works. Erection of new sub-station building and plant room. In addition, the associated landscaping of the site including provision of new pathways and gates and the reinstatement of Grade II* Listed Parks and Gardens and the provision of a new Cricket Pitch and associated Cricket Pavilion - Temple Dinsley (formerly The Princess Helena College) School Lane Preston Hertfordshire SG4 7RT

Thank you for your consultation on the above site, received on 30 July 2024. We have reviewed the application as submitted and wish to make the following comments.

We understand that the application is for proposed conversion of existing college infrastructure of former day and boarding school to residential dwellings in Temple Dinsley, School Lane, Preston, Hertfordshire.

As this is a full planning application, it is noted that the detailed design has not been completed yet for the proposed drainage strategy, thus construction drawings and complete hydraulic modelling report have not been provided along with this application.

We **object** to this planning application in the absence of an acceptable supporting information relating to:

- Appendices I, J, K and L of the Flood Risk Assessment and SuDS Report could not be located. It is recommended that the applicant provide the above data and resubmit, so we are able to review the proposed SuDS design and calculations.
- The applicant must provide an exceedance flow path plan.

Reason

To prevent flooding in accordance with National Planning Policy Framework paragraphs 173, 175 and 180 by ensuring the satisfactory management of local flood risk, surface water flow paths, storage and disposal of surface water from the site in a range of rainfall events and ensuring the SuDS proposed operates as designed for the lifetime of the development.

We will consider reviewing this objection if the following issues are adequately addressed.

1. All the aforementioned missing data/information is provided.
2. General Arrangement drawings, pipe and chamber schedules, standard detail drawings (if any) and catchment plan are provided.

We understand the applicant is currently preparing further information in support of this application and await further consultation in due course.

Informative

For further advice on what we expect to be contained within the FRA to support a planning application, please refer to our Developers Guide and Checklist on our surface water drainage webpage <https://www.hertfordshire.gov.uk/services/recycling-waste-and-environment/water/surface-water-drainage/surface-water-drainage.aspx> this link also includes HCC's policies on SuDS in Hertfordshire.

Yours sincerely,

Rajat Chauhan
SuDS and Watercourses Support Officer
Growth and Environment

Annex

The following documents have been reviewed, which have been submitted to support the application;

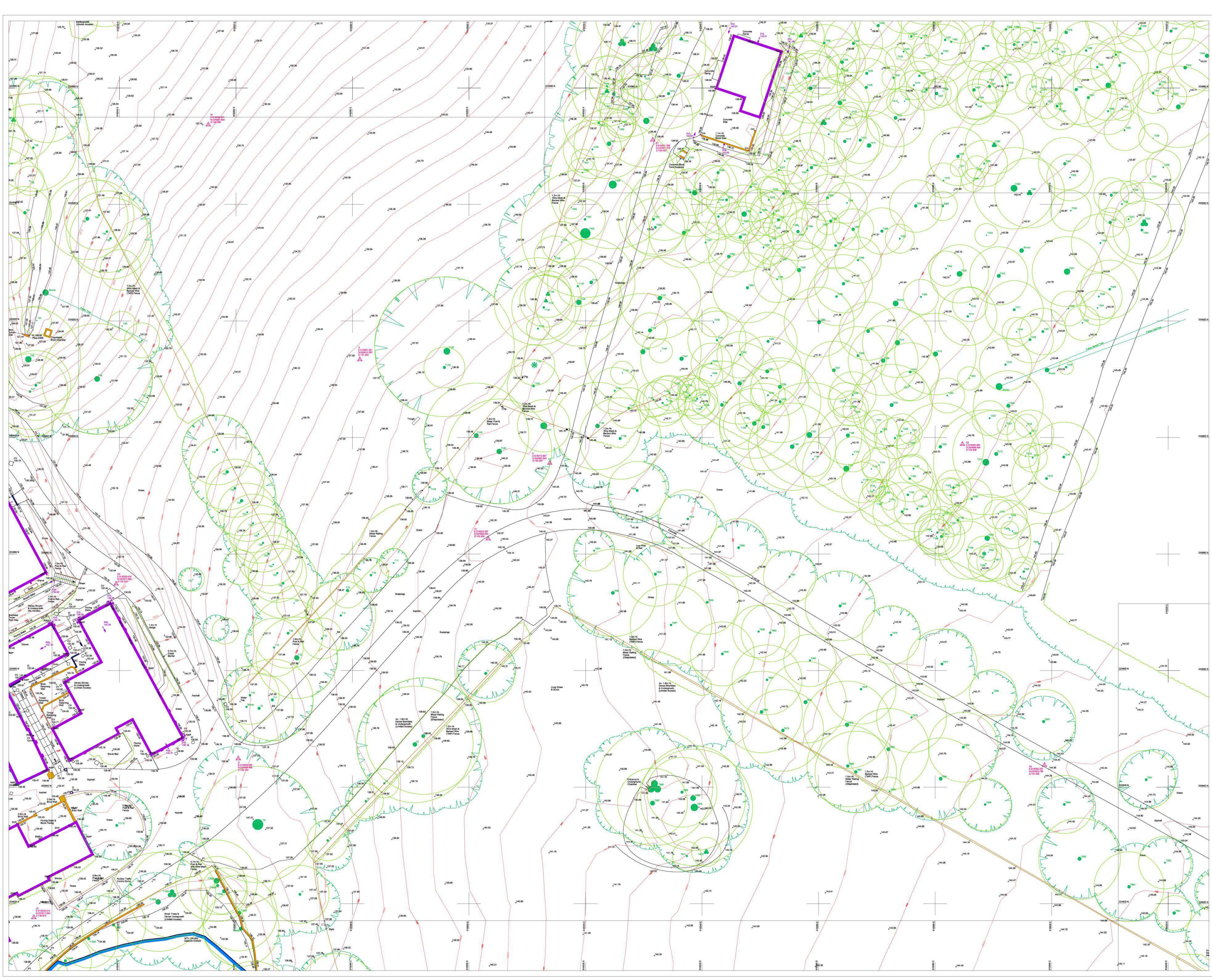
- Flood Risk Assessment and SuDS Report July 2024 – 1 of 2
- Flood Risk Assessment and SuDS Report July 2024 – 2 of 2
- Anglian Water Consultee Response August 2024

- Planning Statement July 2024
- Application Form Redacted

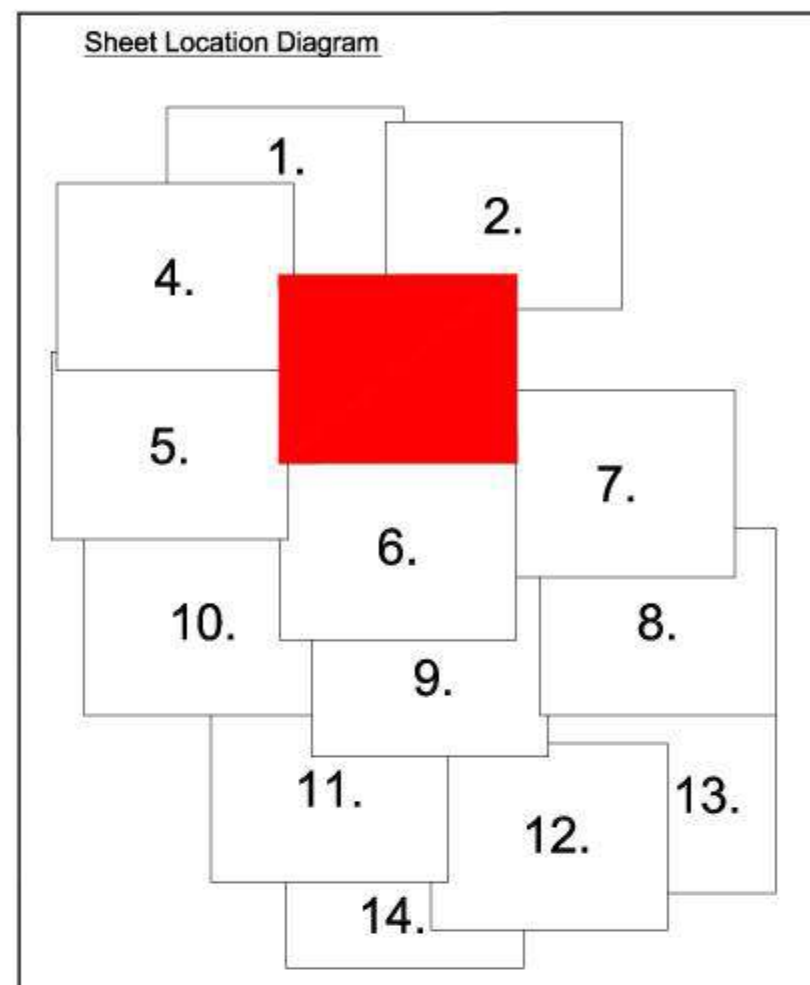
Appendix: D – EA Flood Map for Planning



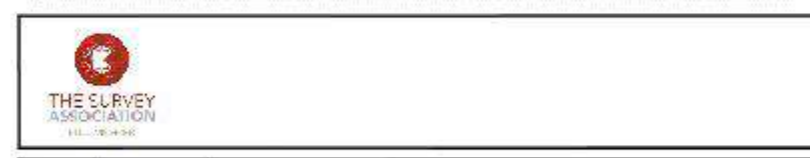
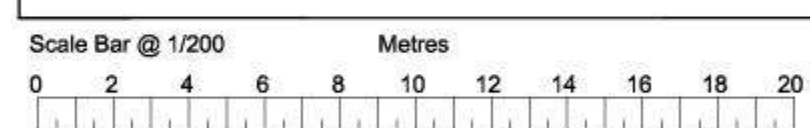
Appendix: E – Topographical Survey



For tree schedule please refer to:
Drawing Sheet (15) Tree Schedule 1:200 @ A0
Excel file: SG4(15) Tree Schedule.xlsx



General Abbreviations	
AB	As Built
AD	As Drawn
AE	As Erected
AF	As Found
AG	As Given
AI	As Installed
AL	As Laid
AM	As Measured
AN	As Noted
AO	As Ordered
AP	As Proposed
AR	As Recorded
AS	As Shown
AT	As Taken
AV	As Verified
AW	As Witnessed
AX	As X-rayed
AY	As Y-rayed
AZ	As Z-rayed
BA	By Agreement
BB	By Book
BC	By Chain
BD	By Diagram
BE	By Estimate
BF	By File
BG	By Gauge
BH	By Hand
BI	By Instrument
BJ	By Jockey
BK	By Knot
BL	By Level
BM	By Map
BN	By Name
BO	By Order
BP	By Plan
BQ	By Plot
BR	By Record
BS	By Scale
BT	By Tape
BU	By Urethane
BV	By Vane
BW	By Wire
BX	By X-ray
BY	By Y-ray
BZ	By Z-ray
CA	By Camera
CB	By Camera
CC	By Camera
CD	By Camera
CE	By Camera
CF	By Camera
CG	By Camera
CH	By Camera
CI	By Camera
CJ	By Camera
CK	By Camera
CL	By Camera
CM	By Camera
CN	By Camera
CO	By Camera
CP	By Camera
CQ	By Camera
CR	By Camera
CS	By Camera
CT	By Camera
CU	By Camera
CV	By Camera
CW	By Camera
CX	By Camera
CY	By Camera
CZ	By Camera
DA	By Camera
DB	By Camera
DC	By Camera
DD	By Camera
DE	By Camera
DF	By Camera
DG	By Camera
DH	By Camera
DI	By Camera
DJ	By Camera
DK	By Camera
DL	By Camera
DM	By Camera
DN	By Camera
DO	By Camera
DP	By Camera
DQ	By Camera
DR	By Camera
DS	By Camera
DT	By Camera
DU	By Camera
DV	By Camera
DW	By Camera
DX	By Camera
DY	By Camera
DZ	By Camera
EA	By Camera
EB	By Camera
EC	By Camera
ED	By Camera
EE	By Camera
EF	By Camera
EG	By Camera
EH	By Camera
EI	By Camera
EJ	By Camera
EK	By Camera
EL	By Camera
EM	By Camera
EN	By Camera
EO	By Camera
EP	By Camera
EQ	By Camera
ER	By Camera
ES	By Camera
ET	By Camera
EU	By Camera
EV	By Camera
EW	By Camera
EX	By Camera
EY	By Camera
EZ	By Camera
FA	By Camera
FB	By Camera
FC	By Camera
FD	By Camera
FE	By Camera
FF	By Camera
FG	By Camera
FH	By Camera
FI	By Camera
FJ	By Camera
FK	By Camera
FL	By Camera
FM	By Camera
FN	By Camera
FO	By Camera
FP	By Camera
FQ	By Camera
FR	By Camera
FS	By Camera
FT	By Camera
FU	By Camera
FV	By Camera
FW	By Camera
FX	By Camera
FY	By Camera
FZ	By Camera
GA	By Camera
GB	By Camera
GC	By Camera
GD	By Camera
GE	By Camera
GF	By Camera
GG	By Camera
GH	By Camera
GI	By Camera
GJ	By Camera
GK	By Camera
GL	By Camera
GM	By Camera
GN	By Camera
GO	By Camera
GP	By Camera
GQ	By Camera
GR	By Camera
GS	By Camera
GT	By Camera
GU	By Camera
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GW	By Camera
GX	By Camera
GY	By Camera
GZ	By Camera
HA	By Camera
HB	By Camera
HC	By Camera
HD	By Camera
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HF	By Camera
HG	By Camera
HH	By Camera
HI	By Camera
HJ	By Camera
HK	By Camera
HL	By Camera
HM	By Camera
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HR	By Camera
HS	By Camera
HT	By Camera
HU	By Camera
HV	By Camera
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HX	By Camera
HY	By Camera
HZ	By Camera
IA	By Camera
IB	By Camera
IC	By Camera
ID	By Camera
IE	By Camera
IF	By Camera
IG	By Camera
IH	By Camera
II	By Camera
IJ	By Camera
IK	By Camera
IL	By Camera
IM	By Camera
IN	By Camera
IO	By Camera
IP	By Camera
IQ	By Camera
IR	By Camera
IS	By Camera
IT	By Camera
IU	By Camera
IV	By Camera
IW	By Camera
IX	By Camera
IY	By Camera
IZ	By Camera
JA	By Camera
JB	By Camera
JC	By Camera
JD	By Camera
JE	By Camera
JF	By Camera
JG	By Camera
JH	By Camera
JI	By Camera
JJ	By Camera
JK	By Camera
JL	By Camera
JM	By Camera
JN	By Camera
JO	By Camera
JP	By Camera
JQ	By Camera
JR	By Camera
JS	By Camera
JT	By Camera
JU	By Camera
JV	By Camera
JW	By Camera
JX	By Camera
JY	By Camera
JZ	By Camera
KA	By Camera
KB	By Camera
KC	By Camera
KD	By Camera
KE	By Camera
KF	By Camera
KG	By Camera
KH	By Camera
KI	By Camera
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KP	By Camera
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KR	By Camera
KS	By Camera
KT	By Camera
KU	By Camera
KV	By Camera
KW	By Camera
KX	By Camera
KY	By Camera
KZ	By Camera
LA	By Camera
LB	By Camera
LC	By Camera
LD	By Camera
LE	By Camera
LF	By Camera
LG	By Camera
LH	By Camera
LI	By Camera
LJ	By Camera
LK	By Camera
LL	By Camera
LM	By Camera
LN	By Camera
LO	By Camera
LP	By Camera
LQ	By Camera
LR	By Camera
LS	By Camera
LT	By Camera
LU	By Camera
LV	By Camera
LW	By Camera
LX	By Camera
LY	By Camera
LZ	By Camera
MA	By Camera
MB	By Camera
MC	By Camera
MD	By Camera
ME	By Camera
MF	By Camera
MG	By Camera
MH	By Camera
MI	By Camera
MJ	By Camera
MK	By Camera
ML	By Camera
MM	By Camera
MN	By Camera
MO	By Camera
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MQ	By Camera
MR	By Camera
MS	By Camera
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MU	By Camera
MV	By Camera
MW	By Camera
MX	By Camera
MY	By Camera
MZ	By Camera
NA	By Camera
NB	By Camera
NC	By Camera
ND	By Camera
NE	By Camera
NF	By Camera
NG	By Camera
NH	By Camera
NI	By Camera
NJ	By Camera
NK	By Camera
NL	By Camera
NM	By Camera
NN	By Camera
NO	By Camera
NP	By Camera
NQ	By Camera
NR	By Camera
NS	By Camera
NT	By Camera
NU	By Camera
NV	By Camera
NW	By Camera
NX	By Camera
NY	By Camera
NZ	By Camera
OA	By Camera
OB	By Camera
OC	By Camera
OD	By Camera
OE	By Camera
OF	By Camera
OG	By Camera
OH	By Camera
OI	By Camera
OJ	By Camera
OK	By Camera
OL	By Camera
OM	By Camera
ON	By Camera
OO	By Camera
OP	By Camera
OQ	By Camera
OR	By Camera
OS	By Camera
OT	By Camera
OU	By Camera
OV	By Camera
OW	By Camera
OX	By Camera
OY	By Camera
OZ	By Camera
PA	By Camera
PB	By Camera
PC	By Camera
PD	By Camera
PE	By Camera
PF	By Camera
PG	By Camera
PH	By Camera
PI	By Camera
PJ	By Camera
PK	By Camera
PL	By Camera
PM	By Camera
PN	By Camera
PO	By Camera
PP	By Camera
PQ	By Camera
PR	By Camera
PS	By Camera
PT	By Camera
PU	By Camera
PV	By Camera
PW	By Camera
PX	By Camera
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QA	By Camera
QB	By Camera
QC	By Camera
QD	By Camera
QE	By Camera
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QJ	By Camera
QK	By Camera
QL	By Camera
QM	By Camera
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QO	By Camera
QP	By Camera
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QR	By Camera
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QT	By Camera
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QX	By Camera
QY	By Camera
QZ	By Camera
RA	By Camera
RB	By Camera
RC	By Camera
RD	By Camera
RE	By Camera
RF	By Camera
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RI	By Camera
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RP	By Camera
RQ	By Camera
RR	By Camera
RS	By Camera
RT	By Camera
RU	By Camera
RV	By Camera
RW	By Camera
RX	By Camera
RY	By Camera
RZ	By Camera
SA	By Camera
SB	By Camera
SC	By Camera
SD	By Camera
SE	By Camera
SF	By Camera
SG	By Camera
SH	By Camera
SI	By Camera
SJ	By Camera
SK	By Camera
SL	By Camera
SM	By Camera
SN	By Camera
SO	By Camera
SP	By Camera
SQ	By Camera
SR	By Camera
SS	By Camera
ST	By Camera
SU	By Camera
SV	By Camera
SW	By Camera
SX	By Camera
SY	By Camera
SZ	By Camera
TA	By Camera
TB	By Camera
TC	By Camera
TD	By Camera
TE	By Camera
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TH	By Camera
TI	By Camera
TJ	By Camera
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TU	By Camera
TV	By Camera
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TX	By Camera
TY	By Camera
TZ	By Camera
UA	By Camera
UB	By Camera
UC	By Camera
UD	By Camera
UE	By Camera
UF	By Camera
UG	By Camera
UH	By Camera
UI	By Camera
UJ	By Camera
UK	By Camera
UL	By Camera
UM	By Camera
UN	By Camera
UO	By Camera
UP	By Camera
UQ	By Camera
UR	By Camera
US	By Camera
UT	By Camera
UU	By Camera
UV	By Camera
UW	By Camera
UX	By Camera
UY	By Camera
UZ	By Camera
VA	By Camera
VB	By Camera
VC	By Camera
VD	By Camera
VE	By Camera
VF	By Camera
VG	By Camera
VH	By Camera
VI	By Camera
VJ	By Camera
VK	By Camera
VL	By Camera
VM	By Camera
VN	By Camera
VO	By Camera
VP	By Camera
VQ	By Camera
VR	By Camera
VS	By Camera
VT	By Camera
VU	By Camera
VV	By Camera
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VZ	By Camera
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WZ	By Camera
XA	By Camera
XB	By Camera
XC	By Camera
XD	By Camera
XE	By Camera
XF	By Camera
XG	By Camera
XH	By Camera
XI	By Camera
XJ	By Camera
XK	By Camera
XL	By Camera
XM	By Camera
XN	By Camera
XO	By Camera
XP	By Camera
XQ	By Camera
XR	By Camera
XS	By Camera
XT	By Camera
XU	By Camera
XV	By Camera
XW	By Camera
XX	By Camera
XY	By Camera
XZ	By Camera
YA	By Camera
YB	By Camera
YC	By Camera
YD	By Camera
YE	By Camera
YF	By Camera
YG	By Camera
YH	By Camera
YI	By Camera
YJ	By Camera
YK	By Camera
YL	By Camera
YM	By Camera
YN	By Camera
YO	By Camera
YP	By Camera
YQ	By Camera
YR	By Camera
YS	By Camera
YT	By Camera
YU	By Camera
YV	By Camera
YW	By Camera
YX	By Camera
YY	By Camera
YZ	By Camera
ZA	By Camera
ZB	By Camera
ZC	By Camera
ZD	By Camera
ZE	By Camera
ZF	By Camera
ZG	By Camera
ZH	By Camera
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ZJ	By Camera
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ZL	By Camera
ZM	By Camera
ZN	By Camera
ZO	By Camera
ZP	By Camera
ZQ	By Camera
ZR	By Camera
ZS	By Camera
ZT	By Camera
ZU	By Camera
ZV	By Camera
ZW	By Camera
ZX	By Camera
ZY	By Camera
ZZ	By Camera



C	08.10.2023	Previously overgrown areas have been surveyed and added to drawing.
B	08.07.2023	Additional areas surveyed and added.
A	12.07.2023	Additional areas surveyed "Summerhouse Plantation Wood".
Orig	05.07.2023	Original survey "Storage Sheds Yard" and site access established.
Rev	Code	Revisions

Notes:

The accuracy and detail shown in this drawing is dependent on the original specification. Sunshine Survey Ltd. should be consulted before use or scales other than those stated.

This drawing provides position and description of features on the ground at the time the survey was undertaken and is not a warranty of accuracy or a guarantee of performance.

Where boundary alignment lines are added to the survey drawing and are taken from legal documents or other information provided, they are shown as the best estimate of the boundary quality and scale. They are provided based on current and do not imply a legal contract.

Detail measured outside of site boundaries with no permission for access or public right of way will be surveyed for record measurement where possible, the detail shown is indicative. This area applies to areas within the site with limited or no access or an unsafe working environment.

Underground drains and services have been recorded as accurately as possible, for clarification a tree specialist should be consulted.

Underground drainage and service information shown has been measured within the chamber without entry. Connections and alignment of pipework from outside of the chamber are indicative. While every effort has been made to correctly identify this information the user should satisfy themselves of the completeness and accuracy before undertaking any works especially in critical areas.

Information relating to the completion of this drawing may be obtained from the following sources:

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