Flood Risk Assessment & Drainage Strategy

Title	Land West of Shilton Road, Earl Shilton
Client	Giles Stanley Ltd
Location	Shilton Road, Earl Shilton, Leicestershire
Project number	25-0320
BIM reference	SRES-BSP-XX-XX-T-W-0001-P03_Flood_Risk_Assessment
Date	16 SEP 2025

Authorisation Sheet & Revisions Record

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Contents

Executive Summary

Introduction	BSP Consulting has been commissioned by Giles Stanley Ltd to undertake a Flood Risk Assessment and Drainage Strategy for a proposed residential development at Shilton Road, Earl Shilton, Leicestershire. This Flood Risk Assessment has been prepared in accordance with the Technical Guidance to the National Planning Policy Framework.
Existing Site Conditions	The site currently comprises agricultural land consisting of stables and a small number of maintenance buildings. Site levels are shown comprise a fall in a northeast direction, away from a local high point in the southwestern corner of the site. Levels on site are indicated to range from approximately 99.36mAOD in the southwestern corner to approximately 91.58mAOD in the northeastern corner.
Development Description and Planning Context	The proposals are to develop the 5.7ha site to comprise 120 residential dwellings with associated car parking, access, landscaping and supporting infrastructure. In accordance with the NPPF, the project falls under the **more vulnerable** category in terms of flood risk.
Definition of Flood Hazard	Unnamed Watercourse 'B' is an Ordinary Watercourse which drains in an easterly direction and is located approximately 320m to the north of the site at its closes point.
Probability (Rivers/fluvial)	The EA Risk of Flooding from Rivers and Sea mapping indicates that the proposed development site has less than a 1 in 1,000 annual probability of flooding from rivers or the sea. This map shows the indicative extent of the natural floodplain if there were no flood defences or certain other manmade structures.
Climate Change	The implications of climate change of up to 40% have been considered in this assessment and mitigation measures have been determined accordingly.
Development Proposals	The technical guidance to the NPPF states that developments of a more vulnerable category such as the proposed residential use are appropriate within Flood Zone 1, without being subject to the application of the Sequential Test.
Flood Risk Management Measures	Due to potential flood risk from surface water, flood risk management measures will be required as outlined in the flood risk management section.
Off-Site Impacts	Surface water runoff will discharge from the proposed development at reduced rates via the provision of attenuation. Therefore, the development will not increase flooding adjacent to or downstream of the site for the lifetime of the development.

Residual Risks	The investigations carried out as part of this flood risk assessment and flood risk management measures proposed have demonstrated that the development will be safe, without increasing flood risk elsewhere.
Recommendations	• In accordance with best practice, external ground levels should comprise falls away from buildings and towards drainage features. The design of surface water drainage features should be such that any surface water flow paths within the site are maintained and/or accommodated while ensuring that buildings remain free from flooding without increasing risk elsewhere. • The proposed surface water drainage system should be designed to accommodate the 1 in 30-year rainfall event without any surface water flooding and should be capable of retaining the 1 in 100-year plus climate change (40%) storm event on site without flooding any buildings. • For the purpose of this report, it has been assumed that soakaways or similar will not be viable. • It is proposed to restrict surface water runoff to **25.0l/s** for all storms up to and including the 1 in 100-year (1% AEP) plus 40% climate change return periods. In order to achieve this discharge rate, an attenuation volume in the order of **2172m³** will need to be provided. • It is recommended that an additional survey of Drainage Ditch 'A', which crosses the site, is undertaken to confirm the downstream drainage connection. • It is recommended that source control methods should be utilised where possible. These include the use of permeable paving for parking spaces and private pedestrian footways, the use of planted swales in lieu of surface water sewers where appropriate, and the creation of bioretention gardens along the curtilage of the primary access road.

1.0 Introduction

1.1 Terms of Reference

1.1.1 BSP Consulting has been commissioned by Giles Stanley Ltd to undertake a Flood Risk Assessment and Drainage Strategy for a proposed residential development at Shilton Road, Earl Shilton, Leicestershire.

1.1.2 This Flood Risk Assessment has been prepared in accordance with the Department for Communities and Local Government (DCLG) Planning Practice Guidance website section on 'Flood Risk and Coastal Change' and the Site-Specific Flood Risk Assessment Checklist.

1.1.3 This report has been produced on behalf of the Client, Giles Stanley Ltd, and no responsibility is accepted to any third party for all or any part. This report should not be relied upon or transferred to any other parties without the express written authorisation of BSP Consulting. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors owe them no duty of care or skill.

1.2 Legislation & Guidance

National Planning Policy Framework

1.2.1 The National Planning Policy Framework (NPPF) was published on 27 March 2012, with the latest update published in December 2024.

1.2.2 Planning Practice Guidance to the NPPF regarding Flood Risk and Coastal Change has been published and this site-specific Flood Risk Assessment is written in compliance with this guidance.

1.2.3 The NPPF, and supporting technical guidance, can be downloaded free of charge from the internet at the following link:

http://www.communities.gov.uk/publications/planningandbuilding/nppf

Flood & Water Management Act

1.2.4 The Flood & Water Management Act (F&WMA) was passed in 2010 and aims to reduce the flood risk associated with extreme weather, compounded by climate change. This act established the EA as responsible for flood risk related to Main Rivers. In this instance, Leicestershire County Council, as Lead Local Flood Authority (LLFA), are responsible for local sources of flood risk (that being from ordinary watercourses, surface water run-off and groundwater). As Local Planning Authority, Hinckley and Bosworth Borough Council has due regard for drainage and flood risk in accordance with local and national guidance and responses from statutory consultees.

2.0 Background Information

2.1 Site Details

2.1.1 Figure 2.1 below indicates the location of the site. A range of sources have been used to assess the local topography, local watercourses and current site use. A more detailed site location plan is included in **Appendix A**.

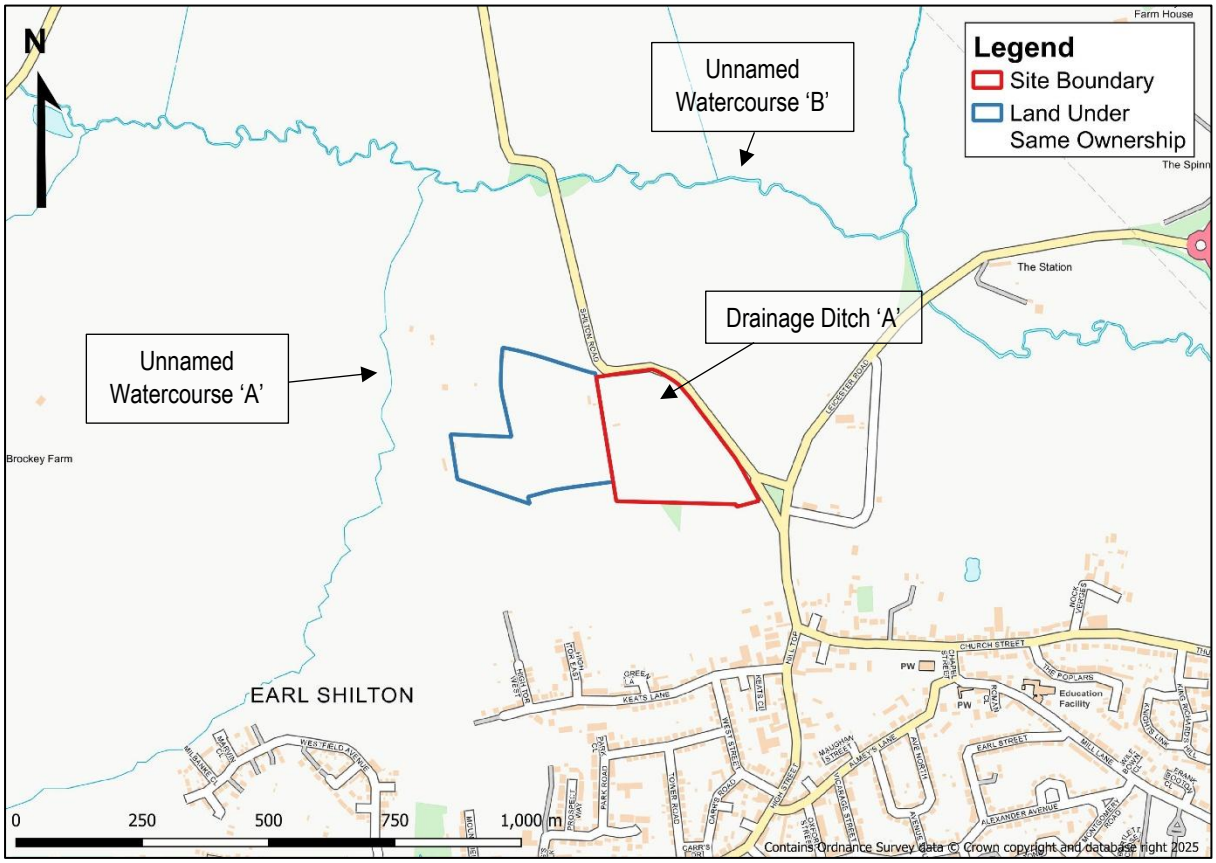


Figure 2.1 Land West of Shilton Road, Earl Shilton – Site Location Plan

2.1.2 The proposed development site is located to the north of Earl Shilton, southwest of Leicester, centred on OSNGR 446604E, 298646N, and occupies an area of approximately 5.7ha.

2.1.3 The site is bound by Shilton Road to the north and east, and existing arable agricultural land to the south and west.

2.1.4 The site currently comprises agricultural land consisting of stables and a small number of maintenance buildings. A topographical survey of the site has been included in **Appendix B**. Site levels are shown comprise a fall in a northeast direction, away from a local high point in the southwestern corner of the site. Levels on site are indicated to range from approximately 99.36mAOD in the southwestern corner to approximately 91.58mAOD in the northeastern corner.

Table 2.1: Overall Catchment Context and Local Watercourse Classifications

Classification	Name	Description
Main Rivers	N/A	There are no EA Main Rivers located within close proximity to the site.
Ordinary Watercourses	Unnamed Watercourse 'A'	Unnamed Watercourse 'A' is an Ordinary Watercourse which drains in a northerly direction towards Unnamed Watercourse 'B' and is located approximately 420m to the west of the site.
	Unnamed Watercourse 'B'	Unnamed Watercourse 'B' is an Ordinary Watercourse which drains in an easterly direction and is located approximately 320m to the north of the site at its closes point.
Manmade Watercourses	N/A	There are no Manmade Watercourses located within close proximity to the site.

2.1.5 The locations of the above watercourses are indicated on Figure 2.1 above.

2.2 Approach to the Assessment

2.2.1 This study has been supplemented by information from the Environment Agency (EA), Severn Trent Water (STW) and additional information contained on the British Geological Society (BGS) website, the DEFRA MagicMap website and the Cranfield Soil and Agrifood Institute Soilscapes website.

2.2.2 This assessment seeks to draw together the relevant data information from these sources and to collate this with the findings of our investigations and discussions to assess the flood risk and drainage strategy for this site.

3.0 Flood Risk Assessment

3.1 Development Description and Planning Context

3.1.1 The development proposals are for the construction of 120 residential dwellings with associated car parking, access, landscaping and supporting infrastructure. The proposed site plan is included in **Appendix C**.

3.1.2 The local area benefits from a Strategic Flood Risk Assessment. This assessment is the Leicestershire and Leicester City Level 1 SFRA (2017). The SFRA notes the site to fall within Flood Zone 1.

3.1.3 In accordance with the NPPF, the proposed residential use falls under the **more vulnerable** category in terms of flood risk.

3.2 Sequential and Exception Tests

3.2.1 The Sequential Test is designed to steer development towards areas of lower flood risk and is required to be completed for development within Flood Zone 2 and 3. As the site is located within Flood Zone 1 the Sequential Test is not required.

3.2.2 The Exception Test is designed to require evidence of how flood risk will be managed on the proposed development site, ensuring that it is safe for its lifetime and will not increase flood risk elsewhere. Table 3.1 below indicates whether developments, based on their vulnerability classification, are permitted within each Flood Zone and whether the Exception Test is required. The NPPF states that developments of the more vulnerable category are suitable within Flood Zone 1 without the requirement of an Exception Test.

Table 3.1: Flood Risk Vulnerability and Flood Zone Compatibility (Source: NPPF)

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test Required	✓	✓
	Zone 3a	Exception Test Required	✓	✗	Exception Test Required	✓
	Zone 3b Functional Floodplain	Exception Test Required	✓	✗	✗	✗

3.3 Definition of Flood Hazard

The potential sources of flooding in the vicinity of the site are as detailed below:

Historic Flooding

3.3.1 The Environment Agency's Historic Flood Map indicates that the development site has not flooded previously. The dataset shows the maximum extent of all individual recorded flood outlines that have occurred as a result of flooding from rivers, the sea and groundwater sources since records began 1946. The dataset does not account for flooding from other sources, such as sewer flooding or surface water flooding, nor is it exhaustive as it may not include all previous flooding incidents and does not provide information regarding event dates. However, the dataset does provide an insight into the potential for flooding from nearby sources.

Fluvial Flood Risk

3.3.2 The EA Risk of Flooding from Rivers and Sea mapping indicates that the proposed development site has less than a 1 in 1,000 annual probability of flooding from Rivers and Sea. This map shows the indicative extent of the natural floodplain, if there were no flood defences or certain other manmade structures, such as surface water sewers, and channel improvements.

3.3.3 The only sources of fluvial flooding locally are Unnamed Watercourse 'A' and Unnamed Watercourse 'B', Ordinary Watercourses which are located approximately 420m to the west and 320m to the north of the site, respectively. Given the scale of the watercourses and their distance to the site, neither of these watercourses present a risk of flooding to the site.

Tidal Flood Risk

3.3.4 Unnamed Watercourses 'A' and 'B' are both non-tidal Ordinary Watercourses. Therefore, the site is not at risk of flooding from tidal sources.

Surface Water Flood Risk

3.3.5 The site is located on land with a fall in a northeast direction away from a local high point to the southwest of the site. Where runoff is likely to occur, this is expected to collect towards the northeast of the site, as well as within any minor localised depressions.

3.3.6 Figure 3.1 below shows the Risk of Flooding from Surface Water mapping and indicates that a large portion of the site is at very low risk (<0.1% AEP) of surface water flooding, however a notable area to the northwest is indicated to be at low risk (0.1% AEP). An overland flow path is also shown run in northerly direction towards Shilton Road following the natural gradient of the site and is indicated to be up to medium risk (1% AEP) of surface water flooding in this area.

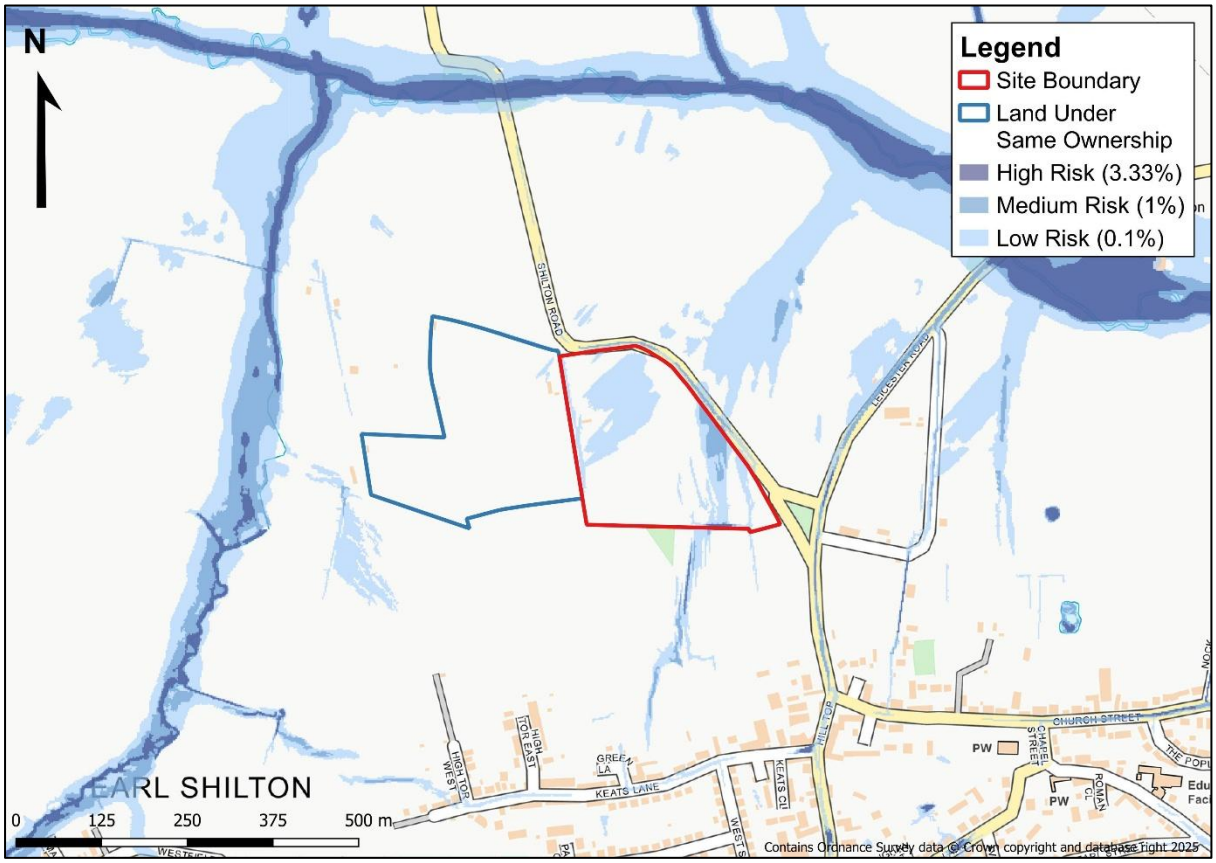


Figure 3.1 Land West of Shilton Road, Earl Shilton – Risk of Flooding from Surface Water (Source: EA)

3.3.7 The overall risk of surface water flooding to the site is considered to be low. Given the indicated surface water flood risk, it is expected that any future surface water drainage system for the development would capture and sufficiently drain this surface water without issue.

Flood Risk from Ground Water

3.3.8 The British Geological Survey's Geology of Britain mapping indicates that the entire site is situated upon bedrock geology consisting of Gunthorpe Member – Mudstone. No superficial deposits have been recorded at this location. Gunthorpe Member is generally classed as a low productivity aquifer.

3.3.9 The Environment Agency Aquifer Designation Map identifies the site as being situated on bedrock classed as Secondary B aquifer: predominantly lower permeability strata which may yield limited amounts of groundwater by virtue of localised features such as fissures, thin permeable horizons and weathering. No superficial deposits have been recorded at this location.

3.3.10 The SFRA (2017) includes mapping of areas that are susceptible to groundwater flooding on a 1km^2 grid scale. This mapping indicates that the site location is <25% susceptible to groundwater flooding.

3.3.11 Based on the information from the above sources, the site is considered to be at low risk of flooding from groundwater sources. However, due to the nature of groundwater flooding, any risk associated with this source is likely to be heavily influenced by the local watercourses and primarily Unnamed Watercourses 'A' and 'B'. Given that the site is not within the natural floodplain of any nearby fluvial watercourses and the underlying local geology consists of formations with poor permeability, the risk of groundwater flooding is expected to be minimal on-site.

Flood Risk from Sewers and Infrastructure

3.3.12 The local sewers are operated and maintained by Severn Trent Water (STW). STW sewer records indicate that there are no adopted sewers within the immediate vicinity of the site, with the closest recorded sewer being a 225mm combined sewer located within Leicester Road and Church Street to the southeast of the site. A copy of the sewer record plan is included in **Appendix D**. STW have not raised any concerns regarding existing sewer flooding issues; however they have stated that modelling may be required to confirm the capacity of the network to receive additional foul flows from the development site.

3.3.13 The EA's Flood Risk from Reservoir mapping indicates that the site lies outside of the predicted maximum flood extents in the unlikely event that all upstream large, raised reservoirs and dams simultaneously fail and release the water they hold; both on a 'dry day', if reservoir flooding were to occur when river levels are at normal levels, and on a 'wet day', should reservoir breach occur if a river is already experiencing an extreme natural flood. As such, the site is not considered to be at risk of flooding from reservoirs.

3.3.14 The site is not in close proximity to any Manmade Watercourses such as canals, reservoirs or wet process industry works.

3.3.15 The sewers and infrastructure flood risk source can therefore be discounted as a significant source of flood risk to the site.

3.4 Climate Change

3.4.1 Climate change is recognised as a factor for consideration in terms of its effects on flood risk. In line with the latest update to the planning practice guidance in the NPPF on Flood Risk and Coastal Change, to assess the effects of climate change the 2070s epoch has been assessed for peak rainfall intensity.

3.4.2 The implications of climate change should be taken into account in relation to surface water drainage. Guidance from the EA advises that the upper end allowances for both the 1 in 30-year (3.3% AEP) and 1 in 100-year (1% AEP) events should be assessed, with the development designed to ensure that there is no increase in flood risk elsewhere and the development will be safe from surface water flooding during the 1 in 100-year event when the upper end allowance for climate change is applied. In this instance, peak rainfall intensity for residential developments within the Soar Management Catchment are estimated

to increase by 35% for the 3.3% AEP event and 40% for the 1% AEP event. Therefore, it is recommended that the upper end allowance of 40% is applied to design rainfall intensity to allow for the potential implications of climate change.

3.5 Detailed Development Proposals

3.5.1 The proposed development and vulnerability classification are discussed in Section 3.1 above.

3.5.2 The technical guidance to the NPPF states that developments of a more vulnerable category such as the proposed residential use are appropriate within Flood Zone 1, without being subject to the application of the Sequential Test.

4.0 Flood Risk Management & Drainage Strategy

4.1 Surface Water Flood Risk Mitigation

4.1.1 The development proposals are for the construction of 120 residential dwellings with associated car parking, access, landscaping and supporting infrastructure.

4.1.2 Although the proposed development will see the levelling of ground during construction, in accordance with best practice, external ground levels should comprise falls away from buildings and towards drainage features. The design of surface water drainage features should be such that any surface water flow paths within the site are maintained and/or accommodated while ensuring that buildings remain free from flooding without increasing risk elsewhere.

4.2 Surface Water Drainage

Sustainable Drainage Systems

4.2.1 Part H of the Building Regulations 2010 recommends that surface water run-off shall discharge to one of the following, listed in order of priority:

a) an adequate soakaway or some other adequate infiltration system, or where that is not reasonably practicable.

b) a watercourse, or, where that is not reasonably practicable.

c) a sewer.

4.2.2 It is necessary to identify the most appropriate method of controlling and discharging surface water. The design should seek to improve the local run-off profile by using systems that can either attenuate run-off and reduce peak flow rates or positively impact on the existing flood profile.

Infiltration Based Systems

4.2.3 The British Geological Survey's Geology of Britain mapping indicates that the entire site is situated upon bedrock geology consisting of Gunthorpe Member – Mudstone. No superficial deposits have been recorded at this location.

4.2.4 The Cranfield Soil and Agrifood Institute's Soilscapes mapping indicates the majority of the site to be situated on soils categorised as Soilscape 8: slightly acid loamy and clayey soils with impeded drainage.

4.2.5 Based on the above information, it is unlikely that permeable ground conditions are present at the site. As a result, the discharge of surface water runoff by infiltration-based systems has been ruled out as the primary method of surface water disposal from the proposed development.

Open Watercourses

4.2.6 The topographical survey shows an existing drainage ditch (Drainage Ditch 'A') that crosses the site. This ditch is then culverted beneath Shilton Road, and is assumed to drain north towards Unnamed Watercourse 'B'. As such, Drainage Ditch 'A' is suitably located to receive a direct discharge from the site, subject to an additional survey confirm the downstream drainage connection.

Sewers

4.2.7 As it is proposed to discharge surface water runoff to Drainage Ditch 'A', it will not be necessary to discharge surface water to a sewer.

SuDS Option Feasibility

4.2.8 A range of SuDS options have been considered for use within the context of the proposed development site, in-line with CIRIA guidance. Table 4.1 below provides a summary of the options considered for this site.

Table 4.1: Sustainable Urban Drainage Systems Options

SuDS Category	SuDS Technique	Viability	Explanation
Infiltration	Infiltration Trenches	✗	Due to the indicated geology on-site, formal infiltration-based systems have been ruled out.
	Infiltration Basins	✗	
	Soakaways	✗	
	Bioretention/Filter Strips	✗	
Filtration	Bioretention/Rain Gardens	✓	Filtration devices could be incorporated within soft landscaped areas across the site, adjacent to the internal roads and walkways; however, these would likely need to be positively drained due to the indicated geology beneath the site. Any landscaped areas could potentially be further developed to include raingardens, which will specifically receive water from impermeable surfaces while also being maintenance free.
	Filter Strips	✗	
Source Control	Green Roofs	✗	As the proposals will include residential dwellings with pitched roofs, the use of green roofs will not be feasible.
	Rainwater Harvesting	✓	Due to the nature of the proposed development, the scope for a formal rainwater harvesting system is

			limited. Options such as water butts could be installed for each individual plot to encourage water re-use, however these would be reliant on maintenance from individual property owners to remain effective.
	Pervious Pavements	✓	Pervious paving may be utilised for the external ground level car parking spaces, pedestrian footways and courtyard areas. This will serve to increase the rainfall-runoff response time and provide water quality benefits.
Conveyance	Swales	✓	Surface level conveyance features, such as roadside swales and filter drains could be utilised rather than sewers to convey water through the development.
	Filter Drains	✓	
	Channels/Rills	✓	
Retention/ Detention	Detention Basin	✓	The proposed development surface water runoff should be attenuated by a detention basin before a restricted discharge out into the existing Drainage Ditch 'A'.
	Retention Pond	✗	
	Subsurface Storage	✗	
	Wetlands	✗	

Runoff Assessment

4.2.9 The ICP SUDS and IH124 (Flood Studies Report) methods have been used to calculate the surface water runoff from a small (<50ha) greenfield site ($QBAR_{RURAL}$), which are detailed below:

$QBAR_{RURAL} = 0.00108 \times (0.01 \times AREA)^{0.89} \times SAAR^{1.17} \times SPR^{2.17}$

Where

AREA = Area (ha)

SAAR = Standard Average Annual Rainfall (mm, 1941-1970)

SPR = Standard Percentage Runoff Coefficient

4.2.10 With a site area of 5.7ha and using Flood Studies Report values for SAAR (700mm) and SPR (0.450), this results in a **$QBAR_{RURAL}$** rate of **25.0l/s**, and discharge rates for the following return periods:

Rainfall Event	Runoff Rate (l/s)
1 in 1-year	20.8
1 in 30-year	49.1
1 in 30-year + 35% Climate Change	66.3
1 in 100-year	64.4
1 in 100-year + 40% Climate Change	90.2

4.2.11 Greenfield runoff calculations are provided in **Appendix E**.

Return Period Design

4.2.12 The proposed surface water drainage system should be designed to accommodate the 1 in 30-year rainfall event without any surface water flooding and should be capable of retaining the 1 in 100-year plus climate change (40%) storm event on site without flooding any buildings.

Discharge Rate

4.2.13 In accordance with DEFRA guidance, the peak surface water runoff rate for greenfield developments should be restricted to the pre-development discharge rate where reasonably practicable. As such surface water discharge should be restricted to **25.0l/s**.

Drainage Proposals – Main Strategy

4.2.14 The proposed development will comprise an impermeable footprint of approximately 3.6ha, including 10% urban creep. In order to maintain the proposed discharge rates for all storms up to and including the 100-year return period with a 40% allowance for climate change, attenuation is required which provides approximately **2172m³** of surface water storage.

4.2.15 The required surface water attenuation volume is proposed to be provisioned by a surface level detention basin, as well as additional subsurface attenuation if necessary, before restricted discharge into Drainage Ditch 'A'.

4.2.16 It is recommended that parking spaces and private pedestrian footways are constructed from permeable paving where appropriate and bioretention features, such as raingardens, are utilised where possible. Both above-mentioned source control methods will act to increase the rainfall-runoff response time by intercepting rainfall at source while also providing improvements to water quality.

4.2.17 An initial surface water drainage strategy plan and supporting calculations are provided in **Appendix E**.

4.2.18 The proposed surface water drainage strategy and associated surface water discharge rate will be subject to agreement with Leicestershire County Council as Lead Local Flood Authority.

4.3 Water Quality

Simple Index Approach

4.3.1 In order to determine whether the proposed SuDS features for the development will be sufficient at removing pollutants from surface water runoff, the CIRIA SuDS Manual (2015) Simple Index Approach has been applied. This approach provides pollution hazard levels and indices to relevant pollutants based on contributing hardstanding surfaces.

4.3.2 Table 4.2 below provides an extract of the land use types and pollutant indices from the CIRIA SuDS Manual which are relevant to the proposed development.

Table 4.2: Pollution hazard indices for different land use classifications (Source: CIRIA SuDS Manual 2015)

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very Low	0.2	0.2	0.05
Individual property driveways, residential car parks, low traffic roads and non-residential car parking with infrequent change	Low	0.5	0.4	0.4

4.3.3 Based on the above, the worst-case indices for the development are 0.5 (Total Suspended Solids), 0.4 (Metals) and 0.4 (Hydrocarbons). Table 4.3 below indicates the mitigation indices for different types of SuDS components, with only those relevant to the development included. Under the Simple Index Approach, in order to suitably mitigate surface water pollutants, the total combined indices for any SuDS components will need to be greater than the worst-case indices above. Where multiple SuDS components are proposed, the primary component is given its full indices, while subsequent component indices are applied with a factor of 50%.

Table 4.3: Indicative SuDS mitigation indices for discharges to surface waters (Source: CIRIA SuDS Manual 2015)

Type of SuDS Component	Mitigation Indices		
	TSS	Metals	Hydrocarbons
Detention Basin	0.5	0.5	0.6
Permeable Pavement	0.7	0.6	0.7
Bioretention System	0.8	0.8	0.8

4.3.5 Based on the above, the proposed detention basin has mitigation indices of 0.5 (Total Suspended Solids), 0.5 (Metals) and 0.6 (Hydrocarbons), demonstrating that this component alone will be sufficient in mitigating surface water runoff pollution from the proposed development. Where further SuDS components are included in the development proposals these will offer even greater mitigation against surface water runoff pollution.

4.4 Maintenance

4.4.1 The proposed surface water drainage system will require routine maintenance to ensure it remains fully operational and effective. The proposed permeable paving and areas of bioretention will be maintained by a private management company and should be inspected and maintained in accordance with the proposed maintenance schedule included in **Appendix E**. The proposed attenuation basin will be built to adoptable standards and is proposed to be adopted by STW. As such, it will be STW's responsibility to maintain the attenuation basin on-site.

4.5 Foul Water Drainage

4.5.1 A foul sewer connection will need to be sought for the proposed development. The nearest public foul or combined sewer is a 225mm diameter combined sewer situated south of the site within Leicester Road. STW have confirmed that modelling may be required to confirm the capacity of the network to receive additional foul flows. In order to reach this sewer foul flows will require a pumped solution, with foul flows initially draining via gravity conveyed network to pumping station located in the north-east site corner, to suit the on-site levels. A rising main connection will then be laid along Shilton Road and Leicester Road to pump the foul flows, at an agreed rate, to the STW combined sewer with a proposed connection being made at manhole 8201

4.5.2 New foul public sewer connections will be subject to agreement with STW via a Section 106 (Water Industry Act 1991) application.

5.0 Off-Site Impacts

5.1.1 Surface water will discharge from the proposed development at reduced rates via the provision of attenuation. Therefore, the development will bring about improvements to the surface water regime in the area and hence will not increase flooding adjacent to or downstream of the site for the lifetime of the development.

6.0 Overland Flow & Flood Routing Considerations

6.1.1 The routing of potential surface water runoff, should the capacity of the proposed drainage system be exceeded, needs to be built into the layout of the site such that the residual risk of flooding from this element can be easily mitigated.

6.1.2 Careful attention will need to be paid to the proposed site levels to ensure that overland flow routes are maintained, and localised low spots are not created.

7.0 Residual Risks

7.1.1 The investigations carried out as part of this flood risk assessment and flood risk management measures proposed have demonstrated that the development will be safe, without increasing flood risk elsewhere.

8.0 Recommendations

The following recommendations are made to ensure flood risk at this site is minimised:

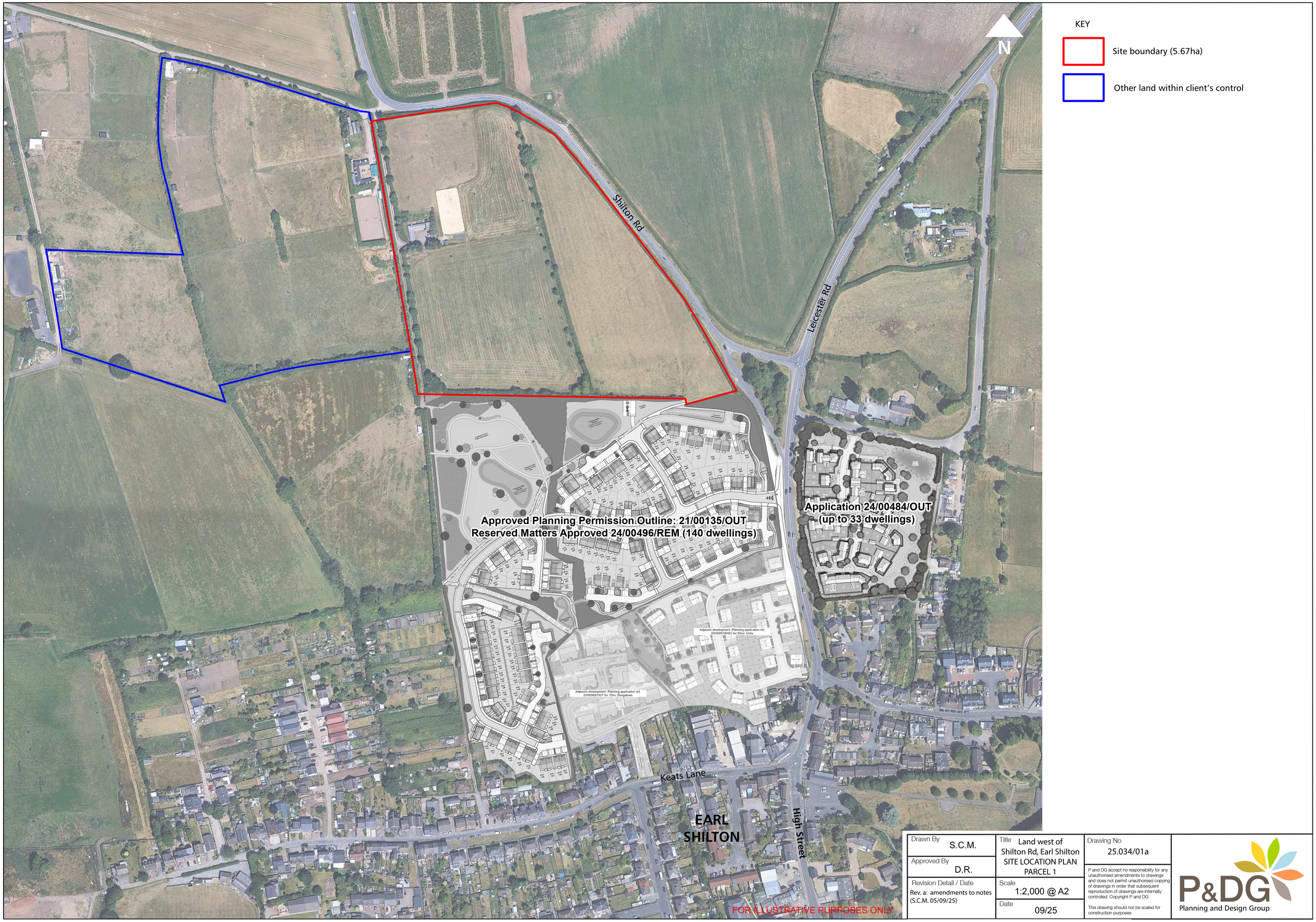
- In accordance with best practice, external ground levels should comprise falls away from buildings and towards drainage features. The design of surface water drainage features should be such that any surface water flow paths within the site are maintained and/or accommodated while ensuring that buildings remain free from flooding without increasing risk elsewhere.
- The proposed surface water drainage system should be designed to accommodate the 1 in 30-year rainfall event without any surface water flooding and should be capable of retaining the 1 in 100-year plus climate change (40%) storm event on site without flooding any buildings.
- For the purpose of this report, it has been assumed that soakaways or similar will not be viable.
- It is proposed to restrict surface water runoff to **25.0l/s** for all storms up to and including the 1 in 100-year (1% AEP) plus 40% climate change return periods. In order to achieve this discharge rate, an attenuation volume in the order of **2172m³** will need to be provided.
- It is recommended that an additional survey of Drainage Ditch 'A', which crosses the site, is undertaken to confirm the downstream drainage connection.
- It is recommended that source control methods should be utilised where possible. These include the use of permeable paving for parking spaces and private pedestrian footways, the use of planted swales in lieu of surface water sewers where appropriate, and the creation of bioretention gardens along the curtilage of the primary access road.

Disclaimer

We would note that all comments made in this report are based on the sources stated in Section 1.1. This report and its recommendations are intended for the use of Giles Stanley Ltd for the above site only.

Appendix A

Site Location Plan

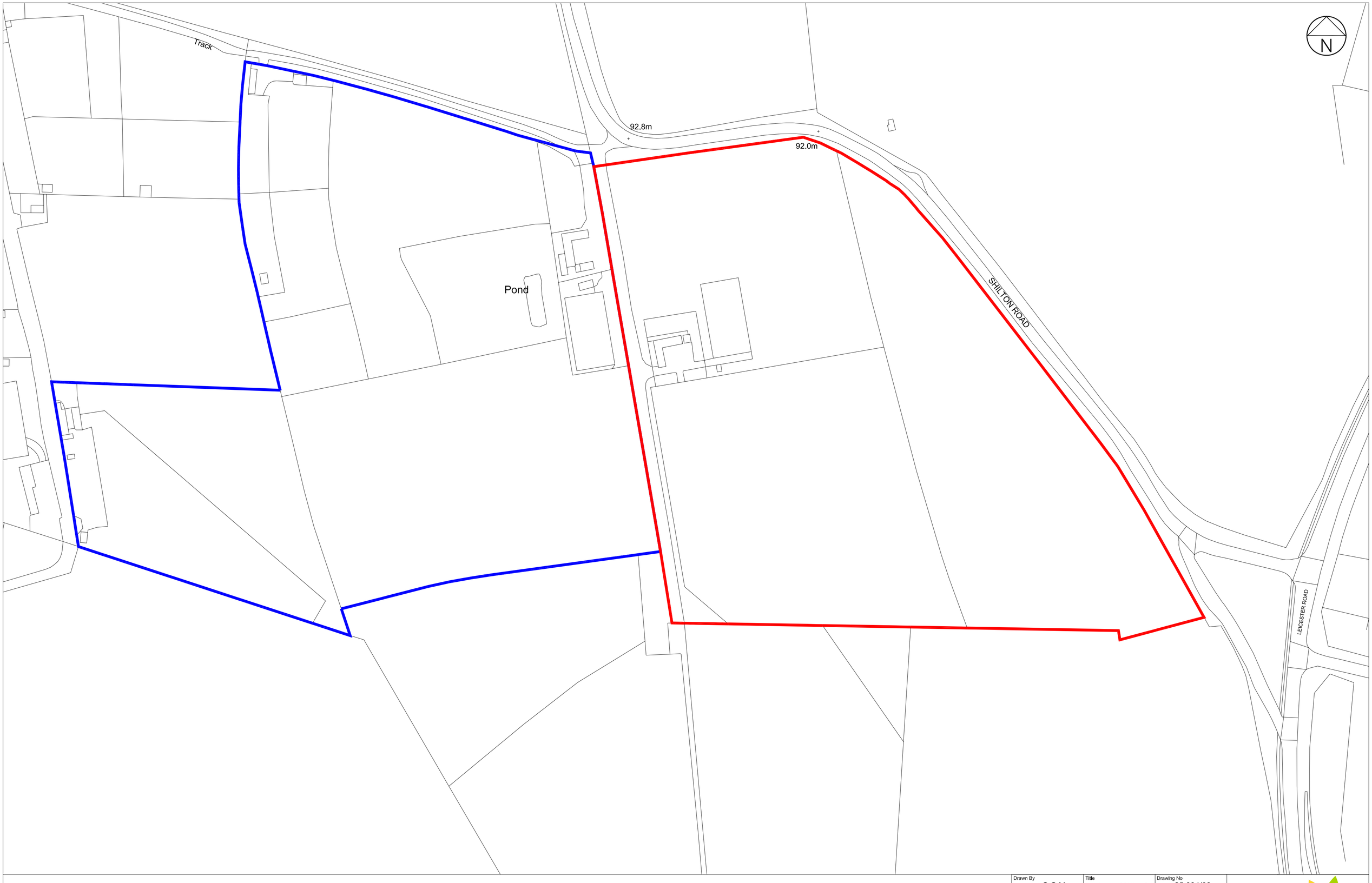


KEY

Site boundary (5.67ha)

Other land within client's control

Drawn By S.C.M.	Title Land west of Shilton Rd, Earl Shilton SITE LOCATION PLAN PARCEL 1	Drawing No 25.034/01a	P&DG Planning and Design Group
Approved By D.R.		P and DG accept no responsibility for any unauthorised amendments to drawings and does not permit unauthorised copying of drawings in order that subsequent reproduction of drawings are internally controlled. Copyright P and DG	
Revision Detail / Date Rev. a: amendments to notes (S.C.M. 05/09/25)	Scale 1:2,000 @ A2	This drawing should not be scaled for construction purposes	
	Date 09/25		



Application site boundary (5.67ha)

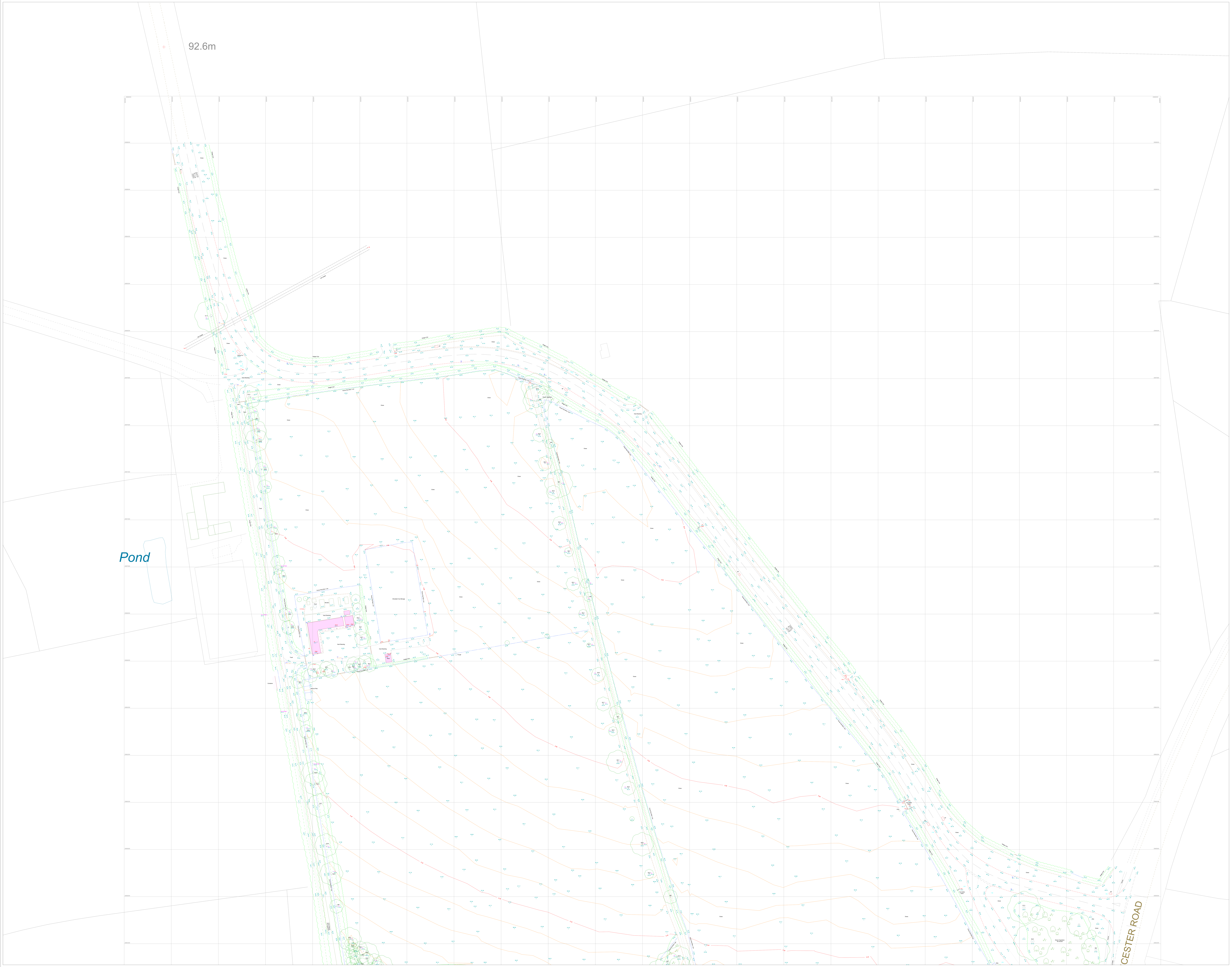
Other land within applicant's control

Drawn By: S.C.M.	Title: Land west of Shilton Rd, Earl Shilton SITE LOCATION PLAN (Parcel 1)	Drawing No: 25.034/08
Approved By: D.R.		Planning and Design Group (P & DG) Pure Offices, Lake View Drive, Sherwood Park, Nottingham NG15 0DT Tel; 01623 726256 web; www.pandd.gov.uk
Revision Detail / Date	Scale @ A2: 1:1,250	Note; P & DG accept no responsibility for any unauthorised amendments to drawings and does not permit unauthorised copying of drawings in order that subsequent reproduction of drawings are internally controlled, Copyright P & DG.
	Date: 09/25	This drawing should not be scaled for construction purposes.

P&DG
Planning and Design Group

Appendix B

Topographical Survey



Key:

FL:	Floor level	SHL:	Sill height level
CL:	Ceiling level	HHL:	Head height level
SusCL:	Suspended ceiling level	SPR:	Spring Point
U/S:	Underside level	Arch:	Arch level
DP:	Down pipe	P.Arch:	Pointed Arch level
WP:	Waste pipe		

Door / sliding door
Inspection cover

Building line
Beam
Window
Dimension

Av	Air valve	G:	Girth circumference	Sv	Stop valve
Bg	Back gully	Gy	Gully	TCB	Telephone call box
BH	Borehole	Ht.	Height	TTL:	Tree top level
BM	Benchmark	IC	Inspection cover	THL	Threshold level
Boll	Bollard	IFL	Internal floor level	TCB	Telephone call box
Bs	Bus stop	IL	Invert level	TL	Traffic light
BT	British Telecom	Lb	Letter box	THL	Threshold level
Bg	Back Gully	Lp	Lamp Post	Tp	Telegraph post
CL	Cover Level	MG	Multigirth	Ts	Traffic signal
CBX	Control box	MH	Manhole	TT	Tactile paving
CPS	Concrete paving slab	Mkr	Marker post	Twl:	Top of wall level
CTV	Cable TV cover	NVP	No visible pipes	UTL	Unable to lift
Elc	Electric cover	PInv	Pipe invert	WL	Water level
Ep	Electricity post	Pb	Post box	Wm	Water meter
Er	Earth rod	Re	Rodding eye	Wo	Wash out
Fh	Fire hydrant	Sp	Sign post		
Fs	Flagstaff	St	Stop tap		

Road
Drop Kerb
Verge Tarmac
Verge Concrete
Verge Grass
Verge
Tops
Bottoms

Ordnance Survey information is provided for a guide only.
OS BUILDING OUTLINE
OS DETAIL

Station	Easting (m)	Northing (m)	Level (m)
M1	446512.512	298661.122	95.878
M2	446549.736	298671.790	95.121
M3	446488.399	298659.230	96.364
M4	446466.853	298777.154	93.339
M5	446499.803	298778.452	93.025
M6	446479.457	298782.897	93.239
M7	446462.419	298802.786	93.840

REV	DATE	DESCRIPTION OF WORK	SURVEYOR	CHECKED BY
-	--.--.--	-	-	-

MAPMATIC
MEASURED SURVEYS

SETTING OUT M UTILITY SURVEYS M CCTV SURVEYS M CAMERA SURVEYS M FLOOD RISK ASSESSMENT
AERIAL SURVEYS M EARTHWORK CALCULATIONS M MEASURED BUILDING SURVEYS M TOPOGRAPHICAL SURVEYS

Mapmatic, Unit 14, Prime Parkway, Derby, DE1 3QB
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CLIENT
Giles
Stanley Ltd

PROJECT
Land West of Shilton Road
Earl Shilton
Leicester, LE9 7EQ

TITLE
Topographical
Survey

Scale	1: 500@A0	Date	22.05.2025
Drawn	MR	Checked	AW
Level datum	GNSS	Grid orientation	GNSS
Job number	7852	Revision	0
Drawing no.	0001	Sheet	1 of 2

Notes:

All critical measurements should be checked on site prior to design. No liability will be taken for this plan if passed onto 3rd parties. Trees and other survey data may be omitted due to dense vegetation. Some services may have been omitted due to parked vehicles and vegetation. Please note the drainage information has been ascertained by visual inspection from the surface and therefore values are estimated.

This survey has been orientated to the Ordnance Survey (OS) national grid via a Global Navigation Satellite System (GNSS) and the OS Active Network (OS NET). A true OSGB36 coordinate has been established near to the site centre via a transformation using the OSTN15 & OSGM15 transformation models. The survey has been correlated to this point and a further one or more OSGB36 points established to create a true OS bearing for angle orientation. No scale factor has been applied to the survey therefore the coordinates shown are arbitrary and not true OS coordinates.
Please refer to the survey station table to enable establishment of the on-site grid.

RICS ICES