FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

LAND OF HILL LANE, MARKFIELD

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APPENDICES

1.0 INTRODUCTION

1.1 Glenalmond Developments Ltd have commissioned ADC Infrastructure Limited to produce a joint Flood Risk Assessment (FRA) and Drainage Strategy report in support of an outline planning application for the proposed residential development of up to 67 dwellings at their site off Hill Lane, Markfield, Leicestershire.

1.2 This report assesses the flood risk to the site and proposes an appropriate foul and surface water drainage strategy for the proposed development. It has been carried out in accordance with the requirements of the National Planning Policy Framework (NPPF) and associated Planning Practice Guidance (PPG). It investigates the flood risk posed to the site from fluvial, pluvial, sewer and groundwater-based sources. A section in this report provides recommendations for mitigation and an analysis of any likely residual risks.

1.3 An initial drainage strategy for both foul and surface water seeks to identify the potential constraints that need to be considered as the development proposals progress. Leicestershire County Council as the Lead Local Flood Authority (LLFA) and Severn Trent Water have been consulted as the relevant statutory authorities to inform the drainage strategy for the site.

2.0 SITE DESCRIPTION

2.1 The development site is located to the north-west of the village centre of Markfield, approximately 11km from the centre of Leicester. It covers an area of approximately 3.02ha and is currently undeveloped, greenfield land.

2.2 The site is bound by existing residential dwellings to the north, east and south-east, by allotments and Mill Hole nature reserve to the south, and a small industrial estate to the west.

2.3 The location of the site is in Figure 1 below and is centred on grid reference 448705, 310530.

Figure 1: The site location with the red line boundary shown.

2.4 A walkover of the site, and its immediate vicinity was undertaken by ADC Infrastructure in January 2021 and September 2025. Photographs were taken across the site and focused upon the existing drainage features; copies of the photos taken during the site walkover can be found in **Appendix A**.

Topography

2.5 A topographical survey, see **Appendix B**, has been undertaken by Castle Surveys Ltd. The survey demonstrates the site to possess a noticeable gradient which falls from the western boundary adjacent to Hill Lane towards the south-eastern site corner. There is a total level difference between the highest and lowest parts of the site of approximately 13m. The highest elevation is located in the north-western site corner at 205.95m AOD, and the lowest point is located within south-eastern corner adjacent to Upland Drive at 192.85m AOD.

2.6 Publicly available LiDAR datasets covering the site and the surrounding area have been obtained and reviewed to gain a better appreciation of the general topography of the area.

2.7 Contour lines were then extracted from the LiDAR data to form a digital elevation model, an extract of which is presented within Figure 2 below.

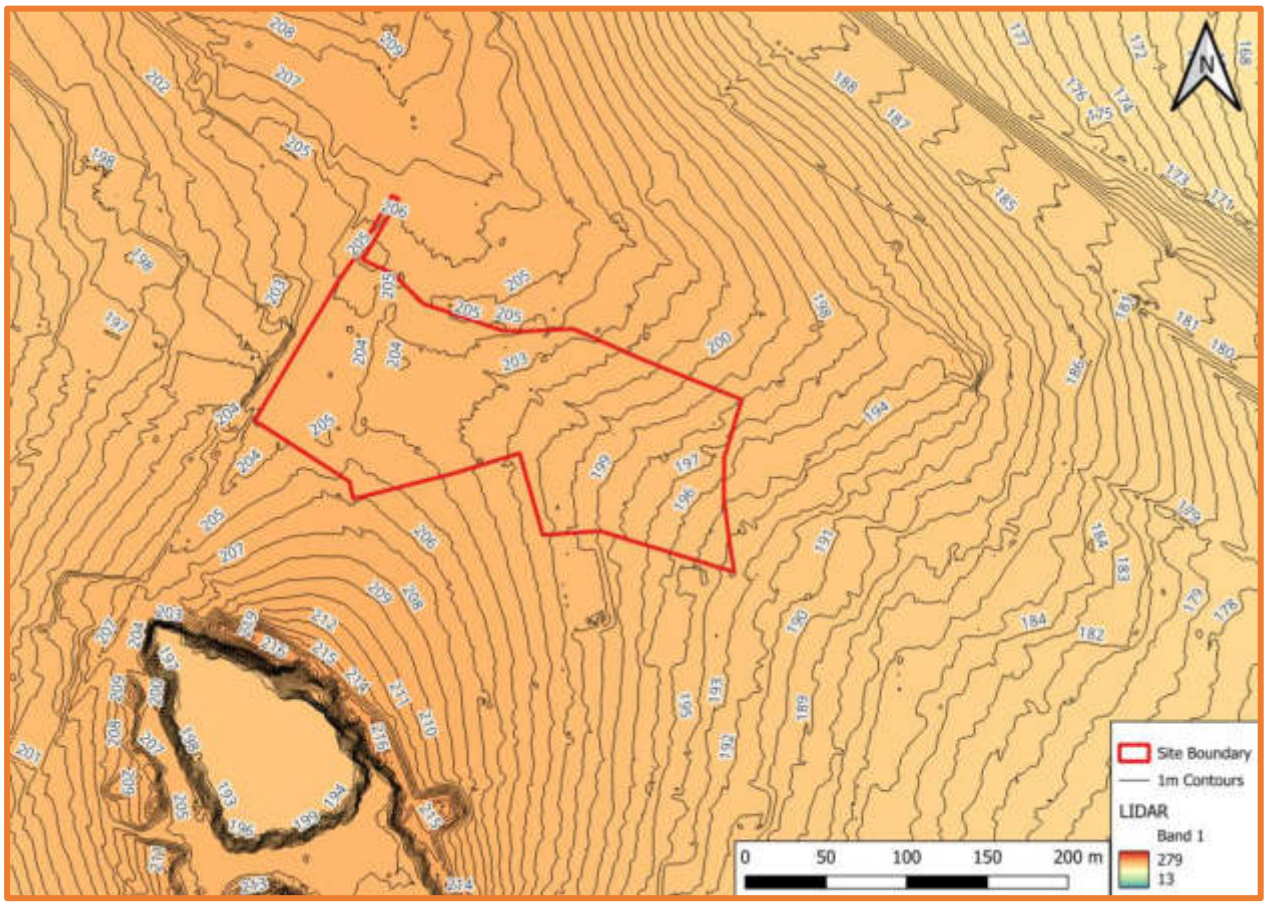

Figure 2: LiDAR map showing the elevation (m AOD) for the site and surrounding area.

2.8 Figure 2 demonstrates ground levels within the wider catchment to decline to the north, west and east.

Existing drainage

2.9 Leicestershire County Council Infrastructure Planning team have confirmed that there is an unnamed ordinary watercourse flowing south approximately 500m west of the proposed development site, before discharging into the Rothley Brook (Main River) approximately 3.5km south of the proposed development site.

2.10 Sewer record plans, obtained from Severn Trent Water, presented in Appendix C show there to be segregated foul and surface water networks within Upland Drive and Ashby Road to the south-east and north-east respectively.

2.11 The topographical survey, **Appendix B**, also indicates the presence of two ordinary watercourses within the site; one is shown to flow in an easterly direction adjacent to the southern boundary, and another which flows in an easterly direction within a central region of the site.

2.12 The topographical survey also demonstrates the presence of a drainage outfall within the south-eastern site corner.

2.13 A CCTV survey of the outfall pipe was undertaken by Onsite in January 2021 to confirm its condition and connectivity to a wider network. A copy of the outputs from the survey can be found in **Appendix D**.

2.14 The survey confirmed that the pipe connects into the public surface water sewer network within Upland Drive via manhole 8405.

2.15 Given the above existing surface water runoff is deemed to drain onsite via a combination of slow infiltration into the surrounding soils, and overland flow into the existing land drainage network.

Geology

2.16 The British Geological Survey (BGS) online mapping was reviewed to give an indication of the underlying ground conditions onsite. The online mapping shows that the bedrock geology and superficial deposits are as follows:

- **Bedrock Geology:**
  - Gunthorpe Member - Mudstone. Sedimentary bedrock formed between 247.1 and 237 million years ago during the Triassic period.

- **Superficial Deposits:**
  - Head - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 2.588 million years ago and the present during the Quaternary period.
  - Oadby Member - Diamicton. Sedimentary superficial deposit formed between 480 and 423 thousand years ago during the Quaternary period.

Soils

2.17 The Cranfield Soil and Agrifood Institute Soilscapes mapping for the site was also reviewed. The mapping defined the underlying soil classification as:

- **Soilscape 17:** Slowly permeable seasonally wet acid loamy and clayey soils

Onsite drainage implications

2.18 Soakaway testing was undertaken for the development site located to the north of the site (planning ref; 18/00699/FUL), known as Christopher Court, in March 2018.

2.19 The underlying geology of the Christopher Court site shown within the BGS mapping, is the same as the site, and therefore any testing would likely be reflective of onsite conditions.

2.20 The infiltration testing conducted at the Christopher Court site concluded that due to minimal draw down of water a rate could not be derived, and testing was subsequently abandoned, as such the use of infiltration for the disposal of surface water was not feasible. A copy of the infiltration testing result for the Christopher Court site can be found in **Appendix E.**

2.21 Given the desktop information on the underlying geology combined with the aforementioned nearby infiltration testing the use of infiltration drainage devices for the disposal of surface water runoff produced onsite is not deemed to be feasible. However, further investigation into ground

conditions is required to make an informed judgement upon the true nature of onsite infiltration capacities and as such it is advised that any infiltration testing undertaken should follow BRE365 guidance as the proposals advance.

Flood warnings/flood alert

2.22 Publicly available mapping demonstrates that the site is not located within a catchment that receives the EA flooding warning service.

3.0 PROPOSED DEVELOPMENT

3.1 The development proposals are for a residential development comprising up to 67 dwellings which will be accessed off Hill Lane to the west.

3.2 Figure 3 below demonstrates the proposed site layout.

Figure 3: The proposed site layout.

4.0 PLANNING CONTEXT

Flood and Water Management Act

4.1 In combination with the Flood Risk Regulations, 2010 (which enact the EU Floods Directive in England and Wales), the Flood and Water Management Act places significantly greater responsibility on Local Authorities to manage and lead on local flooding issues. The Act and Regulations together raise the requirements and targets that Local Authorities need to meet; this includes:

- to plan an active role in leasing flood risk management in an area,
- the development of a Local Flood Risk Management Strategy,
- to prepare preliminary flood risk assessments (PFRAs), flood hazard and risk maps, and flood risk management plans (FRMPs),
- to develop and implement drainage and flood risk management strategies,
- to be responsible for the approval, adoption, and subsequent maintenance of Sustainable Urban Drainage Systems (SuDS)[1].

4.2 The Lead Local Flood Authority (LLFA) for the site are Leicestershire County Council, who have the responsibility for the management of flood risk for the local area. Their standard guidance has been consulted in the preparation of this flood risk assessment and drainage strategy.

4.3 A pre-planning enquiry was sent to Leicestershire County Council in their role as LLFA, in 2020 and 2025, and a copy of their formal responses can be found in **Appendix F**.

The National Planning Policy Framework (NPPF)

4.4 The NPPF sets out the government's planning policies for England, and the expectations of how these policies should be applied. It acts as guidance for local planning authorities and decision-makers, both in drawing up plans and making decisions about individual planning applications.

4.5 Chapter 14 of the NPPF sets out how the government intends decision-making authorities to meet the challenge of climate change plus flooding and coastal change. Paragraph 170 sets out how inappropriate development in areas at risk of flooding should be avoided by directing development away from these areas, but where development is necessary, making it safe for its lifetime without increasing the flood risk elsewhere[2]

4.6 Paragraph 175 advises:

"The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk)."[3]

[1] (GOV.UK, 2010). Flood and Water Management Act. Chapter 2. Section 9.
[2] (Ministry of Housing, Communities and Local Government, 2024). National Planning Policy Framework. Chapter 14. Pg 49. Paragraph 170.
[3] (Ministry of Housing, Communities and Local Government, 2024). National Planning Policy Framework. Chapter 14. Pg 50. Paragraph 175

4.7 Paragraph 177 advises:

"Having applied the sequential test, if it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3."[4]

4.8 Paragraph 178 advises that:

"The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. To pass the exception test it should be demonstrated that:

a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and
b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall."[5]

4.9 Paragraph 181 continues to advise that:

"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 assessment. 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;
e) and safe access and escape routes are included where appropriate, as part of an agreed emergency plan"[6]

4.10 Paragraph 182 further advises that:

"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:

[4] (Ministry of Housing, Communities and Local Government, 2024). National Planning Policy Framework. Chapter 14. Pg 51. Paragraph 177.
[5] (Ministry of Housing, Communities and Local Government, 2024). National Planning Policy Framework. Chapter 14. Pg 51. Paragraph 178.
[6] (Ministry of Housing, Communities and Local Government, 2024). National Planning Policy Framework. Chapter 14. Pg 51. Paragraph 181.

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;"[7]

4.11 Annex 3 of the NPPF defines development type by its associated vulnerability to flooding, this is reproduced within the table below.

Vulnerability Classification	Definition
Essential Infrastructure	Essential transport infrastructure (including mass evacuation routes) which must cross the area at risk. Essential utility infrastructure which must be located within a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. Wind turbines. Solar farms
Highly Vulnerable	Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. Emergency dispersal points. Basement dwellings. Caravans, mobile homes, and park homes intended for permanent residential use. Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or waterside locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').
More Vulnerable	Hospitals Residential institutions such as residential care homes, children's homes, social services homes, prisons, and hostels. Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs, and hotels. Non–residential uses for health services, nurseries, and educational establishments. Landfill* and sites used for waste management facilities for hazardous waste. Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less Vulnerable	Police, ambulance, and fire stations which are not required to be operational during flooding. Buildings used for shops; financial, professional, and other services; restaurants, cafes, and hot food takeaways; offices; general industry, storage, and distribution; non-residential institutions not included in the 'More Vulnerable' class; and assembly and leisure. Land and buildings used for agriculture and forestry. Waste treatment (except landfill* and hazardous waste facilities). Minerals working and processing (except for sand and gravel working).

[7] (Ministry of Housing, Communities and Local Government, 2024). National Planning Policy Framework. Chapter 14. Pg.52. Paragraph 182.

	Water treatment works which do not need to remain operational during times of flood. Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place. Car parks.
Water Compatible Development	Flood control infrastructure. Water transmission infrastructure and pumping stations. Sewage transmission infrastructure and pumping stations. Sand and gravel working. Docks, marinas, and wharves. Navigation facilities. Ministry of Defence installations. Ship building, repairing, and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. Water-based recreation (excluding sleeping accommodation). Lifeguard and coastguard stations. Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

Planning Practice Guidance (PPG)

4.12 The PPG associated with the NPPF provides more detailed guidance on how the requirements of the NPPF can be met in practice. It includes recommendations on the allowances for climate change and for the application of the sequential and exception tests stating:

"The sequential test should be applied to 'Major' and 'Non-major' development proposed in areas at risk of flooding, as set out in paragraphs 173 to 174 of the National Planning Policy Framework. Paragraphs 175, 176 and 180 set out exemptions from the sequential test.

In applying paragraph 175 a proportionate approach should be taken. Where a site-specific flood risk assessment demonstrates clearly that the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development (therefore addressing the risks identified e.g. by Environment Agency flood risk mapping), without increasing flood risk elsewhere, then the sequential test need not be applied.

The absence of a 5-year housing land supply is not a relevant consideration in applying the sequential test for individual applications. However, housing considerations, including housing land supply, may be relevant in the planning balance, alongside the outcome of the sequential test."[8]

4.13 Three critically important tables are included within the PPG that set the framework for discussion and analysis of site-specific flood risk.

[8] (Ministry of Housing, Communities and Local Government, 2025) Planning Practice Guidance – Flood Risk and Coastal Change, paragraph 027

4.14 Table 1 of the Planning Practice Guidance defines flood zones based upon event return probability and is used to steer development and classify land for development. The table is produced below.

Flood Zone	Definition
Zone 1 Low Probability	Land having less than a 1 in 1,000 annual probability of river or sea flooding. (shown as 'clear' on the Flood Map – all land outside Zones 2, 3a and 3b)
Zone 2 Medium Probability	Land having between a 1 in 100, and a 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200, and a 1 in 1,000 annual probability of sea flooding. (shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (not separately distinguished from Zone 3a on the Flood Map)

4.15 It is important to note that land in Flood Zone 3b is categorized as;[9]

- Land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or
- Land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding)

4.16 Areas within the functional floodplain should be identified by local planning authorities within their Strategic Flood Risk Assessments.

4.17 Table 2 of the Planning Practice Guidance (Flood Risk Vulnerability and flood zone 'compatibility') outlines the circumstances in which development may or may not be appropriate and when an Exception Test will be required. The table is reproduced below.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	**Highly Vulnerable**	**More Vulnerable**	**Less Vulnerable**	**Water Compatible**
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test Required.	✓	✓	✓
Zone 3a	Exception Test Required †	×	Exception Test Required	✓	✓
Zone 3b	Exception Test Required*	×	×	×	✓*

[9] (Ministry of Housing, Communities and Local Government, 2025). Planning Practice Guidance. Flood risk and coastal change. Chapter: Flood Zone and flood risk tables. Table 1.

† In Flood Zone 3a – essential infrastructure should be designed and constructed to remain operational and safe in times of flood.
** In Flood Zone 3b (functional flood plain) essential infrastructure that must be there and has passed the Exception Test, and water- compatible uses, should be designed to:*
remain operational and safe for users in times of flood,
result in no net loss of flood plain storage
not impede water flows and not increase flood risk elsewhere.

4.18 The NPPF states that proposed development should remain safe throughout its lifetime without increasing flood risk elsewhere.

4.19 The PPG states:

"Residential development can be assumed to have a lifetime of at least 100 years, unless there is a specific justification for considering a different period the lifetime of a non-residential development depends on the characteristics of that development but a period of at least 75 years is likely to form a starting point for assessment".

4.20 Given the above the proposed development is anticipated to possess a design lifetime of 100 years.

4.21 To assess whether the proposed development would remain safe throughout its lifetime the proposals are to be assessed against the following design flood events, plus a forecasted allowance for climate change.

- river flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year); or
- tidal flooding with a 0.5% annual probability (1 in 200 chance each year); or
- surface water flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year),

Climate change

4.22 Climate change allowances are predictions of anticipated change for:

- Peak river flow
- Peak rainfall intensity
- Sea level rise
- Offshore wind speed and extreme wave height

4.23 The most appropriate climate change allowance for use in assessing the proposed development is peak rainfall intensity.

Peak rainfall intensity[10]

4.24 Peak rainfall intensity allowances should be utilised in small catchments (less than 5km2), or urbanised drainage catchments.

4.25 For flood risk assessments and strategic flood risk assessments, both the central and upper end allowances should be assessed.

[10] (Environment Agency, 2022). Flood Risk Assessments: climate change allowances.

4.26 The proposed site is situated within the Soar Management catchment, the table below, outlines the peak rainfall intensity allowances for a range of periods.

Soar Management catchment	3.3% annual exceedance rainfall epoch (2050s)	3.3% annual exceedance rainfall epoch (2070s onwards)	1% annual exceedance rainfall epoch (2050s)	1% annual exceedance rainfall epoch (2070s onwards)
Upper end	35%	35%	40%	40%
Central	20%	25%	20%	25%

4.27 Given the anticipated life span of the development the site should be assessed via the 2070s epoch allowances; this is up to a 1 in 100-year+40% event.

Local planning context

Hickley and Bosworth Borough Council Local Plan

4.28 The site falls within the jurisdiction of Hinckley and Bosworth Borough Council and is subject to the policies and guidance specified within the local plan. The latest plan was adopted in July 2016 and covers the period from 2006 and 2026.

4.29 The current Local Plan is made up of a series of documents, these include Core Strategy, Site Allocations & Development Management Policies.

Local Development Framework Core Strategy

4.30 The Core Strategy does not contain any specific policies on flood risk or surface water management, but these are covered more broadly under Strategic Objective 10, which seeks to improve resource management across the Borough. Objective 10 notes that flooding is not a major issue for the Borough but states sustainable urban drainage must be incorporated into all new developments.

Site Allocations and Development Management Policies (SADMP)

4.31 The SADMP accompanies the local plan and outlines the key policies for the borough. The development management policies in relation to flood risk and drainage, are DM7 (Preventing Pollution and Flooding) and DM10 (Development and Design).

4.32 Policy DM7 – Preventing Pollution and Flooding, states:

1. *Adverse impacts from pollution and flooding will be prevented by ensuring that development proposals demonstrate that:*

   a) *It will not adversely impact the water quality, ecological value or drainage function of water bodies in the borough;*
   h) *The development doesn't create or exacerbate flooding by being located away from areas of flood risk unless adequately mitigated against in line with National Policy.*

4.33 Policy DM10 – Development and Design, states:

1. *Developments will be permitted providing that the following requirements are met:*

   h) *An appropriate Sustainable Drainage Scheme is submitted to and approved by the relevant Authority. Schemes should incorporate wildlife areas, ponds, swales and permeable paving where appropriate;*

2. *In exceptional circumstances where outstanding, innovative design is demonstrated (particularly where high levels of sustainability are integral feature), applications will be considered favourably, even where this may result in some limited conflict with the above criteria.*

2020-2039 Markfield Parish Neighbourhood Plan

4.34 Markfield Parish Council produced a Neighbourhood Plan to set out a vision for the Parish.

4.35 The Markfield Parish Neighbourhood Plan allows people who live, work and have a business in the area to have a say where they think new houses and businesses should be located and what they should look like.

4.36 The plan demonstrates the following local flood risk information

"The Neighbourhood Area has an elevated landform that slopes steeply away from the edge of Markfield village. There is no fluvial flood risk posed to Markfield. Surface water flow paths follow the topography from high ground to lower ground in the south. In the 30-year event, there is only one overland surface water flow route in the settlement, flowing south on Chitterman Way before draining into an unnamed watercourse south of London Road. In the 100-year event, this overland flow route is more accentuated and has additional flow routes joining it from Linford Crescent, London Road and properties between Chitterman Way and Launde Road."

4.37 The proposed site is distant from the aforementioned flow route.

Hinckley and Bosworth Draft Local Plan 2024-2045

4.38 Hinckley and Bosworth are currently undertaking a regulation 18 for an emerging local plan which covers the time period 2024-2045.

4.39 The draft policies relevant to flood risk and drainage in the emerging plan, are CC02 (Flood Risk) and CC03 (Sustainable Drainage Systems).

4.40 Policy CC02 – Flood Risk, states:

1. *Planning applications for development proposals that require a Flood Risk Assessment will be required to address the actual and residual risk from all forms of flooding and the impact of climate change. The Flood Risk Assessment should be prepared in accordance with national and local guidance, including the recommendations set out in the Borough Council's Strategic Flood Risk Assessment.*

2. *Development in areas at risk of flooding will only be supported where it is satisfactorily demonstrated that:*

   - *The Sequential Test has been passed;*

- *Where required, the Exception Test has been passed;*
- *The proposed development will not increase the risk of flooding on site or elsewhere and appropriate floodplain compensation is provided where necessary; and*
- *The proposed development, including the access and egress, will be safe and resilient to flooding for its lifetime, taking into account the relevant climate change allowances.*

3. *Where development is permitted within flood risk areas, it must demonstrate that, where required, it will reduce fluvial and surface water flood risk and manage residual risks, address the impacts of climate change through appropriate flood mitigation and adaptation measures, including enhancements to existing defences.*

4. *All development proposals should, wherever possible, include measures to reduce and manage surface water through appropriate sustainable drainage systems (SuDS) so as to minimise and manage flood risk and improve water quality in accordance with Policies CC03 and PMD03.*

4.41 Policy CC03 – Sustainable Drainage Systems States:

1. *Development proposals are required to integrate well-designed and naturalised Sustainable Drainage Systems (SuDS), to manage flood risk and water quality in accordance with national and local standards unless it can be clearly demonstrated;*

   - *That SuDS are not technically, operationally or financially deliverable or viable and that surface water drainage issues from the development can be alternatively mitigated; or*
   - *That the SuDS scheme will adversely affect the environment or safety.*

2. *SuDS design should show how constraints have been considered and how the design provides multiple benefits in terms of landscape enhancement, biodiversity, recreation, amenity, leisure and the enhancement of historical features. Applicants should demonstrate how the design and layout of SuDS reflects and responds to the individual site's features such as following natural drainage routes to improve water quality and the local landscape character.*

3. *Applicants are expected to integrate SuDS proposals with green infrastructure and active travel proposals, as part of a multi-functional approach, which should be delivered and integrated as part of a green network. Where integration of SuDS is not proposed, applicants must provide evidence as to why it is not possible. Where SuDS are part of open space obligations, they should be safe and accessible whilst creating an enhancement to local distinctiveness.*

4. *Arrangements in accordance with national policy will need to be put in place for the management and long-term maintenance of the SuDS throughout the operational lifetime of the development. Planning applications for phased developments should be accompanied by a Drainage Strategy, which takes a strategic approach to drainage provision across the entire site and incorporates adequate provision for SuDS within each phase.*

5. *The impacts of flood risk and pollution during the construction phase(s) of development should be fully assessed, and where appropriate a Surface Water Management Plan should be put in place prior to commencement of development to identify and mitigate the potential impacts.*

6. *Proposals for the retrofitting of sustainable drainage systems will be supported.*

Hinckley and Bosworth Level 1 Strategic Flood Risk Assessment

4.42 Hinckley and Bosworth Borough Council commissioned JBA to undertake a Level 1 SFRA in January 2025, to inform and support the production of the 2024-2045 Local Plan. Whilst the local plan has not been adopted the evidence base remains relevant.

4.43 The Level 1 SFRA outlines the following principles for new developments

1. *Consult with statutory and non-statutory consultees at an early stage to understand their requirements.*
2. *Consider the risk from all sources of flooding and that they are using the most up to date flood risk data and guidance.*
3. *Confirm that the development does not increase flood risk elsewhere.*
4. *Make the development safe for future users.*
5. *Enhance the natural river corridor and floodplain environment through new development.*
6. *Consider and contribute to wider flood mitigation strategy and measures in the area and apply the relevant local planning policy.*
7. *Consider opportunities for betterment in locations where critical infrastructure is identified to be at flood risk*

4.44 The SFRA goes onto provide advice for site specific mitigation, this includes modifying ground levels, finished floor levels and general resistance and resilience measures.

Hinckley and Bosworth Borough Council Level 2 Strategic Flood Risk Assessment

4.45 Hinckley and Bosworth Borough Council commissioned JBA to undertake a Level 2 SFRA in May 2020.

4.46 The purpose of the Level 2 SFRA is to screen the preferred development sites across the Borough against the available flood risk information to determine whether a detailed assessment would be required. A total of 65 sites, including the proposed site (LPR43), was assessed. The screening process determined that the site was not at risk of flooding and therefore further assessment as part of the Level 2 SFRA was not required.

Flood Risk Status

4.47 The Environment Agency online flood mapping shows that the site lies within Flood Zone 1 and predominantly possesses a very low chance of flooding from surface water (see Figures 4 and 5 overleaf).

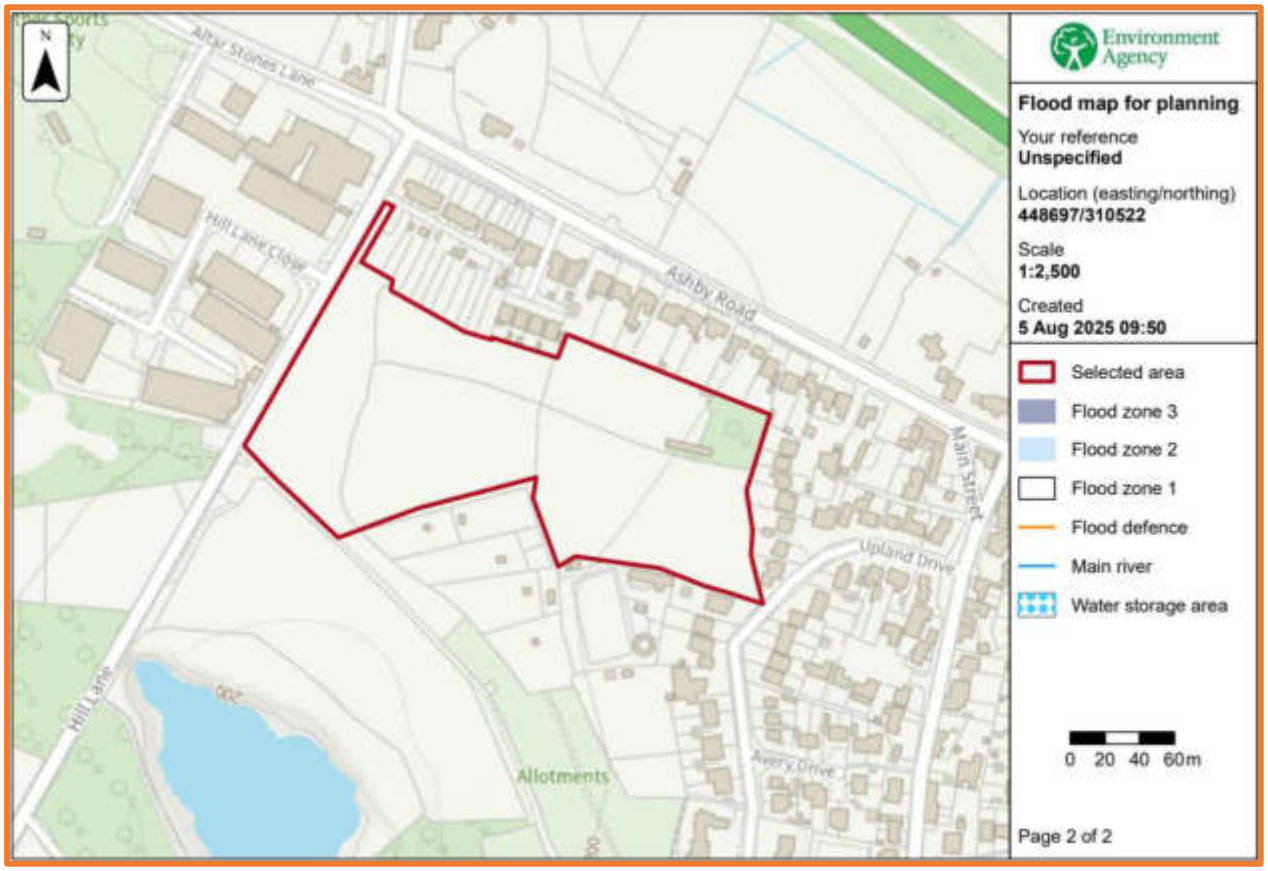

Figure 4: EA Flood Map for Planning Extract.

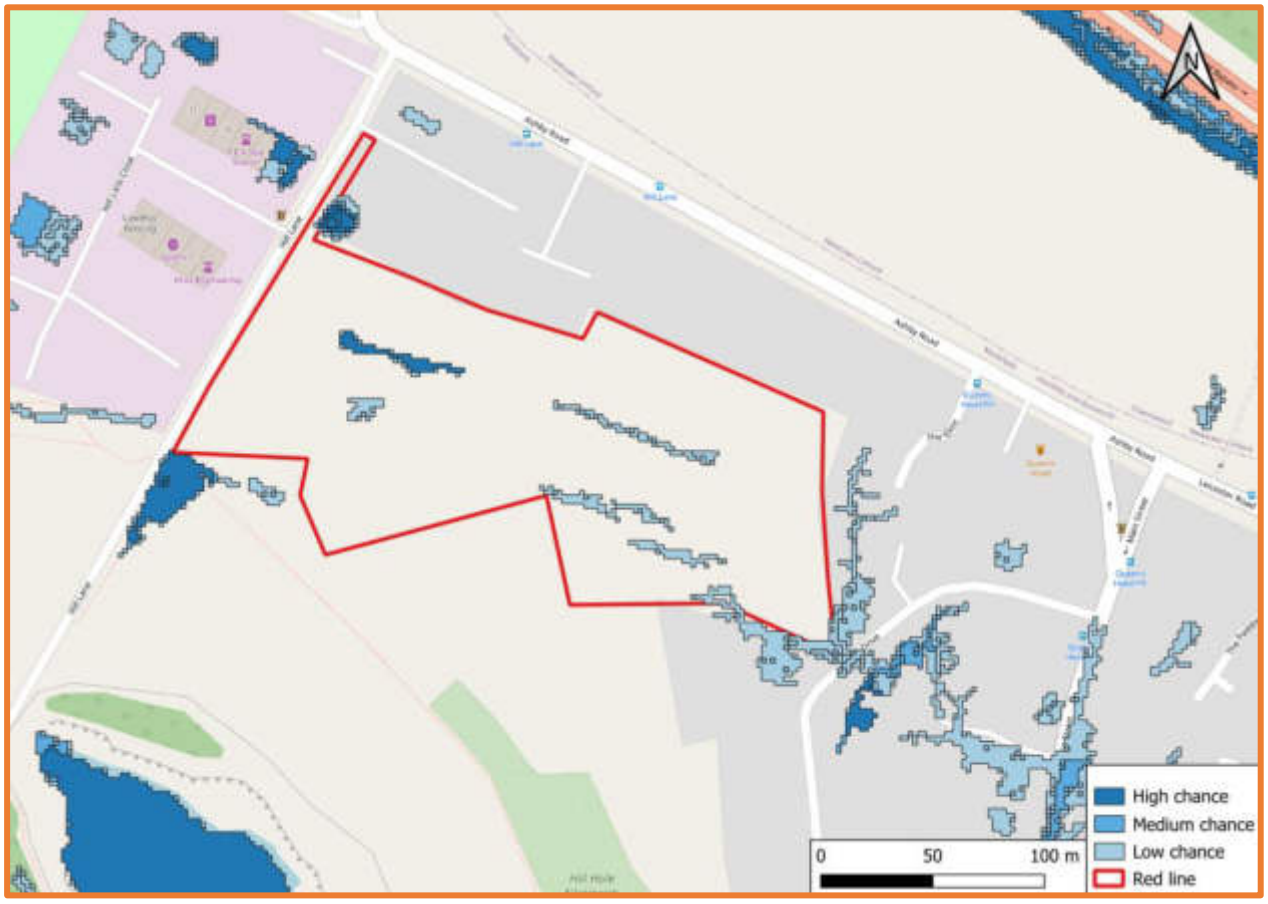

Figure 5: The pluvial flood risk extents for the site and the surrounding area.

Flood risk and development compatibility

4.48 The development is categorised as residential development. In Annex 3 of the NPPF residential development is categorised as a 'More vulnerable' development type.

4.49 The development is located within Flood Zone 1, in accordance with Table 2 of the PPG, the development is deemed appropriate in regard to fluvial flood risk.

4.50 The flood map for planning also demonstrates that the majority of the site is located within an area considered to possess a very low chance of pluvial flooding. This is with the exception of low-high chance pluvial flood extents located within; a central region of the site, on land associated with a minor watercourse, and the south-western corner of the site, on land associated with a topographical low spot.

4.51 Mitigation is detailed within section 5 of this report; this comprises localised ground reprofiling and the introduction of suitably sized culverts to facilitate the crossing of the existing watercourse. Given the proposed mitigation the built development will possess a low chance of pluvial flooding and therefore is determined to be sequentially acceptable in regard to pluvial flood risk.

4.52 The risk posed to the development from both fluvial and pluvial sources is discussed in greater detail within section 5.

Previous flood history

4.53 The Environment Agency recorded flood outlines mapping has been reviewed, the mapping demonstrates that the site has not been impacted by any recorded flood events.

4.54 Leicestershire County Council as the LLFA for the local area are required under section 19 of the Flood Risk and Water Management Act to investigate all flooding incidents that occur within Leicestershire. The LLFA hold no Section 19 reports within Markfield.

4.55 Leicestershire County Council's Infrastructure Planning (Flood Risk Management) team has records of the following flooding incidents within the surrounding area.

- Highway flooding- Priory Lane, Markfield (approximately 900m north of the proposed development site).
- Public right of way (R18) flooding because of a blockage to drainage system/watercourse within Horsepole Grange Industrial Estate- Cliffe Hill Road, Stanton-under-Bardon (approximately 1.7km west of the proposed development site).
- March 2019 – reports of flooding to back gardens from the ditches within the site boundary being blocked

4.56 During the development works all onsite ditches are to be cleared and any blockages removed, this will mitigate against the flood risk reported in March 2019, all other incidents reported are remote from the site.

5.0 FLOOD RISK ASSESSMENT

5.1 In accordance with the NPPF and local planning guidance, this Flood Risk Assessment considers the risk posed to the development from a range of flooding sources. This section of the report details the investigation of flood risk from all pertinent sources; a subsequent section provides recommended mitigation where the risk is deemed significant.

5.2 The flood risks that may be posed to any site are summarised in the table below. The degree of risk to the site is indicated in the table below and site-specific factors are outlined and described in greater detail within the forthcoming sections.

Flooding Source	Degree of Risk	Source of Risk
Fluvial	Low	EA mapping demonstrates that the site lies within Flood Zone 1 and therefore is at a low risk of fluvial flooding.
Tidal	None	There are no tidal influences in the area and so there is no risk of tidal flooding.
Canals	Low	The site is over 100m away from the nearest canal and so the risk of canal flooding is deemed to be low.
Groundwater	Low	A desktop review of the underlying geology infers that the lack of bedrock permeability onsite would render groundwater flooding to be unlikely.
Sewers	Low	Local sewer plans demonstrate an extensive segregated surface water and foul network to the north and east of the development. The public network is generally sited at a lower elevation than the site, and as such any exceedance flows would be unlikely to impact the site.
Pluvial (Surface Water) runoff	Low	The EA mapping demonstrates that the majority of the site possesses a very low chance of pluvial flooding, areas shown to possess a chance of pluvial flooding are to be sufficiently mitigated and as such the risk of pluvial flooding to the built development is low.
Reservoirs and Waterbodies	None	The EA mapping demonstrates that the site is at minimal risk of reservoir flooding.

Fluvial flooding

5.3 The Flood Map for Planning has been reviewed; the mapping shows that the site lies within Flood Zone 1 and is therefore deemed to possess a low probability of fluvial flooding.

5.4 There are no main rivers within the vicinity of the site that could potentially pose a direct risk to the proposed development.

5.5 The LLFA possess a record of flooding to back gardens from the ditches within the site boundary being blocked. As part of the development works all onsite ditches will be cleared and any blockages removed, this will mitigate against any flood risk associated with the onsite ditch network, future maintenance of the drainage network will also further mitigate against this.

Tidal flooding

5.6 The site is located within an area that is not tidally influenced; therefore, it is deemed that there is no risk from tidal or coastal flooding.

Canal flooding

5.7 There are no canals within the immediate vicinity of the site, and therefore there is no risk of canal flooding posed to the site.

Groundwater flooding

5.8 Groundwater flooding occurs when the water table rises following a period of prolonged rainfall and emerges on the ground surface. It is most likely to occur in low-lying areas that are underlain by a permeable bedrock and superficial deposits.

5.9 A desk-based review of the onsite geology reveals that the promotion of groundwater movement may be impeded by the presence of a mudstone bedrock and slowly permeable soils.

5.10 The 2025 Level 1 SFRA for Hinckley and Bosworth includes mapping which shows the areas across the borough that are susceptible to groundwater flooding. The mapping implies that the site falls within an area that is deemed to possess a low susceptibility (<25%) to groundwater flooding. A copy of the Areas Susceptible to Groundwater Flooding map can be found within **Appendix G**.

5.11 It is recommended that a ground investigation is undertaken to confirm the underlying ground conditions on site as the proposals advance. Further testing would provide more detailed information on the ground conditions and henceforth provide further enlightenment on the site's vulnerability to groundwater flooding but given the available information the risk is considered to be low.

Pluvial risk

5.12 The EA publish pluvial (surface water) flood maps as part of the Flood Map for Planning service which show the route of surface water runoff across the ground. Typically, these flood maps identify overland drainage paths that are often part of a historic natural land drainage system. An overview of the surface water flood risk to the site is shown in Figure 5.

5.13 The mapping demonstrates that the majority of the site is located within an area considered to possess a very low chance of pluvial flooding. This is with the exception of low-high chance pluvial flood extents located within; a central region of the site, on land associated with a minor watercourse, and the south-western corner of the site, on land associated with a topographical low spot.

5.14 It should be noted that the surface water mapping simulates where flooding is likely to occur based upon LiDAR data which picks up on topographical trends such as localised low spots and depressions. As such surface water flooding is often simulated within existing field drains or watercourses given their formation as depressions within the ground surface, however in reality watercourses possess conveyance capabilities and as such the associated runoff would route downstream within the wider network.

5.15 All development has been located within areas considered to possess a low chance of surface water flooding, this is with the exception of an area of highway and associated parking areas which are required to cross the low-high chance surface water flood risk extents associated with the minor watercourse which flows in an easterly direction through a central region of the site.

5.16 Surface water flood depth data from the EA's Long-Term Flood Risk Map has been reviewed. While the EA notes that this data is not definitive for development planning, it provides useful context.

5.17 In turn a surface water flood risk depth plan has been produced, see **Appendix H**, the maximum depth of surface water flooding associated the watercourse crossing is 0.3m. The road level and ground level associated with the parking areas are to be elevated by a minimum of 0.3m above the top of bank level of the watercourse and as such once constructed will be elevated above the estimated flood level.

5.18 Furthermore, a culvert will be required to facilitate the construction of the highway and associated parking areas, the design of the culvert is subject to detailed design however the pipework will be designed to provide additional capacity beyond that of the existing channel.

5.19 An additional minor area within the south-western corner of the site is also shown to be located with an area deemed to possess a low-high chance of pluvial flooding. The maximum depth of surface water flooding associated with the aforementioned extents is 0.2m. The general raising of ground levels by 0.2m through construction will mitigate against any risk of surface water flooding within this location.

5.20 Any residual risk of surface water flooding will further be mitigated by the introduction of a sustainable drainage system which will provide a formal conveyance route for runoff which would ordinarily pond or pool in field low spots or depressions.

5.21 Given the above, whilst there are existing areas within the site which possess a residual risk of pluvial flooding, the mitigation measures proposed will ensure that the built development will possess a low chance of surface water flooding once constructed. The proposals are therefore deemed sequentially acceptable in regard to pluvial flood risk, this is in accordance with the NPPF and associated PPG.

Sewer flooding

5.22 Sewer flooding occurs when the conveyed flows exceed the available capacity of the system. This may be due to intense rainfall events, restricted discharges to watercourses with high water levels, blockages, collapses, or equipment failure.

5.23 The site is greenfield in nature and is not currently served by a sewer system, so the direct risk to the site is minimal.

5.24 A pre-development enquiry response, shown in **Appendix C**, obtained from Severn Trent Water demonstrates that there is a comprehensive segregated foul and surface water sewerage network present to the north and east of the development. The sewer lengths are located at generally lower elevations than onsite ground levels and therefore there is a low residual risk of sewer flooding.

Reservoirs and artificial waterbodies

5.25 The EA has prepared reservoir failure flood risk mapping as part of the 'Check Your Long-Term Flood Risk' service to show the largest area that might be flooded if a reservoir were to fail. The mapping displays a worst-case scenario and is only intended as a guide. The site is shown to be outside areas considered at potential risk of reservoir flooding, see Figure 6.

Figure 6: The flood risk from reservoir sources to the site.

5.26 It should be noted that these maps are indicative and the probability of the flood event from reservoir failure occurring is extremely low.

Proposed mitigation

5.27 The risk of flooding to the site from a variety of sources has been investigated. The evidence expressed above demonstrates that flood risk as a result of fluvial, tidal, canal, sewer, groundwater and reservoir influences have all been deemed as low and as such so no further mitigation is recommended.

5.28 Flood risk from pluvial sources has been deemed to be predominantly low this is with exception to minor low-high chance extents associated with an existing watercourse and a topographical low spot. Source specific mitigation has been outlined which will ensure that the built development will possess a low chance of surface water flood risk once constructed.

5.29 Although the flood risk to the site from the variety of sources investigated has been deemed to be low; to alleviate any residual flood risk to the site the following should be analysed.

Access and egress

5.30 The PPG states that to ensure a development is safe for its lifetime the ability of residents and users to safely access and exit a building during a design flood and to evacuate before an extreme flood (0.1% annual probability of flooding plus climate change) must be considered[11].

5.31 The access and egress route from the development is shown to be located within Flood Zone 1 and to possess a low chance of pluvial flooding.

Drainage system design

5.32 The National Standards for SuDS has a series of recommendations in relation to the design of prospective drainage systems for new developments. These are to ensure that drainage systems on new developments are designed to a standard to negate the additional flood risk that may arise from the development. The National Standard for SuDS states:

"The surface water drainage system shall be designed so that, unless an area is designated to hold or convey water as part of the design, flooding does not occur on any part of the development for rainfall events up to the 3.3% AEP event."[12]

"The surface water drainage system shall be designed so that flooding does not occur during rainfall events up to a 1% AEP event in any part of: a building (including a basement); any utility plant susceptible to water (for example, pumping station or electricity substation) within the development; or any route designed to provide safe access and escape during flooding."[13]

Exceedance routes

5.33 The National Standards for SuDS guidance also specifies that:

"The surface water drainage system shall be assessed for exceedance events in excess of the 1% AEP event with expected exceedance routes identified across the development to confirm there is no adverse flood risk to the development or elsewhere."[14]

5.34 The proposed SuDS features have been sized to accommodate all runoff generated onsite for up to the 1 in 100-yeat+40% storm event, as such there will be no exceedance flows within the site for the 1%AEP event.

Finished floor levels

5.35 The site is not located within an area where there is a residual flood risk, however finished floor levels according to the gov.uk website should be a minimum of whichever is higher of; 300mm above the general ground level of the site or 600mm above the estimated river or sea flood level[15].

[11] (Ministry of Housing, Communities and Local Government, 2024). Planning Practice Guidance. Flood risk and coastal change.
[12] (Department for Environment, Food and Rural Affairs, 2025). National standards for sustainable drainage systems (SuDS) paragraph 3.35
[13] (Department for Environment, Food and Rural Affairs, 2025). National standards for sustainable drainage systems (SuDS) paragraph 3.36
[14] (Department for Environment, Food and Rural Affairs, 2025). National standards for sustainable drainage systems (SuDS) paragraph 3.40
[15] (Environment Agency, 2024). Flood risk assessment standing advice.

5.36 Since the site is located within Flood Zone 1 and is at a low risk of flooding it is recommended that on site finished floor levels are set to a minimum of 300mm. The maximum depth of surface water flood risk within the developed areas of the site also equates to 300mm and as such the raising of finished floor levels to this extent will also mitigate against any residual risk of flooding from pluvial sources.

External site levels

5.37 External site levels should be designed to route any excess runoff away from buildings, and into landscaped areas or drainage outlets. Any raising of levels onsite should be designed to ensure that there is no increase in surface water runoff onto neighbouring third-party land.

5.38 Likewise, similar design considerations to minimise any potential risk from sewer flooding arising from the onsite drainage network should be considered, to prevent foul effluent from entering the proposed dwellings.

6.0 SURFACE WATER DRAINAGE STRATEGY

Existing discharge rate

6.1 Current proposals comprise of plans for residential development upon predominantly greenfield land.

6.2 The existing greenfield runoff rate has been calculated using the UK SuDS greenfield runoff tool, this has been based upon an estimated impermeable area of 1.1ha, which is 60% of the proposed developable area shown within the illustrative site layout (1.83ha).

6.3 The full outputs are included within **Appendix I**, and a summary of the results is provided in the table below.

Return Period	Impermeable Area (ha)	Runoff Rate (l/s)
QBAR	1.1	5.36
20% QBAR	1.1	4.29
1 in 1 Year	1.1	4.50
1 in 2 Year	1.1	4.80
1 in 30 Year	1.1	10.70
1 in 100 Year	1.1	13.80

6.4 As per local policy the proposed discharge rate utilised should be the more onerous of a 1 in 2-year return period or a 20% reduction in QBAR.

6.5 Given the above surface water runoff from the site is to be discharged at a rate of 4.2l/s, which is equivalent to a 20% betterment upon the existing QBAR greenfield runoff rate.

Discharge options

6.6 In accordance with the Building Regulations Part H, the newly published National Standards for SuDS and prevailing best practice, surface water should look to be discharged according to the following preferential hierarchy:

- Priority 1: collected for non-potable use
- Priority 2: infiltrated to ground
- Priority 3: discharged to an above ground surface water body
- Priority 4: discharged to a surface water sewer, or another piped drainage system
- Priority 5: discharged to a combined sewer

6.7 It is recommended that each dwelling will have individual water butts to allow for a means of onsite rainwater harvesting, however an additional solution for the disposal of the surface water runoff will also be required.

6.8 The British Geological Survey (BGS) mapping and Soilscapes mapping were reviewed to give an indication of the underlying ground conditions. These suggest that the site is underlain by a mudstone bedrock and slowly permeable seasonally wet soils, which may limit the viability of the use of infiltration onsite. As such it is advised that a ground investigation which includes infiltration testing is undertaken to determine whether there is any soakage potential across the site.

6.9 Leicestershire County Council, as the LLFA, require that sufficient evidence is provided to prove whether infiltration is a viable option to dispose of surface water runoff or not. Should the use of infiltration features be found not to be suitable, then an alternative outfall such as a watercourse or surface water sewer needs to be confirmed.

6.10 The use of infiltration drainage techniques does not appear feasible; therefore, surface water runoff should be sought to be discharged into an above ground surface water body. The topographical survey demonstrates the presence of an ordinary watercourse which flows in an easterly direction adjacent to the site's southern boundary. A site walkover confirmed the presence of an existing surface water outfall associated with the minor watercourse within the south-eastern corner of the site.

6.11 A CCTV survey of the existing surface water outfall pipe was conducted, see outputs in **Appendix D**, which confirmed the surface water outfall to discharge into the public surface water sewer network within Upland Drive to the south-east of the site via manhole 8405, the survey confirmed the pipework to be in a reasonable condition, however remedial works will be carried out, as required, as part of the development works. As such it is proposed that surface water runoff produced onsite is to discharge via the ordinary watercourse and existing surface water outfall to the south-east of the site.

6.12 Correspondence with Severn Trent Water, see **Appendix J**, demonstrates that a gravity connection to the public surface water sewer within Upland Drive (direct or indirect) would be acceptable.

Onsite surface water strategy

6.13 The proposed onsite surface water strategy looks to convey surface water runoff generated on site via a below ground gravity conveyed network to an attenuation basin.

6.14 The proposed attenuation basin will be located within the south-eastern extents of the site, to suit the topography and development proposals. The basin will temporarily store and treat surface water runoff before outfalling at the restricted discharge rate of 4.2l/s. The proposed discharge rate provides a 20% betterment upon the existing QBAR greenfield runoff rate, this is in line with local policy.

6.15 The proposed attenuation basin has been sized using InfoDrainage for all storms events up to and including a 1 in 100-year+40% storm event. The basin has been modelled with a submerged outfall; this is to ensure that the proposed system would continue to operate efficiently should the proposed drainage connections surcharge. The InfoDrainage calculations are shown within **Appendix K**.

6.16 The preliminary design for the proposed attenuation basin is a feature that possesses a 1.5m depth, inclusive of a 300mm freeboard, and a required storage volume of approximately 1300m^3 and a NET storage volume of approximately 1700m^3.

6.17 To further enhance the treatment train onsite street trees, with attenuative pits are to be sited adjacent to the internal highway, pervious surfacing is also proposed within the proposed parking bays. The inclusion of these additional SuDS will provide an element of surface water treatment upstream of the proposed attenuation basin and will help to intercept the first 5mm of rainfall produced within onsite.

Drainage layout

6.18 A drainage layout plan, drawing 2587-ADC-HDG-DR-CD-0501-S1, has been prepared by ADC Infrastructure, a copy of which can be found in **Appendix L**. The drainage layout demonstrates the drainage routes within the site and the initial design for the attenuation basin.

6.19 A drainage catchment and exceedance plan, 2587-ADC-HDG-DR-CD-0502-S1, is presented within **Appendix M**, the catchment plan provides clarification upon the areas utilised to inform the drainage strategy alongside exceedance arrows which demonstrate exceedance flows to route towards landscaped area, the proposed SuDS, and existing watercourses.

7.0 FOUL WATER DRAINAGE STRATEGY

Proposed discharge rate

7.1 Based upon the current development proposals, it is anticipated that there will be up to 67 residential dwellings constructed onsite.

7.2 In line with Section B3.1 of the guidance within the Design and Construction Guidance for foul and surface water sewers[16], the peak design foul flow rate is 4000 litres per dwelling per day. This is a design peak foul water flow rate and not a daily average water usage.

7.3 The peak foul flow rate has been calculated as follows:

67 x 4000 = 268 000 l/day
268 000/ (24 x 60 x 60) = 3.1 l/s

Proposed discharge strategy

7.4 In accordance with the guidance specified within the Building Regulations Part H, foul water effluent should look to be discharged according to the following preferential hierarchy:

- a foul water sewer
- a combined sewer
- a septic tank
- a cesspool

7.5 The site is greenfield in nature and has no foul discharge at present. Sewer asset record plans provided by Severn Trent Water confirm that there are no adopted sewer assets within the site, with the closest assets being the segregated surface water and foul sewers within Upland Drive to the south-east.

7.6 A developer enquiry was submitted to Severn Trent Water in their response, see **Appendix J**, Severn Trent Water confirmed that a connection into the public foul sewer network within Upland Drive would be acceptable and would have no adverse impact upon the existing network.

7.7 Foul effluent shall therefore drain via a gravity conveyed foul network which will discharge into the existing public foul sewer within Upland Drive, via a new connection which will be made into manhole 8401. This shall be subject to the submission of a Section 106 application and/or S98 requisition application, as required to Severn Trent for approval prior to the commencement of onsite work.

Drainage layout

7.8 A drainage layout plan, drawing 2587-ADC-HDG-DR-CD-0501-S1, has been prepared by ADC Infrastructure, a copy of which can be found in **Appendix L**. The drainage layout demonstrates a foul drainage network for the site and details of the proposed offsite connection.

[16] (Sewerage Sector Guidance, 2021). Design and construction guidance for foul and surface water sewers. Section B3.1.

8.0 SUSTAINABLE DRAINAGE ASSESSMENT

8.1 Sustainable Drainage Systems (SuDS) remove, store, re-use, and intercept surface water by mimicking the natural water cycle. In turn this not only alleviates flood risk but also promotes benefits for water quality, amenity, recreation, health, and the local ecology[17].

8.2 The NPPF defines Sustainable Drainage Systems as:

"A sustainable drainage system controls surface water run off close to where it falls, combining a mixture of built and nature-based techniques to mimic natural drainage as closely as possible, and accounting for the predicted impacts of climate change. The type of system that would be appropriate will vary from small scale interventions such as permeable paving and soakaways that can be used in very small developments to larger integrated schemes in major developments."[18]

8.3 A variety of SuDS options are available to reduce or temporarily hold back the discharge of surface water runoff. The proposed development will see an increase in flows and therefore will require a drainage strategy which incorporates SuDS to ensure that flows are balanced, and that flood risk is not increased elsewhere.

8.4 The table below outlines the applicability of the use of a range of SuDS devices in relation to the proposals detailed in this report, this is in accordance with the hierarchical approach outlined in The SuDS Manual (CIRIA C753).

SuDS type	Device	Description	Reason for use	Applicability (✖ /✓)
Source control	Living roofs	Provide soft landscaping at roof level, intercepting and reducing surface water runoff.	The structural design of the proposed buildings are not conducive for the use of living roofs.	✖
	Infiltration devices	Store runoff and allow water to percolate into the ground via natural infiltration.	A desktop review of the underlying ground conditions demonstrate that the site is not suitable for the use of infiltration features. This is subject to further testing.	✖
	Pervious surfaces	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.	The nature and use of the proposed driveways would be conducive with permeable paving.	✓
	Rainwater harvesting	Reduces the annual average rate of runoff from the site by reusing	Individual water butts will be utilised to enable a means of rainwater harvesting.	✓

[17] (Ciria, 2015). The SuDS Manual C753. Part B. Chapter 1.
[18] (Ministry of Housing, Communities and Local Government, 2024). National Planning Policy Framework. Annex 2. Pg 79.

SuDS type	Device	Description	Reason for use	Applicability (✖ /✓)
		water for non-potable uses e.g., toilet flushing.		
	Street trees	Storm water is conveyed to trees located adjacent to the internal roads, the tree pits attenuate and treat runoff	The site will possess an internal road with sufficient space for street trees.	✓
Permeable conveyance	Swales	Broad shallow channels that convey /store runoff and allow infiltration when ground conditions are permitting.	Due to the topography of the site combined with the site's spatial layout swales are not suitable for use within the site's drainage design.	✖
	Bioretention area/ Rain garden	Shallow landscaped depression which are under drained and rely on engineered soils and enhanced vegetation and filtration to remove pollution and reduce runoff downstream.	Given alternative landscaping requirements the use of bio retention areas are not deemed to be feasible.	✖
	Filter strips	Wide gently sloping areas of grass or dense vegetation that remove pollutants from run-off from adjacent areas.	A desktop review of the underlying ground conditions and spatial layout of the proposed development demonstrates that the site is not suitable for the use of filter strips. This is subject to further testing.	✖
	Filter drains and perforated pipes	Trenches filled with granular materials (which are designed to take flows from adjacent impermeable areas) that convey runoff while allowing infiltration.	A desktop review of the underlying ground conditions and spatial layout of the proposed development demonstrates that the site is not conducive for the use of filter drains and perforated pipes. This is subject to further testing.	✖

SuDS type	Device	Description	Reason for use	Applicability (✖ /✓)
End of pipe treatment	Infiltration basins	Depressions in the surface designed to store runoff and allow infiltration.	A desktop review of the underlying ground conditions demonstrates that the site is not suitable for the use of infiltration basins. This is subject to further testing.	✖
	Wet ponds	Provide water quality treatment &temporary storage above the permanent water level.	The site layout and quantity of onsite surface water storage needed means that the use of an attenuation basin is conducive for use within the site's surface water drainage strategy.	✓
	Attenuation Basins	Vegetated depressions in the surface, with an outlet that restricts runoff, designed to store and treat runoff.	An attenuation tank could provide the necessary surface water storage required onsite, but other methods are preferred	✖
	Attenuation tanks	Oversized pipes or geo-cellular tanks designed to store water below ground level.	The structural design of the proposed buildings are not conducive for the use of living roofs.	✖

8.5 Given the table above the proposed drainage combination will incorporate the following components:

- Pervious surfacing
- Rainwater harvesting via individual water butts
- Street trees adjacent to the internal highway
- Attenuation Basin

8.6 The site's proposed drainage combination has been selected due to spatial and topographical aspects of the site and its proposed layout, and the need to attenuate and convey onsite surface water runoff.

Water quality assessment

8.7 Any such development can give rise to pollution during both the construction and occupation phases in relation to hydrocarbons, suspended soils, and general waste. Careful consideration of the treatment of surface water runoff should provide confidence that the proposed development will not result in any detriment to the receiving waters.

8.8 The proposed impermeable areas on the site are currently divided into residential roofs, private driveways, and low traffic roads. In accordance with the CIRIA SuDS Manual C753 (2015), the attributed pollution 'hazard' levels associated with these classifications of hardstanding are between very low and low risk.

Land Use	Pollution Hazard Level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Private driveways, residential car parks and low traffic roads.	Low	0.5	0.4	0.4
source: CIRIA SuDs Manual (C753) (2015) Part E. Chapter 26, Table 26.3, pg. 568				

8.9 As the pollution hazard risk from the development is deemed to be very low-low, then the simple index approach (SIA) is applicable. SIA uses a source to receptor pathway approach which considers three pollutants: total suspended solids (TSS), heavy metals and hydrocarbons. For the selected SuDs components, total pollution indices based on the reduction in pollution, are assigned.

8.10 The selected SuDS components and the associated total pollution mitigation indexes are outlined in the table below (CIRIA SuDS Manual Table 26.3 extract). The proposed SuDS treatment train has been designed to exceed the pollution values/risk occurring from proposed land uses highlighted in the table above.

8.11 Where the mitigation index of an individual component is insufficient, two components or more in series will be required. A factor of 0.5 is used to account for the reduced performance of secondary or tertiary components associated with already reduced inflow concentrations as below:

Total SuDS mitigation index = mitigation index 1 + 0.5 (mitigation index 2)

Type of SuDS component	TSS	Metals	Hydrocarbons
Permeable paving surfaces	0.7	0.6	0.7
Attenuation basin	0.5	0.5	0.6
Street trees	0.8	0.8	0.8
source: CIRIA SuDs Manual (C753) (2015) Part E. Chapter 26, Table 26.3, pg. 569			

8.12 Based upon the pollution mitigation indices highlighted in the table above, it is anticipated that the proposed SuDs treatment train will provide more than enough mitigation for the anticipated pollutants that will be generated by the development.

Alternative benefits of SuDS

8.13 SuDS features can provide habitats for a range of species, this can heavily assist in boosting the ecological value of a site and offer much more support for the ecosystem in comparison to alternative grey solutions.

8.14 In addition to water quality and biodiversity benefits mentioned above the proposed SuDS combination can offer a range of benefits. The following is a list of the benefits that SuDS can provide which has been obtained from the CIRIA SuDS Manual (C753).

- protecting people and property from increased flood risk resulting from the development
- protecting the quality of groundwater and surface waters from polluted runoff from the development
- protecting natural flow regimes (and thus the morphology and associated ecology) in rivers, lakes and streams
- supporting local natural habitats and associated ecosystems by encouraging greater biodiversity and linking habitats
- improving soil moisture and replenishing depleted groundwater levels
- providing society with a valuable supply of water
- creating attractive places where people want to live, work and play through the integration of water and green spaces with the built environment
- improving people's understanding of how runoff from their development is being managed and used, and the benefits of more sustainable approaches
- supporting the creation of developments that are more able to cope with changes in climate
- delivering cost-effective infrastructure that uses fewer natural resources and has a smaller whole-life carbon footprint than conventional drainage

8.15 The design of the SuDS incorporated within the drainage design will develop as the planning proposals progress, to boost the multifunctionality of the proposed components it is advised that the proposed SuDS are constructed in accordance with the CIRIA SuDS Manual (C753).

9.0 MAINTENANCE AND ADOPTION

9.1 The proposed drainage network will require consistent maintenance to ensure that the efficiency of the system is sustained.

9.2 The proposed SuDS will be entirely contained within the site and will be constructed to adoptable standards. It is expected that the proposed SuDS will be adopted by Severn Trent Water, from the point of adoption the maintenance of the proposed SuDS and associated pipework will be the responsibility of Severn Trent Water.

9.3 Prior to adoption the pond and associated pipework will be maintained by the onsite client team.

9.4 The onsite drainage system including the SuDS and associated inlets/outlets, headwalls and pipework will be subject to routine monitoring and maintenance, a record of this should be upheld.

Maintenance schedules

9.5 The sections below express the minimum standards for the onsite maintenance regime and have been prepared from recommendations contained within the CIRIA SuDS Manual (C753).

9.6 It should be noted that any invasive maintenance work such as silt or vegetation removal is only required intermittently but it should be planned to be sympathetic to the requirements of the ecosystem. The window for carrying out maintenance to achieve this is usually towards the end of the growing season (September/October) although this varies with species[19].

Storage and attenuation

9.7 Surface water runoff from the site is to be attenuated by an attenuation basin, street trees, pervious surfacing and individual water butts. The proposed maintenance regime for the aforementioned features is expressed in the tables below.

Operation and maintenance requirements for rainwater harvesting systems		
Maintenance schedule	**Required action**	**Typical frequency**
Regular maintenance	Inspection of the tank for debris and sediment build-up, inlets/outlets/withdrawal devices, overflow areas, pumps, filters	Annually (and following poor performance)
	Cleaning of tank, inlets, outlets, gutters, withdrawal devices and roof drain filters of silts and other debris	Annually (and following poor performance)
Occasional maintenance	Cleaning and/or replacement of any filters	Three monthly (or as required)
Remedial actions	Repair of overflow erosion damage of damage to tank	As required
	Pump repairs	As required
source: CIRIA SuDs Manual (C753) (2015) Part D. Chapter 11, pg. 229		

[19] (Ciria, 2015). SuDS Manual (C753). Part D. Chapter 23. Pg 500.

Operation and maintenance requirements for street trees		
Maintenance schedule	**Required action**	**Typical frequency**
Regular maintenance	Remove litter and debris	Monthly (or as required)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets and outlets	Inspect monthly
Occasional maintenance	Check tree health and manage tree appropriately	Annually
	Remove all build up from inlets and surface and replace mulch as necessary.	Annually, or as required
	Water	As required (in periods of drought)
Monitoring	Inspect silt accumulation rates and establish appropriate removal frequencies	Half yearly
source: CIRIA SuDs Manual (C753) (2015) Part D. Chapter 19, pg. 382		

Operation and maintenance requirements for attenuation basins		
Maintenance schedule	**Required action**	**Typical frequency**
Regular maintenance	Remove litter and debris	Monthly
	Cut grass – for spillways and access routes	Monthly (during growing season), or as required
	Cut grass – meadow grass in and around basin.	Half yearly (spring before nesting season, and autumn)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets, outlets, and overflows for blockages, and clear if required	Monthly
	Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies	Monthly (for first year), then annually or as required
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlet and forebay	Annually (or as required)
	Manage wetland plants in outlet pool –where provided	Annually (as set out in CIRIA SuDs guidance)
Occasional maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required

	Remove sediment from inlets, outlets, forebay and main basin when required	Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)
Remedial action	Repair erosion or other damage by reseeding or re-turfing	As required
	Realignment of riprap	As required
	Repair/ rehabilitation of inlets, outlets, and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required
source: CIRIA SuDs Manual (C753) (2015) Part D. Chapter 22, pg. 483		

Conveyance, pipework, and flow control

9.8 Surface water runoff is to drain from impermeable surfaces onsite via a gravity conveyed surface water sewer.

Drainage Component	Maintenance Task	Frequency
Drainage Network	Inspect for blockages to ensure network is free running	Every 3 months and after any significant storm event
Surface water gullies/ Linear drainage features	Inspect for blockages and ensure that the drainage feature is free running. Jet or vacuum as appropriate.	Every 3 months and after any significant storm event
Catchpits	Inspect for and remove silt	Every 6 months and after any significant storm event
Discharge Control	Inspect for blockage and correct operation	Every 3 months and after any significant storm event
source: CIRIA SuDs Manual (C753) (2015) Part D. Chapter 28		

Connections

9.9 Surface water is to discharge via the minor watercourse and existing surface water outfall pipe. The proposed maintenance regime for these components is expressed in the table below.

Drainage Component	Maintenance Task	Frequency
Outfall pipe	Regular maintenance and monitoring to ensure sufficient operation.	Annually or as required
Drainage ditch	Monitoring of watercourse levels	Frequently post development then as required/after any storm event
source: CIRIA SuDs Manual (C753) (2015) Part D. Chapter 28		

Design life

9.10 The design life of the development may exceed the design life of certain components of the surface water network; this however is based upon numerous unpredictable variables.

9.11 During the maintenance regime it should be assessed whether any repairs are required and whether drainage components have reached the end of their functional lifetime. The proposed drainage network is to be built to adoptable standards, and it is anticipated that the network will be adopted by Severn Trent Water, thus the responsibility to replace/repair any unfunctional components of the drainage network will lie with Severn Trent Water. Should any components fail prior to adoption the responsibility would lie with the onsite client team.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 This Flood Risk Assessment and Drainage Strategy has been carried out on behalf of Glenalmond Developments Ltd and regards the construction of up to 67 dwellings at their site off Hill Lane, Markfield, Leicestershire. The assessment has been conducted in accordance with the requirements of the NPPF and the associated Planning Practice guidance.

10.2 The site has been found to not be at any direct flood risk from flooding associated with fluvial, sewer, tidal, canal, reservoir or groundwater sources. The development site is entirely within Flood Zone 1.

10.3 Flood risk from pluvial sources has been deemed to be predominantly low this is with the exception of minor low-high chance extents associated with an existing watercourse, within a central region of the site, and a topographical low spot, within the south-western corner of the site. Source specific mitigation has been outlined which will ensure that the built development will possess a low chance of surface water flood risk once constructed.

10.4 The surface water drainage strategy has been considered, and a calculation of the anticipated discharge rates and attenuation volumes has been carried out. The proposed development shall look to discharge surface water runoff into the existing minor watercourse and associated surface water outfall within the southeastern corner of the site. A CCTV survey of the existing surface water outfall demonstrates the existing pipework to discharge into the public surface water sewer network within Upland Drive via MH8405. The surface water discharge from the site is to be restricted to 4.2l/s, this provides a 20% betterment upon the existing QBAR greenfield runoff rate and is in line with local policy.

10.5 Attenuation is proposed via the use of an attenuation basin which will be sited within the southeastern corner of the site to suit the onsite topography and development proposals. The basin has been designed to attenuate surface water runoff for all storm events up to and including a 1 in 100-year plus 40% climate change storm event, in line with local planning guidance. The provisional design for the attenuation basin, is a feature that is 1.5m deep including a 300mm freeboard, with a required surface water storage volume of approximately 1300m^3, and a NET volume of approximately 1700m^3.

10.6 Foul effluent shall look to be conveyed via a gravity conveyed sewer network which will discharge via a new connection into the adopted foul sewer within Upland Drive to the south-east.

10.7 Provided that the recommendations of this report are followed, then the development can proceed without being at any significant flood risk and without increasing flood risk elsewhere. The development proposals are considered sustainable from a flood risk and drainage perspective.

11.0 REFERENCES

- Ciria, 2015. *The SuDS Manual,* London: Ciria.
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- Environment Agency, 2022. *Flood risk assessments: climate change allowances.* [Online] Available at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances [Accessed December 2024].
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- Ministry of Housing, Communities and Local Government, 2024. *National Planning Policy Framework.* [Online] Available at: https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change [Accessed December 2024].
- Ministry of Housing, Communities and Local Government, 2024. *Planning Practice Guidance.* [Online] Available at: https://www.gov.uk/government/collections/planning-practice-guidance [Accessed December 2024].
- Sewerage Sector Guidance, 2021. *Design and Construction Guidance for foul and surface water sewers offered for adoption under the Code for adoption agreements for water and sewerage companies operating wholly or mainly in England,* s.l.: Water UK.

APPENDIX A
SITE WALKOVER PHOTOS

Figure 1: View looking east across the site taken from Hill Lane.

Figure 2: View looking east across the site taken from Hill Lane

Figure 3: The watercourse which flows in an easterly direction within the northern portion of the site.

Figure 4: The southern portion of the site.

Figure 5: Photos of the proposed offsite foul connection point MH 8401 (left) and surface water connection point MH 8405 (right) respectively, in Upland Drive to the south-east of the site.

APPENDIX B
SITE TOPOGRAPHICAL SURVEY

Floor Plan Legend:

- SH 1.00m / HH 2.00m — Window Cill & Head Height (SH: Sill Height From FFL, HH: Head Height From FFL)
- Ht 2.00 — Door Height From FFL
- Overhead Detail
- Stairs/Step
- RAD — Radiator
- Ventilation / Overhead
- Hatch — Access Hatch
- TV Point
- Phone Point
- 13A Power Socket
- Fused Socket
- Shaver Socket
- Extractor Fan
- Lantern Light
- Down Light
- Light Dimmer Switch
- Light Switch
- Fixed Lighting
- FA — Fire Alarm Button
- FX — Fire Extinguisher
- Reception / Carpet — Room Name / Floor Covering
- 2.49 — Ceiling Height
- IFL 145.80 — Internal Floor Level

Topographic Legend:

- Buildings / Walls
- Building Canopy / Overhang
- Concrete edge
- Kerb line
- Centre Line
- Barrier
- Hedge
- Security Fence
- Panel Fence
- Gate
- Overhead Line
- SAP — Tree / Sapling
- Tree Canopy Line
- Chambers
- CS1 — Survey Station & Name
- BM 100.00 — Bench Mark
- TBM 100.00 — Temporary Bench Mark
- CL — Cover level
- IL — Invert level
- Inv Ø 0.25 — Pipe invert (diameter)
- GU — Gully
- MH — Manhole
- IC — Inspection chamber

Trig	Trig Pillar	FS	Flag Staff
Bldg	Ridge Level	MK	Gas Marker
Eave	Eave Level	EP	Electric Post
DPC	Dpc Level	TP	Telegraph Post
FL	Floor Level	INS	Pipe Invert
Soff	Soffit Level	GU	Gully
TBo	Control Box	RP	Rodding Point
LP	Lamp Post	BT	Bt Cover
SP Post	Sign Post / Post	CO	Cover Unknown
WM	Water Meter	EC	Electricity Cover
BB	Bellisha Beacon	TL	Traffic Light
BOL	Bollard	FH	Fire Hydrant
BS	Bus Stop	GAS	Gas Cover
ER	Earthing Rod	SV	Stop Valve
Box	Post Box	TV	Tv Cover
MS	Mile Stone	GV	Gas Valve
		Peg	Peg

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LONDON: 020 3728 2884
MANCHESTER: 0161 549 0206

LAND
BUILDING
3D LASER SCANNING
BIM
SITE ENGINEERING & SETTING OUT
UTILITY
DRAINAGE CCTV SURVEYS & REPORTS
QUALITY ASSURANCE SURVEYS & REPORTS

CLIENT: **Cerda Planning**

SITE DETAILS: **Hill Lane, Markfield**

TITLE: **Topographical**

DRAWING NO.: 20495-20-01	REV:
SCALE: 1: 500	DATE: 18-12-20
DRAWN: CL	CHECKED: PJ
Level datum	OSGB36(15)
Paper Size - A0	

Comments:

This plan should only be used for its original purpose. Castle Surveys Ltd dos not accept any responsibility for this plan if supplied to any other party, other than the original client.

All dimensions and levels should be check on site prior to design and construction.

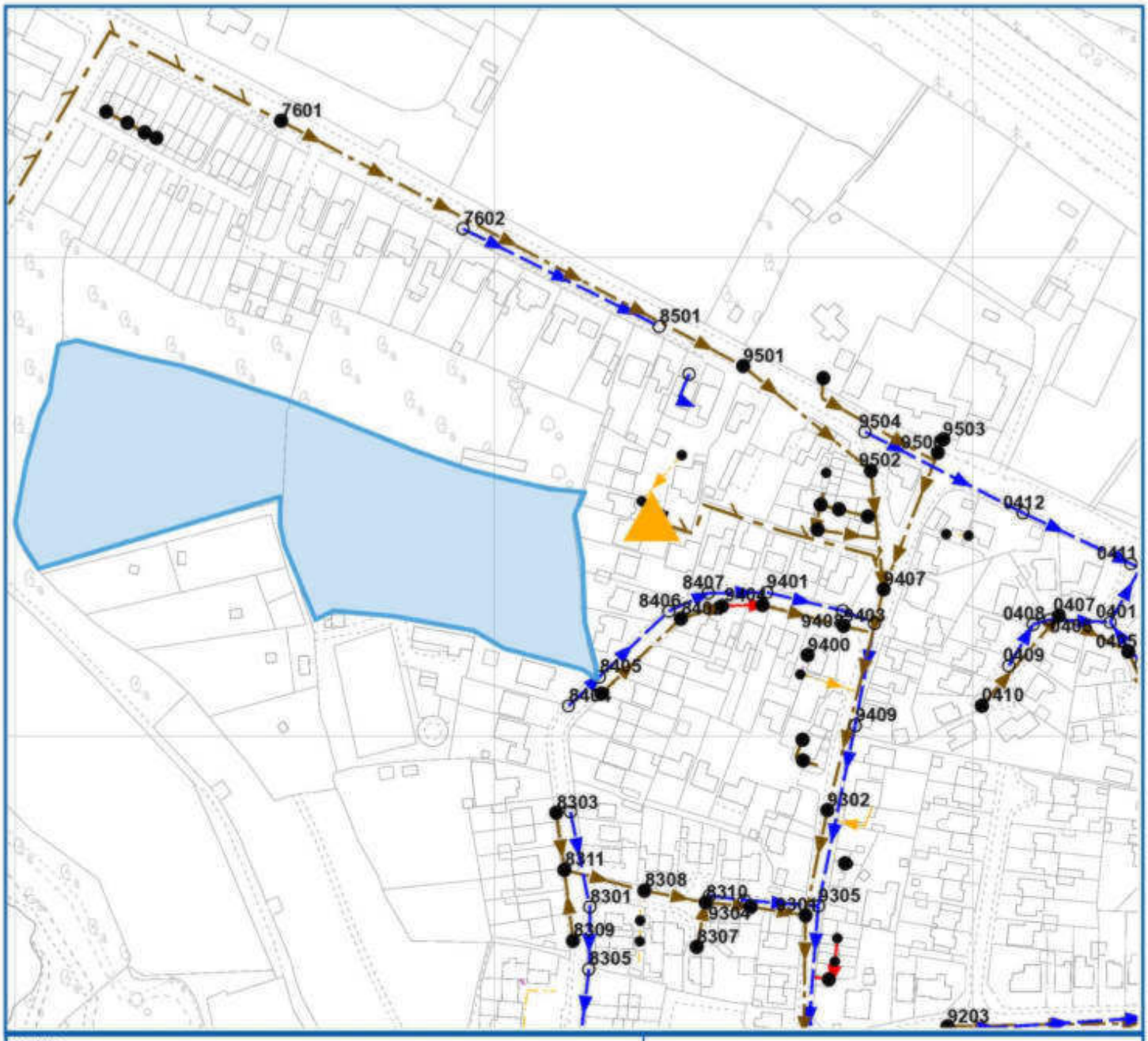
Drainage information (where applicable) has been visually inspected from the surface and therefore should be treated as approximate only. Some services may have been omitted due to parked vehicles or due to the site being overgrown with vegetation.

Tree information (where applicable) has been surveyed from ground level and therefore should be treated as approximate only. Advise that a tree survey should be carried out.

Roof linework (where applicable) is indicative only.

DO NOT SCALE

APPENDIX C
SEVERN TRENT SEWER ASSET RECORD PLANS



LEGEND

Operational Site

Waste Water Pump
- Transferred Asset
- Estimated
- Unknown
- Unadopted
- Not Private
- Null
- None
- Highway Drain
- Adopted Sewer

Storage
- Disposal Site
- Off-Line Waste Water Storage
- On-Line Waste Water Storage
- Wet Well

Waste Water Process Structure
- Sewage Treatment Point
- Sewage Treatment Structure
- Sludge Treatment Point
- Sludge Treatment Structure

Manhole
- Foul Bifurcation Manhole
- Combined Bifurcation Manhole
- Surface Water Bifurcation Manhole
- Dual Manhole
- Foul Single Manhole
- Combined Single Manhole
- Surface Water Single Manhole
- Twin Manhole
- Foul Adopted Manhole
- Combined Adopted Manhole
- Surface Adopted Manhole
- Transferred Manhole
- Unsurveyed Manhole

Gravity Sewer Pipe
- Foul Gravity Sewer
- Combined Gravity Sewer
- Surface Water Gravity Sewer
- 1504 Surface Water Gravity Sewer
- 1504 Combined Gravity Sewer
- 1504 Foul Gravity Sewer
- Private Surface Water Gravity Sewer
- Private Combined Gravity Sewer
- Private Foul Gravity Sewer
- Surface Water Unsurveyed Pipe
- Combined Unsurveyed Pipe
- Foul Unsurveyed Pipe
- Transferred Surface Water Sewer
- Transferred Combined Sewer
- Transferred Foul Sewer
- Disposal Pipe
- Overflow Pipe
- Culverted Waste Course
- Waste Internal Site Pipe
- Sewer Service Connection
- Gravity Sewer Others

Pressure Sewer Pipe
- Surface Water Pressure Sewer
- Combined Pressure Sewer
- Foul Pressure Sewer
- 1504 Surface Water Pressure Sewer
- 1504 Combined Pressure Sewer
- 1504 Foul Pressure Sewer
- Private Surface Water Pressure Sewer
- Private Combined Pressure Sewer
- Private Foul Pressure Sewer
- Surface Water Vacuum Sewer
- Foul Vacuum Sewer
- Combined Vacuum Sewer
- 1504 Surface Water Vacuum Sewer
- 1504 Combined Vacuum Sewer
- 1504 Foul Vacuum Sewer
- Private Surface Water Vacuum Sewer
- Private Combined Vacuum Sewer
- Private Foul Vacuum Sewer
- Surface Water Siphon
- Combined Siphon
- Foul Siphon
- Private Surface Water Siphon
- Private Combined Siphon
- Private Foul Siphon
- 1504 Surface Water Siphon
- 1504 Combined Siphon
- 1504 Foul Siphon
- Surface Water Unsurveyed Pipe
- Combined Unsurveyed Pipe
- Foul Unsurveyed Pipe
- Disposal Pipe

Service Pipe
- Surface Water Lateral Drain
- Combined Lateral Drain
- Foul Lateral Drain
- 1504 Surface Water Lateral Drain
- 1504 Combined Lateral Drain
- 1504 Foul Lateral Drain
- Private Surface Water Lateral Drain
- Private Combined Lateral Drain
- Private Foul Lateral Drain
- Transferred Surface Water Lateral Dr
- Transferred Combined Lateral Drain
- Transferred Foul Lateral Drain

Pressure Sewer Annotation

Gravity Sewer Annotation

Service Sewer Annotation

Ancillary
- Balancing Lagoon
- Depot Tank
- Interceptor
- Screen

Chamber
- Flushing Chamber
- Soakaway
- Overflow

Fitting
- Bled Shaft
- Facility Connector
- Head Node
- Lamphole
- Sewerage Air Valve
- Sewerage Chemical Injection Point
- Sewerage Hatch Box
- Sewerage Pressure Washout
- Vent Column
- Waste Water Outlet

Control Valve
- Hydrobrake
- Penstock
- Sewerage Isolation Valve
- Sewerage Non Return Valve

Manhole Annotation

Print200mLine

Severn Trent Water Limited
Asset Data Management
PO Box 5344
Coventry
CV3 9FT
Telephone: 0345 601 6616

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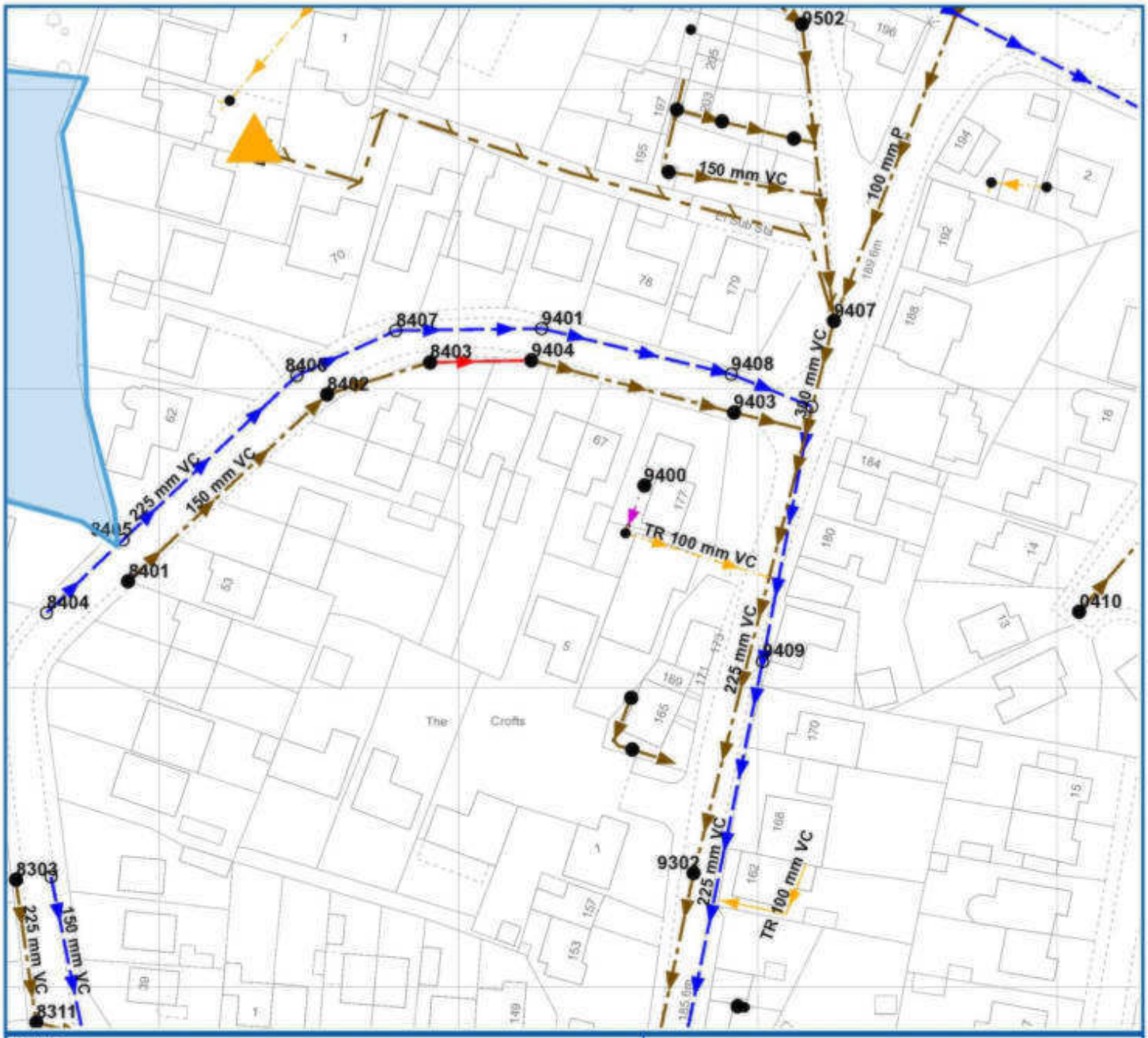

LEGEND

Operational Site

Waste Water Pump
- Transferred Asset
- 0301
- 0302
- 0303
- Not Private
- Not
- None
- Highway Drain
- Adopted Sewer

Storage
- Disposal Site
- Off-Line Waste Water Storage
- On-Line Waste Water Storage
- Wet Well

Waste Water Process Structure
- Sewage Treatment Point
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- Twin Manhole
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- Combined Adopted Manhole
- Surface Adopted Manhole
- Transferred Manhole
- Unsurveyed Manhole

Gravity Sewer Pipe
- Foul Gravity Sewer
- Combined Gravity Sewer
- Surface Water Gravity Sewer
- 0301 Surface Water Gravity Sewer
- 0301 Combined Gravity Sewer
- 0301 Foul Gravity Sewer
- Private Surface Water Gravity Sewer
- Private Combined Gravity Sewer
- Private Foul Gravity Sewer
- Surface Water Unsurveyed Pipe
- Combined Unsurveyed Pipe
- Foul Unsurveyed Pipe
- Transferred Surface Water Sewer
- Transferred Combined Sewer
- Transferred Foul Sewer
- Disposal Pipe
- Overflow Pipe
- Culverted Waste Course
- Waste Internal Site Pipe
- Sewer Service Connection
- Gravity Sewer Others

Pressure Sewer Pipe
- Surface Water Pressure Sewer
- Combined Pressure Sewer
- Foul Pressure Sewer
- 0301 Surface Water Pressure Sewer
- 0301 Combined Pressure Sewer
- 0301 Foul Pressure Sewer
- Private Surface Water Pressure Sewer
- Private Combined Pressure Sewer
- Private Foul Pressure Sewer
- Surface Water Vacuum Sewer
- Foul Vacuum Sewer
- Combined Vacuum Sewer
- 0301 Surface Water Vacuum Sewer
- 0301 Combined Vacuum Sewer
- 0301 Foul Vacuum Sewer
- Private Surface Water Vacuum Sewer
- Private Combined Vacuum Sewer
- Private Foul Vacuum Sewer
- Surface Water Siphon
- Combined Siphon
- Foul Siphon
- Private Surface Water Siphon
- Private Combined Siphon
- Private Foul Siphon
- 0301 Surface Water Siphon
- 0301 Combined Siphon
- 0301 Foul Siphon
- Surface Water Unsurveyed Pipe
- Combined Unsurveyed Pipe
- Foul Unsurveyed Pipe
- Disposal Pipe

Service Pipe
- Surface Water Lateral Drain
- Combined Lateral Drain
- Foul Lateral Drain
- 0301 Surface Water Lateral Drain
- 0301 Combined Lateral Drain
- 0301 Foul Lateral Drain
- Private Surface Water Lateral Drain
- Private Combined Lateral Drain
- Private Foul Lateral Drain
- Transferred Surface Water Lateral Dr
- Transferred Combined Lateral Drain
- Transferred Foul Lateral Drain

Pressure Sewer Annotation

Gravity Sewer Annotation

Service Sewer Annotation

Ancillary
- Balancing Lagoon
- Grease Trap
- Interceptor
- Screen

Chamber
- Flushing Chamber
- Soakaway
- Overflow

Connector
- Sewer Junctions
- Sewer Line Connection Node

Fitting
- Bend Shaft
- Facility Connector
- Head Node
- Lamphole
- Sewerage Air Valve
- Sewerage Chemical Injection Point
- Sewerage Hatch Box
- Sewerage Pressure Washout
- Vent Column
- Waste Water Outfall

Control Valve
- Hydrobrake
- Penstock
- Sewerage Isolation Valve
- Sewerage Non Return Valve

Manhole Annotation

Landline Symbol
- Culvert Symbol
- Direction Of Flow Symbol
- Boundary Net Missing Symbol
- Bench Mark Symbol
- Railway Switch Symbol
- Road Related Flow Symbol

Print5DmLine

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Asset Data Management
PO Box 5344
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CV3 9FT
Telephone: 0345 601 6616

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5 Ordnance Survey licence number: **AC0000808122**

Sewer Node Sewer Pipe Data

Reference	Cover Level	Invert Level Upstream	Invert Level Downstream	Purpose	Material	Pipe Shape	Max Size	Min Size	Gradient	Year Laid
SK48108405	193.41	192.1	191.15	S	VC	C	225	<UNK>	41.71	31/12/1899 00:00:00
SK48109204	181.7299	179.94	176.96	S	CO	C	375	<UNK>	33.28	31/12/1899 00:00:00
SK48108202	191.6999	189.82	186.29	S	VC	C	225	<UNK>	28.62	31/12/1899 00:00:00
SK48108104	187.8099	186.22	185.71	S	VC	C	225	<UNK>	16.75	31/12/1899 00:00:00
SK48109201	184.44	183.38	180.99	F	VC	C	<UNK>	<UNK>	49.18	31/12/1899 00:00:00
SK48108403	191.81	190.57	189.72	C	VC	C	<UNK>	<UNK>	20	31/12/1899 00:00:00
SK48109409	186.576	185.57	184.66	S	VC	C	<UNK>	<UNK>	85.13	31/12/1899 00:00:00
SK49100409	185.5399	183.63	183.5	S	VC	C	150	<UNK>	158.38	31/12/1899 00:00:00
SK48108406	192.3999	191.07	190.65	S	VC	C	225	<UNK>	44.74	31/12/1899 00:00:00
SK49100412	188.43	187.55	183.08	S	VC	C	<UNK>	<UNK>	11.22	31/12/1899 00:00:00
SK49100404	183.4299	181.47	181.28	S	VC	C	150	<UNK>	112.63	31/12/1899 00:00:00
SK48108407	191.85	190.59	189.6	S	VC	C	225	<UNK>	24.24	31/12/1899 00:00:00
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SK48109501	196.9	195.49	<UNK>	F	VC	C	<UNK>	<UNK>	0	31/12/1899 00:00:00
SK48109407	188.97	187.74	<UNK>	F	VC	C	<UNK>	<UNK>	0	31/12/1899 00:00:00
SK48108401	193.52	192.41	191.08	F	VC	C	150	<UNK>	35.65	31/12/1899 00:00:00
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SK48108311	193.1999	191.16	189.4	F	VC	C	225	<UNK>	19.3	31/12/1899 00:00:00
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SK48109502	<UNK>	<UNK>	187.76	F	<UNK>	<UNK>	<UNK>	<UNK>	0	31/12/1899 00:00:00
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SK48108304	193.8099	191.98	191.01	S	VC	C	150	<UNK>	41.04	31/12/1899 00:00:00
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SK48108309	192.6199	191.51	191.26	F	VC	C	150	<UNK>	117.08	31/12/1899 00:00:00
SK49100403	182.8	0	0	F	VC	C	150	0	0	31/12/1899 00:00:00
SK49100410	185.66	184.42	183.7	F	VC	C	150	<UNK>	68.32	31/12/1899 00:00:00
SK49100408	185.63	183.3	183.7	S	VC	C	150	<UNK>	<UNK>	31/12/1899 00:00:00
SK48109404	190.87	189.69	187.79	F	VC	C	<UNK>	<UNK>	19.02	31/12/1899 00:00:00
SK48109301	185.63	184.45	183.42	F	VC	C	<UNK>	<UNK>	62.15	31/12/1899 00:00:00
SK48109203	182.0599	180.43	177.35	F	VC	C	150	<UNK>	32.15	31/12/1899 00:00:00
<UNK>	<UNK>	<UNK>	<UNK>	F	VC	C	100	<UNK>	<UNK>	05/10/2020 00:00:00
SK48109403	188.9499	187.74	<UNK>	F	VC	C	<UNK>	<UNK>	0	31/12/1899 00:00:00
SK48108301	192.7599	190.96	190.47	S	VC	C	150	<UNK>	53.06	31/12/1899 00:00:00
SK49100407	185.35	183.69	181.96	F	VC	C	150	<UNK>	18.75	31/12/1899 00:00:00
SK48108303	193.83	192.37	191.67	F	VC	C	225	<UNK>	34.76	31/12/1899 00:00:00

APPENDIX D
CCTV SURVEY REPORT

CCTV Inspection Report

Uplands Drive
Off Hill Lane
Markfield
Leicester
LE67 9PN

25/01/2021

Job Number: OSCC2104451

OnSite Central Limited
89 Blackpole West
Blackpole
Worcester
Worcestershire
WR3 8TJ

OnSite Central Limited
89 Blackpole West
Blackpole
Worcester
Worcestershire
WR3 8TJ

Main Sections

Job Number	Surveyed by (Operator)	Base Unit	Date
OSCC2104451	**JS01**	**N6S6OAPG2Q**	**25/01/2021**

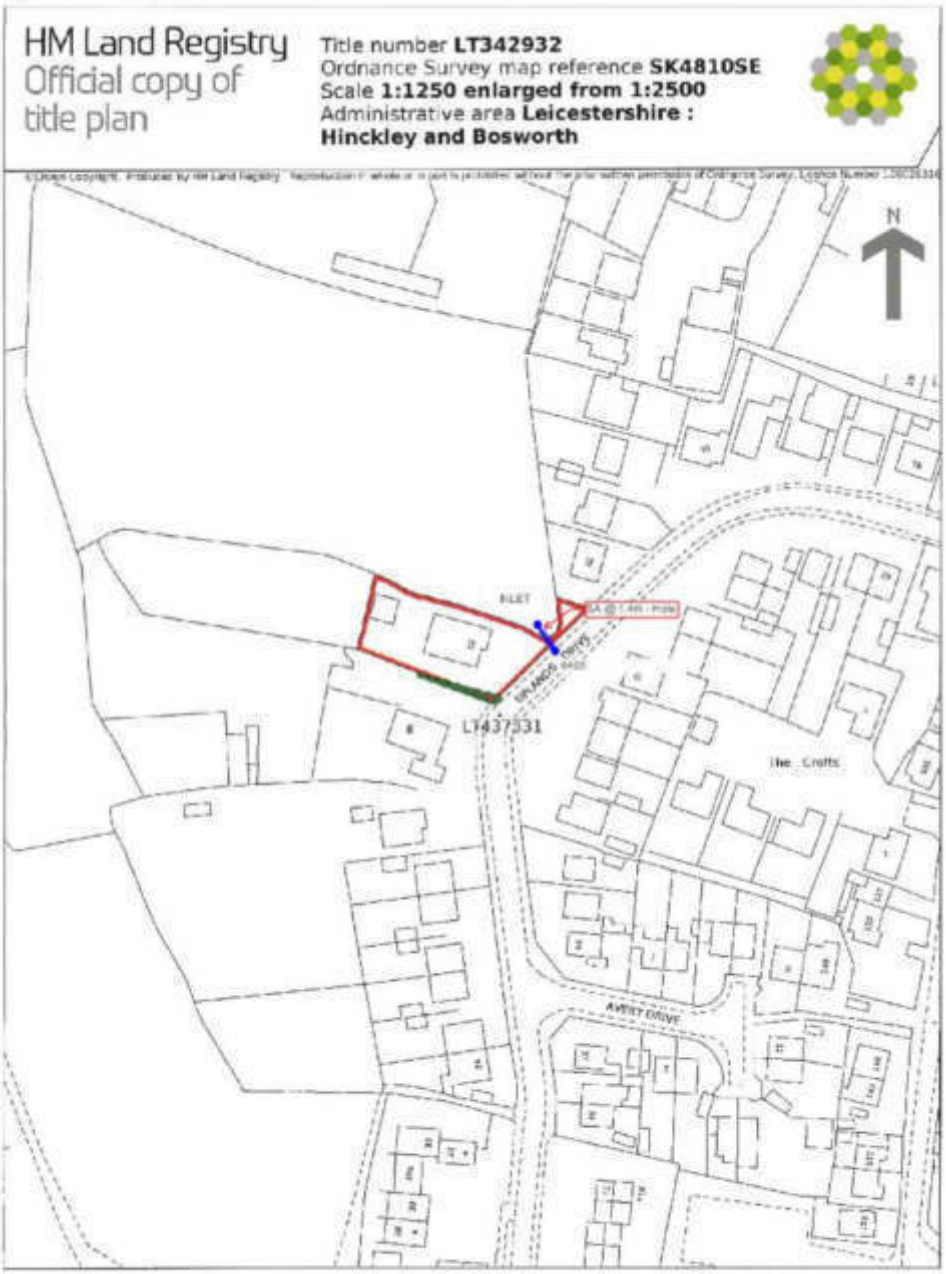
No.	US MH	DS MH	Date	Road	Material	m
1	INLET	8405	25/01/2021	Uplands Drive	Vitrified clay	1.4

Pipe size: 225 = 1.8m

All sections = 1.8m

Job Number	Surveyed by (Operator)	Base Unit	Date
OSCC2104451	**JS01**	**N6S6OAPG2Q**	**2021-01-25**

This sketch is not to scale and does not represent the exact routing of the drainage system



This official copy is incomplete without the preceding notes page.

CCTV Inspection Report

OnSite Central Limited
89 Blackpole West
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Worcestershire
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Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
JS01	**OSCC2104451**	**INLET X**	**25/01/2021**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
Dry		**0/4**	**N6S6OAPG2Q**	**1**

Road **OFF UPLANDS DRIVE**
Place **MARKFIELD**
Location

Ground Surface
Code List **Drains and Sewer Codes (4th Edition)**
Location Details

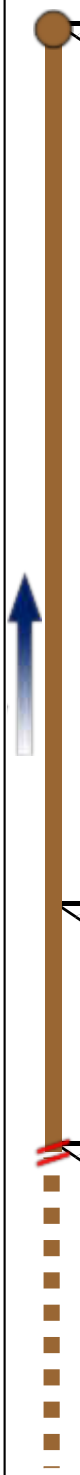
Shape/Size **225mm**
Material **Vitrified clay**
Duty **Surface water**

Start MH **8405**
End MH **INLET**
Total length **1.8 metres**

Scale **1:0.05**
Direction **Upstream**

M/H Ref:8405 | I/L : metres | M/H Depth: 1.3 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference 8405	2313076	Comment / 0
0.00	WL	Water level 5% height/diameter	2313077	Comment / 0
1.10	OJM	Open joint medium	2313078	Structural / 1
1.10	MCCO	Material of drain/sewer changes to Concrete at this point	2313079	Comment / 0
1.40	H	Hole in drain/sewer from 5 to 8 o'clock	2313082	Structural / 4
1.40	SA	Survey Abandoned - Remark: HOLE UNABLE TO PASS	2313094	Comment / 0



M/H Ref:INLET | I/L : metres | M/H Depth: 0 metres

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89 Blackpole West
Blackpole
Worcester
Worcestershire
WR3 8TJ

CCTV Inspection Photos

Job Number	Surveyed by (Operator)	Base Unit	Date
OSCC2104451	**JS01**	**N6S6OAPG2Q**	**25/01/2021**

Hole in drain/sewer from 5 to 8 o'clock

Survey Abandoned - Remark: HOLE UNABLE TO PASS

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89 Blackpole West
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Worcester
Worcestershire
WR3 8TJ

Structural Defects (SRM 4)

Job Number	Surveyed by (Operator)	Base Unit	Date
OSCC2104451	**JS01**	**N6S6OAPG2Q**	**2021-01-25**

No.	PLR	Dir.	Use	Shape/Size	Date	Mat.	Total Length	Inspection Length	Cat.	Peak Score	Grade	Mean Score	Total Score
1	INLET X	U	S	Circular/225	25/01/2021	Vitrified clay	1.8 metres	1.4	U	80	4	57.86	81

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Blackpole
Worcester
Worcestershire
WR3 8TJ

Service Defects (SRM 4)

Job Number	Surveyed by (Operator)	Base Unit	Date
OSCC2104451	**JS01**	**N6S6OAPG2Q**	**2021-01-25**

No.	PLR	Dir.	Use	Shape/Size	Date	Mat.	Total Length	Inspection Length	Cat.	Peak Score	Grade	Mean Score	Total Score
1	INLET X	U	S	Circular/225	25/01/2021	Vitrified clay	1.8 metres	1.4	U	0	1	0	0

Report Summary

OnSite Central Limited
89 Blackpole West
Blackpole
Worcester
Worcestershire
WR3 8TJ

Job Number	Surveyed by (Operator)	Base Unit	Date
OSCC2104451	**JS01**	**N6S6OAPG2Q**	**2021-01-25**

Job Information

Total Distance Surveyed: **1.8 metres**
Engineer: **JS01**
Number of Surveys: **1**
Number of Surveys grade 4 or above: **1**

Section 1 Overview (25/01/2021)

Manholes: **8405 to INLET**
Pipe Length: **1.8 metres**
Structural Grade: **4**
Service Grade: **0**
Material: **Vitrified clay**
Pipe Size: **225mm**
Use: **Surface water**

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89 Blackpole West
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Worcester
Worcestershire
WR3 8TJ

Grade 3,4 & 5 Summary

Job Number	Surveyed by (Operator)	Base Unit	Date
OSCC2104451	**JS01**	**N6S6OAPG2Q**	**25/01/2021**

STRUCTURAL DEFECTS

Grade 3; Best practice suggests consideration to be given to repair in the medium term.
Grade 4; Best practice suggests consideration to be given to repair to avoid potential collapse.
Grade 5; Best practice suggests this pipe is at risk of collapse at any time; urgent consideration should be given to repair to avoid collapse.

Structural Defects			
Section	PLR	Grade	Fault Description
1	INLET X	4	Hole in drain/sewer from 5 to 8 o'clock

SERVICE / OPERATIONAL DEFECTS

Grade 3; Best practice suggests consideration to be given to maintenance activities in the medium term.
Grade 4; Best practice suggests consideration to be given to maintenance to avoid potential blockage.
Grade 5; Best practice suggests this pipe is at risk of backing up / causing flooding.

Service Defects			
Section	PLR	Grade	Fault Description
No Service Defects at Grade 3, 4 or 5 found on this survey.			

ABANDONED SURVEYS

Camera no access		
Section	PLR	Fault Description
1	INLET X	Survey Abandoned - Remark: HOLE UNABLE TO PASS

INFORMATION

These summaries are based on the SRM grading from the WRC

Defect Grade Descriptions

OnSite Central Limited
89 Blackpole West
Blackpole
Worcester
Worcestershire
WR3 8TJ

Job Number	Surveyed by (Operator)	Base Unit	Date
OSCC2104451	**JS01**	**N6S6OAPG2Q**	**2021-01-25**

1: Occurences without damage. For example, laterals, joints,etc.

NO DEFECTS WERE DETECTED.

2: Constructional deficiencies or occurences with insignificant influence to tightness, hydraulic or static pressure or pipe: Eg. wide joints, badly torched intakes, minor deformation of plastic pipes, minor erosions etc.

REHABILITATION CAN BE SCHEDULED LONG-TERM.

3: Constructional deficiencies diminishing static, hydraulic and tightness: Eg. untorched intakes, cracks, minor drainage obstructions such as calcite build ups, protruding laterals, minor damages to pipe wall, individual root penetrations, corroded pipe walls etc.

REHABILITATION IS NECESSARY MEDIUM-TERM WITHIN 3 TO 5 YEARS.

4: Constructional damages with insufficent static safety, hydraulic or tightness: Eg. axial/radial pipe bursts, pipe deformations, visually noticeable infiltration/exfiltration, cavities, in pipe-wall, severe protruding, laterals severe root penetrations, severe corrosion of pipe wall etc.

REHABILITATION PROCEDURE IS URGENT AND HAS TO BE COMPLETED WITHIN 1 TO 2 YEARS. NECESSITY FOR EMERGENCY OPERATIONS HAS TO BE EXAMINED.

5: Pipe is already or will shortly be impermeable: Eg. collapsed pipe, deeply rooted pipe or other drainage obstructions. Pipe loses water or danger of backwater in basements etc.

REHABILITATION IS URGENT AND SHORT-TERM. IN ORDER TO PREVENT FURTHER DAMAGE, NECESSARY TEMPORARY SPOT REPAIR HAS TO BE CONDUCTED ON EMERGENCY LEVEL.

APPENDIX E
SOAKAWAY TESTING RESULTS

6.0 GEOTECHNICAL ASSESSMENT

The geotechnical assessment considers the development proposal for number of residential dwellings with gardens and access.

6.1 GEOTECHNICAL LABORATORY TESTING

The results contained in Appendix G show PI values of between 30% and 36% and moisture contents between 16.4% and 17.3%, indicating the clay deposits to be of medium plasticity and medium volume change potential.

Water soluble sulphate and pH analysis revealed results of 0.02-0.06g/lSO_4 and 6.3-7.3 respectively.

6.2 FOUNDATION DESIGN & FLOOR SLABS

Traditional foundations are considered suitable for the proposed development. Worst case in-situ SPT testing of the shallow clay deposits yields a presumed net allowable bearing pressure of 75kN/m^2 at standard founding depths allowing for restricted new planting (minimum 1.25mbgl). The Diorite encountered beneath the clay across the site has a presumed net allowable bearing pressure of 150kN/m^2. This assessment should also be confirmed by the appointed structural engineer.

Foundations will need to be deepened where they are within the influencing distance of trees in accordance with the relevant standards (NHBC Chapter 4.2 – Building Near Trees). No deepening will be required beyond the Diorite at the site, as this material is not influenced by trees.

If a structure is founding across different strata (e.g. Clay and Rock) then reinforcement should be applied. If this is required, a specialist engineer should be approached to provide a specialised reinforcement design.

6.3 EXCAVATION & GROUNDWATER CONDITIONS

Good stability was recorded in all boreholes undertaken across the site. No significant perched water was encountered during works.

6.4 BURIED CONCRETE

Based on the recorded water soluble sulphate concentrations and pH values, it is considered appropriate to adopt a Basic Design Sulphate Class of DS-1, together with an Aggressive Chemical Environment of Concrete (ACEC) of AC-1.

6.5 SOAKAWAY DRAINAGE

During the course of the fieldwork, soakaway testing was undertaken in one location (WS1); the results of testing are included in Appendix D.

During the testing, infiltration was so slow that not even 25% drawdown was achieved and therefore the tests were abandoned.

On the basis of the observed ground conditions, movement of soil water would not be expected within the shallow strata underlying the site.

APPENDIX F
LLFA ENQUIRY RESPONSE

From: Takara Walker <Takara.Walker@leics.gov.uk>
Sent: 03 October 2025 14:39
To: Alice Kirsz
Subject: RE: LLFA Response: Ref. 2025/0909/04/PA Hill Lane, Markfield, Leicestershire

Categories: Filed to CloudFiler

Good afternoon Alice,

I hope you are well.

In regards to the flooding reported in 2019, this is when the customer reported the flooding to several back gardens due to unmaintained ditches.

If pervious and impervious areas are unknown, then a best estimate would be sufficient at outline application stage. The LLFA needs to see that the site has made provisions for attenuation storage. Precise storage structure volumes and sizing can be fixed at Reserved Matters stage.

The method for calculating runoff rates should be consistent. If using the entire site boundary to calculate predevelopment greenfield runoff rates, then all areas should be represented in the hydraulic model. Please refer to the National Standards for Sustainable Drainage sections 3.32 to 3.34 - National standards for sustainable drainage systems (SuDS) - GOV.UK

Kind regards,

Takara Walker
EngTech AMCIHT

Technician
Flood Risk Management Team
Infrastructure Planning
Leicestershire County Council

Please note: Following widespread flooding across the county on 6th and 7th January, we are currently experiencing unprecedented demand on our teams resources, so there may be a delay before we are able to provide a substantiated response.

Email: Flooding@leics.gov.uk
Website: www.leicestershire.gov.uk/environment-and-planning/flooding-and-drainage

From: Alice Kirsz <Alice.Kirsz@ADCinfrastructure.com>
Sent: 30 September 2025 08:57

To: Takara Walker <Takara.Walker@leics.gov.uk>
Subject: RE: LLFA Response: Ref. 2025/0909/04/PA Hill Lane, Markfield, Leicestershire

Hi Takara,

Thankyou for the email below; would it be possible to provide further information regarding the recorded flood event in March 2019? I note the requirement to include pervious and impervious areas within the storage calculations, what would you consider best practice to achieve this at outline stage where a full drainage network wouldn't be modelled and a layout is not fixed? Furthermore if we are including impervious areas within the calculations does this mean that the greenfield runoff rate can therefore be calculated based upon the developable area and not the proposed impermeable area?

Kind regards

Alice Kirsz (BSc) (MSc)
Engineer ADC Infrastructure Limited
DD: 01156930354 M: 07804893057

4th Floor, City Buildings, 34-36 Carrington Street, Nottingham NG1 7FG
Alice.Kirsz@ADCinfrastructure.com
www.ADCinfrastructure.com

From: Takara Walker <Takara.Walker@leics.gov.uk>
Sent: 19 August 2025 15:18
To: Riley Male <Riley.Male@ADCinfrastructure.com>
Subject: LLFA Response: Ref. 2025/0909/04/PA Hill Lane, Markfield, Leicestershire

Dear Riley,

Thank you for request for pre-application advice. Following review of the submitted documents, I can confirm the following. The applicant is looking to situate 65 dwellings.

When determining planning applications, the local planning authority (Hinckley and Bosworth District Council) should ensure flood risk is not increased elsewhere and only consider development appropriate in areas at risk of flooding where informed by a site-specific flood risk assessment (FRA) confirming it will not put the users of the development at risk. Where a FRA is applicable this should be undertaken in accordance with the National Planning Policy Framework (NPPF) , the accompanying Planning Practice Guidance (PPG) and the new **National Standards for SuDS (Published 19 June 2025)**. Consideration of local policies should also be made.

From review of the Flood Map for Planning which shows fluvial flood risk, the site is located in an area associated with flood zone 1.

The risk of flooding from surface water map shows areas of the site to be at risk from surface water flooding with some parts located within low risk areas.

Other sources of flood risk including (but not limited to) groundwater, canals, reservoirs, sewers, etc. should be considered as part of any forthcoming planning application. The LLFA

would recommend reviewing the relevant Strategic Flood Risk Assessment for this area which may contain additional flood risk details.

The proposed site is situated within the Soar catchment. The river leads from the Quorn Brook Catchment (trib of Soar). Leicestershire County Council's Infrastructure Planning (Flood Risk Management) team has records of the following flooding incidents within close proximity to the site.

- March 2019 – reports of flooding to back gardens from the ditches within your site boundary being blocked

It is advised that not all instances of flooding are reported to Leicestershire County Council and as such, there may be a history of flooding for which we have no record. All development has the potential to increase flood risk so it is essential that all forms of flooding are taken into consideration within any flood risk assessment (where required) or planning application. Where there is insufficient information regarding any aspect of risk, the responsibility to investigate falls to the applicant.

Leicestershire County Council as the Lead Local Flood Authority (LLFA) would expect a sequential approach to masterplan development, locating development in areas at lowest risk of flooding.

From review of the submitted masterplan, the proposed development does not identify the use of any sustainable drainage systems (SuDS) features for surface water drainage. Given the currently undeveloped nature of the site, the LLFA would expect surface water runoff from the site to be suitably managed as per best practice guidance given in the CIRIA C753 The SuDS Manual.

The LLFA would expect any surface water drainage proposal to seek to infiltrate unless demonstrated to be unfeasible. Such demonstration should include infiltration testing in accordance with BRE Digest 365 Soakaway Design. Should this not be appropriate, the LLFA would expect runoff from site to be discharge to the next most appropriate receptor at the greenfield 1 in 2 year discharge rate in line with the recently released National Standards for SuDS. Note that NPPF gives weight to emerging policy with much of Leicestershire's local Boroughs and Districts seeking to implement policy requiring a 20% reduction over greenfield QBar discharge rates. The applicant should ensure that all relevant surface water policy is being considered and that the more onerous elements of relevant policies are used.

Your proposed drainage strategy is acceptable in principle as long as the proposed runoff rate of 1 in 2 year Qbar rate should be corrected to the 1 in 2 year greenfield rate in accordance with the national standards for sustainable drainage systems.

All proposals should seek to mimic the pre-development surface water drainage regime of the site. As such, it is important to understand the existing surface water drainage regime of the site and to clearly convey this to the LPA and LLFA. As such, in all but the most straight forward scenarios, the LLFA would expect any future application to include a plan showing the existing drainage regime for the site. This plan should include topographic details, on-site overland flow routing directions, flow routes to and from the site, existing on-site and relevant off-site surface water drainage features (such as ditches, pipes, ponds etc.), flow directions of any existing drainage features, levels of existing features, identification of sub-catchments (including their size), identification of areas at risk of flooding and details of the downstream connectivity of any identified surface water receptors.

Over the lifetime of a development, it is possible that the overall impermeable area contributing to surface water runoff within the site could significantly increase (known as ‘urban creep). Sensitivity testing of a 10% increase in impermeable area should therefore be included where appropriate to ensure that surface water drainage designs can cope with future increases in impermeable areas. Note that the National Standards for SuDS requires attenuation to take account of all areas intercepted by the surface water proposals, including permeable surfaces (with an appropriate Cv value).

The ditch running through the centre of the site is classified as an ordinary watercourse; as such consent may be required from Leicestershire County Council in their role as LLFA, under the Land Drainage Act (1991) for any activities within close proximity. Further information on the types of work/structure which require consent together with a template application form can be found on our website under the section ‘Regulation of activities on watercourses’.

Leicestershire County Council opposes the culverting of watercourses; however, we recognise there are instances where culverting may be unavoidable. Any applicant will be required to justify the use of culverts and provide information demonstrating that there will be no detrimental effect on flood risk. Please refer to the County Council’s policies which can be found on our website here:
https://www.leicestershire.gov.uk/environment-and-planning/flooding-and-drainage/flood-risk-management

To safeguard access to watercourses or ditches for future maintenance, inspection and improvement works in the future; clear margins should be provided from the top of banks. A minimum clear margin of 3m should be provided from each top of bank for watercourses less than 2 metres in width, a minimum clear margin of 4.5m should be provided for watercourses 2 metres or greater in width.

The LLFA would expect any future surface water drainage scheme to assess the use of SuDS including but not limited to swales, attenuation basins and permeable paving in line with ‘CIRIA C753 The SuDS Manual’. Such above ground SuDS structures would also provide one of the required treatment trains to manage water quality. It should be noted that the LLFA do not consider the use of underground storage tanks or oversize pipes as a suitable treatment train and as such where these are proposed, additional treatment trains should be implemented. Leicestershire County Council, in their role as LLFA, does not adopt SuDS. For enquiries regarding the proposed development and future adoption and maintenance of SuDS features, please direct these to your local District or Borough Council.

Any surface water drainage features should be located within the areas at lowest risk of flooding to ensure they remain operational during an extreme event. Any drainage features should also consider how an extreme event may constrain the discharge from any proposed drainage system and ensure the drainage infrastructure can adequately manage surface water runoff regardless (for example a surcharged outfall).

Where a site-specific flood risk assessment (FRA) is required by NPPF the associated drainage strategy should also provide outline operation and maintenance details along with an indicative proposal of who will maintain any SuDS features over the lifetime of the development.

Please find enclosed the LLFA planning checklist and guidance which provides further details, which is also available on our website.

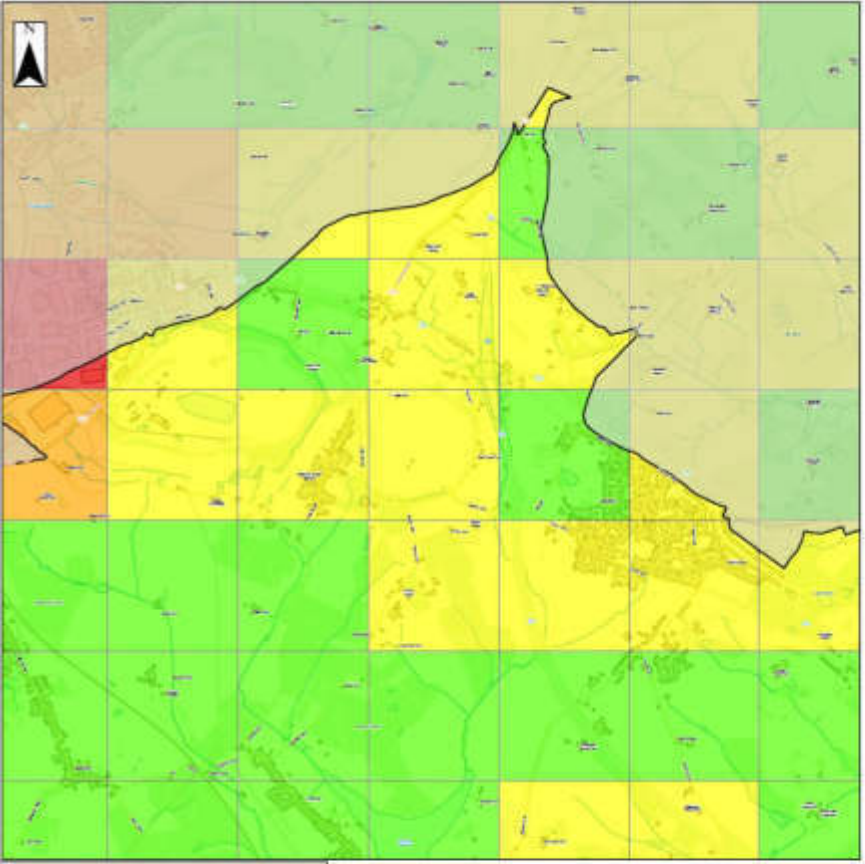
If you have any further questions, please do not hesitate to contact us.

Yours faithfully

Takara Walker
Technician
On behalf of LCC Infrastructure Planning (Flood Risk Management)

APPENDIX G
GROUNDWATER SUSCEPTIBILITY MAPPING

Hinckley and Bosworth Borough Level 1 Strategic Flood Risk Assessment



Authority Information
- Hinckley & Bosworth Borough Boundary

Watercourses
- Main Rivers
- All Watercourses
- 8m Watercourses Buffer
- Canals

Defences
- Bridge Abutment
- Embankment
- Engineered High Ground
- Natural High Ground
- Wall

Modelled Flood Zones (Fluvial)
- Modelled Flood Zone 3b
- Modelled Flood Zone 3a
- Modelled Flood Zone 2

EA Flood Map for Planning
- Indicative Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Climate Change Extent (Modelled)
- Indicative 3.3% AEP Central
- 3.3% AEP Central
- 3.3% AEP Higher Central
- 3.3% AEP Upper End
- 1% AEP Central
- 1% AEP Higher Central
- 1% AEP Upper End

Reservoir Flood Extents (EA)
- Dry Day Extent
- Wet Day Extent
- Fluvial Contribution

Risk of Flood from Rivers and Sea (EA)
- High
- Medium
- Low
- Very Low

Reduction in Risk of Flooding from Rivers and Sea
- Reduction In Risk Of Flooding

Risk of Flooding From Surface Water (EA)
- 3.3% AEP
- 1% AEP
- 0.1% AEP

Surface Water Climate Change Extent (Modelled)
- 3.3% AEP Upper End 2070s CC
- 1% AEP Upper End 2070s CC

Groundwater Emergence Mapping (JBA)
- Less than 0.025m below surface
- Between 0.025- 0.5m below surface
- Between 0.5- 5m below surface
- At least 5m below surface
- No risk.

Groundwater Flooding Susceptibility (EA)
- < 25%
- >= 25% <50%
- >= 50% <75%
- >= 75%

Historic Flooding
- Recorded Flood Outlines
- Historic Flood Map

EA Flood Alert and Warning Areas
- Flood Warning Areas
- Flood Alert Areas

To use: Click on check box to turn a layer on/off

0 0.5 1 1.5 2 Kilometers

APPENDIX H
SURFACE WATER DEPTH PLAN

Flood Map for Planning Flood Extents (Surface Water Flood Extents)

Low Chance Surface Water Depths

Medium Chance Surface Water Depths

High Chance Surface Water Depths

This drawing references the data noted below

Data	Source	Reference	Rev.	Dated
Topographical survey	Castle Surveys	20495-20-01	-	December 2020
Mapping	DEFRA	RoSFW	-	-
Site Layout	Ophir	PL002.1	-	September 2025

General Notes

1. Do not scale this drawing. All dimensions must be checked/verified on site.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions are in metres unless noted otherwise. All levels are in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Key

Application Boundary

Flood Map for Planning Flood Extents

- 1 in 30-year Annual Likelihood Surface Water Flooding (High Chance)
- 1 in 100-year Annual Likelihood Surface Water Flooding (Medium Chance)
- 1 in 1000-year Annual Likelihood Surface Water Flooding (Low Chance)

Medium & High Chance Surface Water Flood Depths

- Below 0.2m Surface Water Flood Depths
- 0.2-0.3m Surface Water Flood Depths
- 0.3-0.6m Surface Water Flood Depths
- 0.6-0.9m Surface Water Flood Depths
- 0.9-1.2m Surface Water Flood Depths
- Above 1.2m Surface Water Flood Depths

Rev	Date	Description	Dr	Ch
P01	17.10.25	First Issue	RM	AK

Client: Glenalmond Developments Ltd

Project: Hill Lane, Markfield

Title: Surface Water Depth Constraints Plan

ADC INFRASTRUCTURE

Size: A1 | Scale: 1:1000

Status: PRELIMINARY

Project	Originator	Volume	Level	Type	Role	Number	Status	Revision
2587	ADC	HDG	XX	DR	CD	0520	S1	P01

APPENDIX I
SURFACE WATER RUNOFF CALCULATIONS

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

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

Project details

Date	17/09/2025
Calculated by	AK
Reference	Markfield
Model version	2.1.2

Location

Site name	Hill Lane
Site location	Markfield

Site easting (British National Grid)	448711
Site northing (British National Grid)	310521

Site details

Total site area (ha)	1.1 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value		Map value
SAAR (mm)	706 mm		706
How should SPR be derived?	WRAP soil type		
WRAP soil type	4		4
SPR	0.47		
QBar (IH124) (l/s)	5.36 l/s		

Growth curve factors

	My value		Map value
Hydrological region	4		4
1 year growth factor	0.83		
2 year growth factor	0.89		
10 year growth factor	1.49		
30 year growth factor	2		
100 year growth factor	2.57		
200 year growth factor	3.04		

Results

Method	IH124
Flow rate 1 year (l/s)	4.5 l/s
Flow rate 2 year (l/s)	4.8 l/s
Flow rate 10 years (l/s)	8.0 l/s
Flow rate 30 years (l/s)	10.7 l/s
Flow rate 100 years (l/s)	13.8 l/s
Flow rate 200 years (l/s)	16.3 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

APPENDIX J
SEVERN TRENT DEVELOPER ENQUIRY

WONDERFUL ON TAP

SEVERN TRENT

Severn Trent Water Ltd
Leicester Water Centre
Gorse Hill
Anstey
Leicester
LE7 7GU
www.stwater.co.uk

We're here if you need us:
Vijay Tanna- 07855100647
Email:
network.solutions@severntrent.co.uk

Our ref: **1156322**

ADC Infrastructure
34-36 Ground Floor & 32-36 First Floor
Carrington Street
Nottingham
NG1 7FG

07Th August 2025

F.A.O: Riley Male

Dear Sir/Madam,

Proposed Development: (65x Dwellings – 1.01 l/s)
Land West of Hill Lane, Markfield, LE67 9UB
XY:448692, 310553

I refer to your 'Development Enquiry Request' in respect of the above named site. Please find enclosed the sewer records that are included in the fee together with the Supplementary Guidance Notes (SGN) which refer to surface water disposal from development sites.

Protective Strip

Due to a change in legislation on 1 October 2011 there may be former private sewers on the site which have transferred to the responsibility of Severn Trent Water Ltd, which are not shown on the statutory sewer records, but are located in your client's land. These sewers would require protective strips of 3 metres either side of the sewer's centreline that we will not allow to be built over. If such sewers are identified to be present on the site, please contact us for further guidance.

Please note: there is no guarantee that you will be able to build over or close to any Severn Trent sewers, and where a diversion is required there is no guarantee that you will be able to undertake those works on a self-lay basis. Every approach to build near to or divert our assets has to be assessed on its own merit and the decision of what is or isn't permissible is taken based on the risk to the asset and the wider catchment it serves. It is vital therefore that you contact us at the earliest opportunity to discuss the implications of our assets crossing your site. Failure to do so could significantly affect the costs and timescales of your project if it transpires diversionary works need to be carried out by Severn Trent.

Foul Water Drainage

The nearest 150mm foul sewer is located on Upland Drive and nearest mh is SK4810**8401**. It is anticipated the approximate foul flows of 1.1l/s (2xdwf) will have no adverse impact on the network. Therefore, a gravity connection to the public sewer (direct or indirect) is acceptable subject to a formal Section 106 sewer connection approval.

Please note, that a connection at this location may involve crossing third party land-You must comply and obtain any third party landowners permission and easement(s) to work on and access private land. Or alternatively as per your proposals you may consider to apply for a Sewer requisition (S98) with Severn Trent.

Surface Water Drainage

Under the terms of Section H of the Building Regulations 2000, the disposal of surface water by means of soakaways should be considered as the primary method. If these are found to be unsuitable, satisfactory evidence will need to be submitted. The evidence should be either percolation test results or by the submission of a statement from the SI consultant (extract or a supplementary letter).

Subject to above Severn Trent Water expects all surface water from the development to be drained in a sustainable way to the nearest watercourse or land drainage channel, subject to the developer discussing all aspects of the developments surface water drainage with the Local Lead Flood Authority (LLFA). Any discharge rate to a watercourse or drainage ditch will be determined by the LLFA / EA.

Note, STW will have to be satisfied that all sustainable option have been exhausted before allowing discharge to the public network.

Subject to above, a connection to the 225mm surface water sewer running across Uplands Drive and nearest mh SK4810**8404** can be considered with flows restricted in line with greenfield run off rates of 5l/s per hectare. Therefore, a gravity connection to the public sewer (direct or indirect) is acceptable subject to a formal Section 106 sewer connection approval.

Connections

For any new connections (including the re-use of existing connections) to the public sewerage system, the developer will need to submit a Section 106 application form. Our Developer Services department are responsible for handling all new connections enquiries and applications. To contact them for an application form and associated guidance notes please call 0800 7076600 or download from www.stwater.co.uk.

Please quote the above reference in any future correspondence (including e-mails) with STW Limited. Please note that Developer Enquiry responses are only valid for 6 months from the date of this letter.

Yours sincerely

Vijay Tanna
Network Solutions
Developer Services

APPENDIX K
SURFACE WATER STORAGE CALCULATIONS

Hill Lane: Markfield Basin	Date: 09/09/2025		
	Designed by: AK	Checked by:	Approved By:
Report Details: Type: Inflows Storm Phase: Phase	ADC Infrastructure: 34-36 Carrington Street		

Catchment Area

Type : Catchment Area

Area (ha)	1.76

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	60

Hill Lane: Markfield Basin	Date: 09/09/2025		
	Designed by: AK	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	ADC Infrastructure: 34-36 Carrington Street		

Pond

Type : Pond

Dimensions

Exceedance Level (m)	196.000
Depth (m)	1.500
Base Level (m)	194.500
Freeboard (mm)	300
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.00
Total Volume (m³)	1281.806

Depth (m)	Area (m²)	Volume (m³)
0.000	866.74	0.000
1.500	1400.00	1684.154

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area
Bypass Destination	(None)
Capacity Type	No Restriction

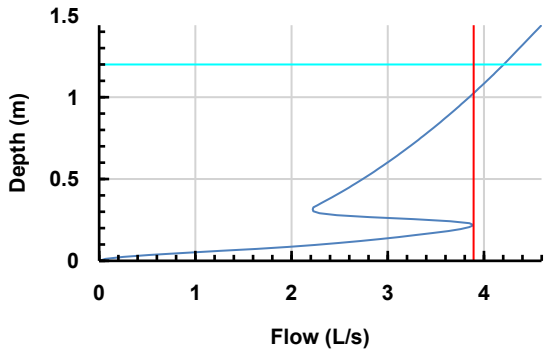
Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Hydro-Brake®

Invert Level (m)	194.500
Design Depth (m)	1.200
Design Flow (L/s)	4.2
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☐

Unit Reference	CHE-0090-4200-1200-4200



Hill Lane: Markfield Basin	Date: 09/09/2025		
	Designed by: AK	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	ADC Infrastructure: 34-36 Carrington Street		

Advanced

Perimeter	Circular
Length (m)	117.709
Friction Scheme	Manning's n
n	0.025

Hill Lane: Markfield Basin	Date: 09/09/2025		
	Designed by: AK	Checked by:	Approved By:
Report Details: Type: Outfall Details Storm Phase: Phase	ADC Infrastructure: 34-36 Carrington Street		

Outfalls

Outfall	Outfall Type	Gated	Fixed Surcharged Level (m)	Level Curve
Pond	Fixed Surcharged Level	☐	192.500	
FEH : 100 years: +40 %: 15 mins: Summer			192.500	
FEH : 100 years: +40 %: 15 mins: Winter			192.500	
FEH : 30 years: +35 %: 15 mins: Summer			192.500	
FEH : 30 years: +35 %: 15 mins: Winter			192.500	
FEH : 100 years: +40 %: 30 mins: Summer			192.500	
FEH : 100 years: +40 %: 30 mins: Winter			192.500	
FEH : 30 years: +35 %: 30 mins: Summer			192.500	
FEH : 30 years: +35 %: 30 mins: Winter			192.500	
FEH : 100 years: +40 %: 60 mins: Summer			192.500	
FEH : 100 years: +40 %: 60 mins: Winter			192.500	
FEH : 30 years: +35 %: 60 mins: Summer			192.500	
FEH : 30 years: +35 %: 60 mins: Winter			192.500	
FEH : 100 years: +40 %: 120 mins: Summer			192.500	
FEH : 100 years: +40 %: 120 mins: Winter			192.500	
FEH : 30 years: +35 %: 120 mins: Summer			192.500	
FEH : 30 years: +35 %: 120 mins: Winter			192.500	
FEH : 100 years: +40 %: 180 mins: Summer			192.500	
FEH : 100 years: +40 %: 180 mins: Winter			192.500	
FEH : 30 years: +35 %: 180 mins: Summer			192.500	
FEH : 30 years: +35 %: 180 mins: Winter			192.500	
FEH : 100 years: +40 %: 240 mins: Summer			192.500	
FEH : 100 years: +40 %: 240 mins: Winter			192.500	
FEH : 30 years: +35 %: 240 mins: Summer			192.500	
FEH : 30 years: +35 %: 240 mins: Winter			192.500	
FEH : 100 years: +40 %: 360 mins: Summer			192.500	
FEH : 100 years: +40 %: 360 mins: Winter			192.500	
FEH : 30 years: +35 %: 360 mins: Summer			192.500	
FEH : 30 years: +35 %: 360 mins: Winter			192.500	
FEH : 100 years: +40 %: 480 mins: Summer			192.500	
FEH : 100 years: +40 %: 480 mins: Winter			192.500	
FEH : 30 years: +35 %: 480 mins: Summer			192.500	
FEH : 30 years: +35 %: 480 mins: Winter			192.500	

FEH : 100 years: +40 %: 600 mins: Summer			192.500	
FEH : 100 years: +40 %: 600 mins: Winter			192.500	
FEH : 30 years: +35 %: 600 mins: Summer			192.500	
FEH : 30 years: +35 %: 600 mins: Winter			192.500	
FEH : 100 years: +40 %: 720 mins: Summer			192.500	
FEH : 100 years: +40 %: 720 mins: Winter			192.500	
FEH : 30 years: +35 %: 720 mins: Summer			192.500	
FEH : 30 years: +35 %: 720 mins: Winter			192.500	
FEH : 100 years: +40 %: 960 mins: Summer			192.500	
FEH : 100 years: +40 %: 960 mins: Winter			192.500	
FEH : 30 years: +35 %: 960 mins: Summer			192.500	
FEH : 30 years: +35 %: 960 mins: Winter			192.500	
FEH : 100 years: +40 %: 1440 mins: Summer			192.500	
FEH : 100 years: +40 %: 1440 mins: Winter			192.500	
FEH : 30 years: +35 %: 1440 mins: Summer			192.500	
FEH : 30 years: +35 %: 1440 mins: Winter			192.500	
FEH : 100 years: +40 %: 2160 mins: Summer			192.500	
FEH : 100 years: +40 %: 2160 mins: Winter			192.500	
FEH : 30 years: +35 %: 2160 mins: Summer			192.500	
FEH : 30 years: +35 %: 2160 mins: Winter			192.500	
FEH : 100 years: +40 %: 2880 mins: Summer			192.500	
FEH : 100 years: +40 %: 2880 mins: Winter			192.500	
FEH : 30 years: +35 %: 2880 mins: Summer			192.500	
FEH : 30 years: +35 %: 2880 mins: Winter			192.500	
FEH : 100 years: +40 %: 4320 mins: Summer			192.500	
FEH : 100 years: +40 %: 4320 mins: Winter			192.500	
FEH : 30 years: +35 %: 4320 mins: Summer			192.500	
FEH : 30 years: +35 %: 4320 mins: Winter			192.500	
FEH : 100 years: +40 %: 5760 mins: Summer			192.500	
FEH : 100 years: +40 %: 5760 mins: Winter			192.500	
FEH : 30 years: +35 %: 5760 mins: Summer			192.500	
FEH : 30 years: +35 %: 5760 mins: Winter			192.500	

Hill Lane: Markfield Basin	Date: 09/09/2025		
	Designed by: AK	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	ADC Infrastructure: 34-36 Carrington Street		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	10
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FEH

Type: FEH

Site Location	GB 448725 310519 SK 48725 10519
Rainfall Version	2013
Data Type	Point
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	40.000
30.0	35.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880
2160	4320
2880	5760
4320	8640
5760	11520

Hill Lane: Markfield Basin	Date: 09/09/2025		
	Designed by: AK	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	ADC Infrastructure: 34-36 Carrington Street		

FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FEH: 100 years: +40 %: 960 mins: Winter	195.631	195.631	1.131	1.131	59.9	1193.910	0.000	0.000	4.1	396.892	6.857	OK

Hill Lane: Markfield Basin	Date: 09/09/2025		
	Designed by: AK	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	ADC Infrastructure: 34-36 Carrington Street		

FEH: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FEH: 30 years: +35 %: 960 mins: Winter	195.336	195.336	0.836	0.836	43.3	839.299	0.000	0.000	3.9	341.448	34.522	OK

APPENDIX L
2587-ADC-HDG-DR-CD-0510-S1
PROPOSED DRAINAGE LAYOUT PLAN

Note: Watercourse alignments are indicative and are based upon available topographical information

Note: The embankments associated with the proposed basin are indicative and are subject to an earthworks review at detailed design

A culvert will be installed to facilitate the construction of the required access across the watercourse. The culvert will contain the projected flood extents associated with the watercourse beneath the surface of the access.

Play area is to be reshaped to be located outside of the watercourse and its associated margin

Title Boundary conflict with survey

Informal Play Spaces
644 sqm

Equipped Children's Play Area
c.300sqm

Accessible Natural Green Space
1332sqm

Accessible Natural Green Space
525sqm

Informal Play Spaces
878 sqm

Accessible Natural Green Space
4221sqm

ASHBY ROAD

7601

7602

8501

8406

8402

8405

8404

FW01
CL 198.20
IL 196.70

FW02
CL 197.40
IL 194.10

FW03
CL 196.40
IL 193.80

FW04
CL 196.75
IL 193.50

FW05
CL 194.35
IL 192.85

SW01
CL 198.20
IL 195.00

ATTENUATION BASIN
TOP OF BANK- 196.00
BASE LEVEL- 194.50
STORAGE DEPTH- 1.20m
FREEBOARD- 0.3m
NET VOLUME- 1685CUM

SW02 (FLOW CONTROL)
CL 196.00
IL 194.00
OUTFLOW 4.2l/s

STW MH8406
CL 192.40
IL 191.07

STW MH8405
CL 193.41
IL 192.10

STW MH8401
CL 193.520
IL 192.410

The proposed restricted discharge rate achieves a 20% betterment upon the greenfield QBAR rate, and is less than the 1 in 2-year greenfield runoff rate

Surface water runoff is to outfall into the existing watercourse which discharges via a 225mm drain into the public surface water sewer network within Upland Drive via MH8405

New manhole connection to be made into the foul sewer to the south-east in Upland Drive via MH8401. Sewer requisition potentially required for any sewer works in third party land

This drawing references the data noted below				
Data	**Source**	**Reference**	**Rev.**	**Dated**
Topographical survey	Castle Surveys	20495-20-01	-	18.12.20
Site Layout	Ophir	GDA05-PL002	-	Sept 2025

General Notes

1. Do not scale this drawing. All dimensions must be checked/verified on site.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions are in metres unless noted otherwise. All levels are in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Key

- Ordinary watercourse
- Clear margin
- Proposed adoptable surface water gravity sewer
- Proposed adoptable foul gravity sewer
- Existing private surface water sewer
- Existing public surface water sewer
- Existing public foul sewer
- Street tree
- Attenuation basin

Rev	Date	Description	Dr	Ch
P01	04.11.25	First Issue	AK	RW

Client: Glenalmond Developments Ltd

Project: Hill Lane, Markfield

Title: Drainage layout plan

ADC INFRASTRUCTURE

Size: A1 | Scale: 1:500

Status: PRELIMINARY

Project	Originator	Volume	Level	Type	Role	Number	Status	Revision
2587	ADC	HDG	XX	DR	CD	0501	S1	P01

APPENDIX M
DRAINAGE CATCHMENT AND EXCEEDANCE PLAN

This drawing references the data noted below				
Data	**Source**	**Reference**	**Rev.**	**Dated**
Topographical survey	Castle Surveys	20495-20-01	-	18.12.20
Site Layout	Ophir	GDA05-PL002	-	Sept 2025

General Notes

1. Do not scale this drawing. All dimensions must be checked/verified on site.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions are in metres unless noted otherwise. All levels are in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Key

Drainage catchment area

Exceedance flow arrows

Rev	Date	Description	Dr	Ch
P01	04.11.25	First Issue	AK	RW

Client:
Glenalmond Developments Ltd

Project:
Hill Lane, Markfield

Title:
Drainage catchment and exceedance plan

ADC INFRASTRUCTURE

Size: A1 | Scale: 1:500

Status: PRELIMINARY

Project	Originator	Volume	Level	Type	Role	Number	Status	Revision
2587	ADC	HDG	XX	DR	CD	0502	S1	P01