MEC Consulting Group

FLOOD RISK & DRAINAGE

Stoke Golding, Hinckley
Flood Risk Assessment
August 2025

Report Ref: 29782-FLD-0101

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CLIENT: A.R. Cartwright Construction Ltd.

ENGINEER: MEC Consulting Group Ltd
The Old Chapel
Station Road
Hugglescote
Leicestershire
LE67 2GB

Tel: 01530 264 753
Email group@m-ec.co.uk

REGISTRATION OF AMENDMENTS

Date	Rev	Comment	Prepared By	Checked By	Approved By
August 2025	-	First issue	**Jack Harriman** BSc (Hons) Flood Risk Engineer	**Zoe Jordan** BSc (Hons) Flood Risk Engineer	**Ryan Chafer** BSc (Hons) Principal Flood Risk Engineer

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EXECUTIVE SUMMARY

Site Address	Land off High Street, Stoke Golding, Hinckley, CV13 6HA. Easting: 439819 Northing: 297479
Site Description and Setting	The proposed development is situated on a greenfield site with an area of approximately 0.79ha. The site is accessed off High Street from the west. To the south lies Roseway and its residential dwellings whilst to the north and east lies further greenfield land.
Proposed Development	This report is to support a full planning application proposed to situate a 19 dwelling residential development including pedestrian access and associated infrastructure of highway, drainage and landscaping works.
Flood Risk Information	The site is wholly within Flood Zone 1 (Low Probability) which is defined as land having less than 0.1% annual probability of river or sea flooding. The Environment Agency Flood Risk from Surface Water Map for the 2050's epoch indicates that the site is predominately at very low risk of surface water flooding. There is an area of medium-high risk along the eastern boundary of the site, indicating an on-site ditch. Other sources of flood risk including, but not limited to reservoirs, canals and sewers, are assessed as being low or negligible.
Surface Water Drainage Strategy	Existing runoff conditions have been calculated using the FEH module within Flow Causeway. For an impermeable area of 0.504ha, the QBAR Greenfield Rate has been calculated as 0.2/s. Discharge is limited to 2l/s to reduce blockage risk. In accordance with the National SuDS Standards, the strategy involves conveying surface water flows to a geocellular tank and attenuation basin before discharging to a proposed off -site surface water sewer. This sewer proposes to discharge into the combined sewer overflow to the north at Manhole 9601. In total a storage volume of 360.0m^3 is required within the attenuation basin to allow sufficient time for surface water to discharge at the restricted rate of 2.0l/s and to accommodate the 1%AEP40CC storm event. Additional drainage features such as permeable paving will be used across the site and will provide extra storage on-site. Permeable paving will act as a first treatment stage for any run-off and will ensure adequate surface water treatment is provided.
Foul Water Drainage Strategy	It is proposed that foul water from the development will connect into the existing foul water system within the site and this has been accepted by Severn Trent Water in a Developer Enquiry response. A pumping station will be required for all dwellings to have an outfall. All systems are to be offered to STW in a Section 104 approval application.
Recommendations	It is recommended that any proposed dwellings situated in areas of high to medium surface water flood risk have finished floor levels raised 300mm above that of the estimated flood level. If certainty about the estimated flood level cannot be discerned, then raising finished floor levels 600mm may be appropriate. Should this not be feasible, further flood risk resistance or resilience measures may be necessary.
Conclusions	With the above measures in place, the development of the site will not create any flood risk issues within the wider area.
This summary should be read in conjunction with the full report and reflects an assessment of the site based on information received by MEC at the time of production.	

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APPENDICES

1.0 INTRODUCTION

1.1 MEC Consulting Group Ltd (MEC), has been commissioned by A.R Cartwright Construction Ltd (hereafter referred to as 'the Client') to undertake a Flood Risk Assessment for a proposed residential development at Stoke Golding (hereafter referred to as 'the Site'). A site location plan is shown in **Appendix A,** and a proposed layout plan is contained within **Appendix B.**

1.2 This report is to support a full planning application proposed to situate a 19 dwelling residential development including pedestrian access and associated infrastructure of highway, drainage and landscaping works.

1.3 The purpose of this Flood Risk Assessment (FRA) is to review freely available information and assess the flood risk posed to the site from a range of sources. The assessment has been prepared using our best engineering judgement, however, there are levels of uncertainty implicit in the historical data and methods of analysis. The Flood Risk Assessment has been carried out in accordance with the requirements of the documents below:

- National Planning Policy Framework (NPPF) – December 2024
- Flood Risk and Coastal Change Planning Practice Guidance (PPG) – August 2022
- Environment Agency Flood Map for Planning and Risk of Flooding from Surface Water datasets from the DEFRA Spatial Data Catalogue
- British Geological Survey Geology Viewer and GeoIndex
- Hinckley and Bosworth Borough Council Local Development Framework, December 2009
- Hinckley and Bosworth Borough Council Level 1 Strategic Flood Risk Assessment, July 2019
- Hinckley and Bosworth Borough Council Level 2 Strategic Flood Risk Assessment, May 2020
- The Leicestershire and Leicester City Level 1 Strategic Flood Risk Assessment - October 2017.
- The Leicestershire County Council Preliminary Flood Risk Assessment - June 2011
- The Local Flood Risk Management Strategy for Leicestershire - February 2024

1.4 The Local Planning Authority (LPA) for the site is Hinckley & Bosworth Borough Council (HBBC) and the Lead Local Flood Authority (LLFA) for the site is Leicestershire County Council (LCC). The site falls within the Severn Trent Water (STW) catchment.

Disclaimer

1.5 MEC has completed this report for the benefit of the Client and any relevant statutory authority which may require reference in relation to approvals for the proposed development. Other third parties should not use or rely upon the contents of this report unless explicit written approval has been gained from MEC.

1.6 MEC accepts no responsibility or liability for:

a) The consequence of this documentation being used for any purpose or project other than that for which it was commissioned;
b) The issue of this document to any third party with whom approval for use has not been agreed.

2.0 POLICY CONTEXT

National Planning Policy Framework

2.1 The National Planning Policy Framework (NPPF) was published and updated most recently in December 2024 by the Ministry of Housing, Communities and Local Government.

2.2 The NPPF is the primary source of national planning guidance in England, setting out the Government's planning policies for England, and how they are expected to be applied by local councils.

2.3 'Chapter 14: Meeting the challenge of climate change, flooding and coastal change' outlines the guiding principles for managing flood risk as part of the planning process, notably paragraphs 161-186.

2.4 The Planning Practice Guidance (PPG) sets out the vulnerability to flooding of different land uses. It encourages development to be in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk off-site to the wider catchment.

2.5 The PPG also states that alternative sources of flooding, other than fluvial (river flooding), should be considered when preparing an FRA. The document also includes a series of tables that define Flood Zones, the flood risk vulnerability classification of development land use, and 'compatibility' of development within the defined Flood Zones.

2.6 Therefore, this FRA has been completed in line with the guidance and requirements of the NPPF and PPG.

Local Development Framework

2.7 The Hinckley and Bosworth Borough Council (HBBC) Local Development Framework 2006-2026 (LDF) was adopted by the council in December 2009. This LDF sets out how land within the authorities' boundaries can be used and developed, providing policies which the council uses to determine planning applications. The plan aims to ensure future growth and changes to the Borough are appropriate to local need now, and in the future.

2.8 More generally, the LDF also lists policies that guide the design and principles of all development within the authorities' land. Those relevant to this FRA are summarised as follows;

- DM7 – Preventing Pollution and Flooding
- DM10 – Development and Design

Local SFRA

2.9 The HBBC Level 1 Strategic Flood Risk Assessment (SFRA) was published in July 2019. The SFRA was produced to provide an appropriate evidence base for the LDF and provides a summary of flood risk across the district.

2.10 The HBBC Level 2 SFRA was published in May 2020. This Level 2 report provides specific flood risk information for allocated sites within the LDF, and generally builds upon the Level 1 report providing updates to flood risk policy, flood history and recommendations.

2.11 Appropriate background information has been used to inform this FRA and will be referenced accordingly.

Local PFRA

2.12 The Leicestershire County Council Preliminary Flood Risk Assessment (PFRA) was published in June 2011 and was prepared to assist Leicestershire County Council meet its duties to manage local flood risk, and the delivery of any legal requirements placed on it as Lead Local Flood Authority (LLFA) under the Flood Risk Regulations 2009.

2.13 Appropriate background information has been used to inform this FRA and will be referenced accordingly.

Flood Risk Management Strategy

2.14 The Local Flood Risk Management Strategy for Leicestershire (FRMS) was published in February 2024 to comply with Section 9 of the Flood and Water Management Act 2010 and aims to provide a framework for meeting its requirements to develop, maintain, apply, and monitor a local strategy for flood risk management.

2.15 The FRMS provides further information regarding surface water runoff, groundwater and sewer flooding and flood risk around the County and the introduction of flood risk alleviation schemes at various scales, including SuDS.

Supplementary Planning Document

2.16 The HBBC 'The Good Design Guide' Supplementary Planning Documents (SPD) was published in February 2020. This SPD was produced to provide developers with information on all aspects of development they will be required to meet as part of an application.

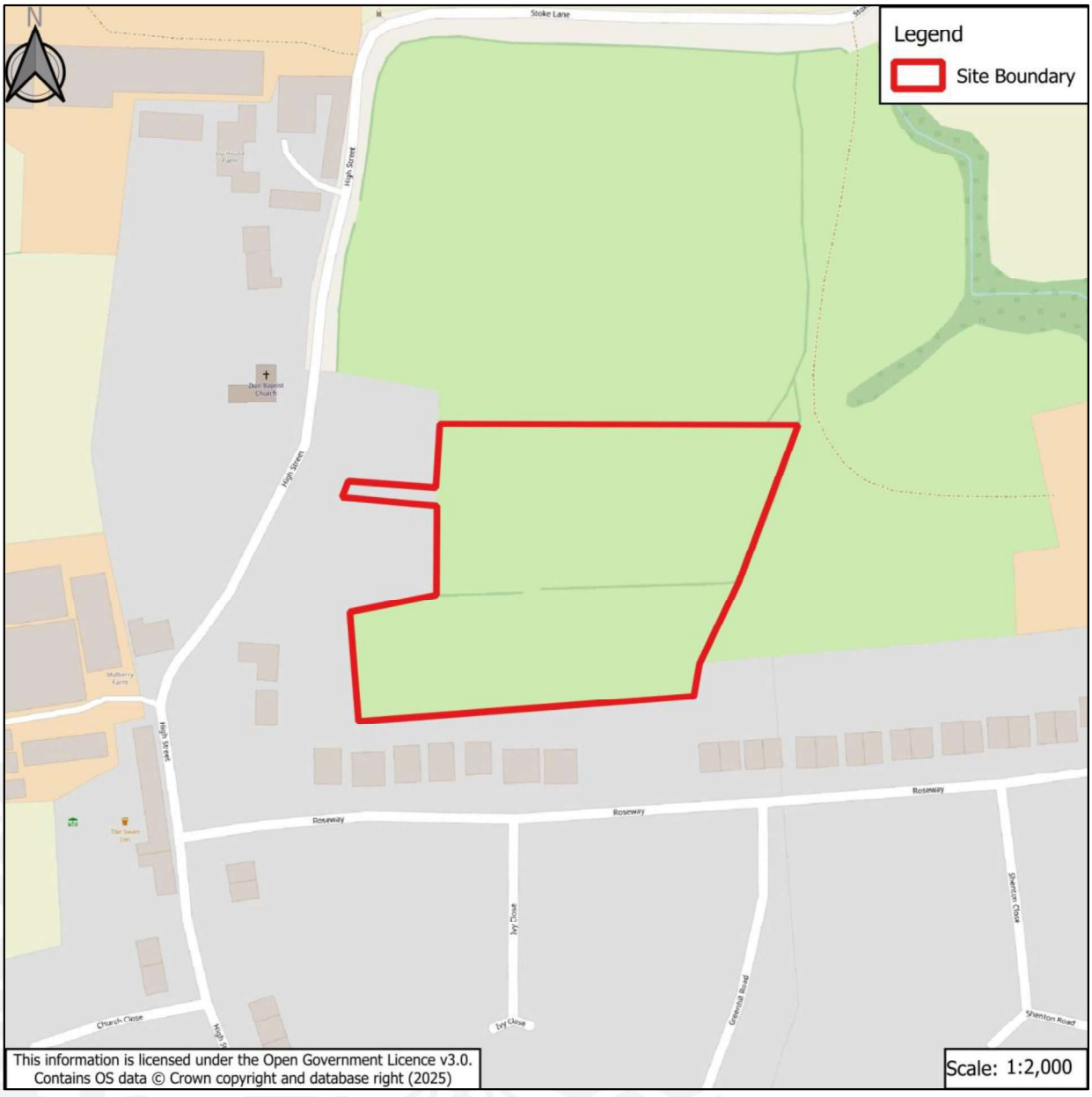
2.17 Specially for this FRA, this SPD contains information on managing flood risk and the water environment within HBBC, along with information surrounding SuDS, flood mitigation and how they should be incorporated into designs.

3.0 SITE LOCATION AND CONTEXT

Site Location and Existing Use

3.1 The site is located to the east of High Street, Stoke Golding, approximately 3km northwest of the town of Hinckley, Leicestershire (Ordnance Survey National Grid Reference: Easting: 439819 Northing: 297479). Mapping shows the site to currently comprise of a sloped paddock. A site location plan is included for reference as Figure 3.1. In total, the site covers approximately 0.79ha.

Figure 3.1 Site Location Plan



3.2 To the north and east is open agricultural land, to the south are rear gardens and houses on Roseway and to the west is High Street.

3.3 Mapping shows the site to currently a sloped paddock, therefore, is considered undeveloped and is assumed to be subject to a natural regime of runoff and infiltration where ground conditions permit.

Local Watercourses

3.4 There are no existing named watercourses identified in close vicinity to the site. Approximately 180m to the north, on the other side of Stoke Lane, lies the Ashby-de-la-Zouch Canal.

Topography

3.5 A topographical survey, completed by SV Surveying Ltd and included as **Appendix C**, shows the site to have a maximum elevation of 101.470mAOD in the southwest, falling to a minimum elevation of 95.150mAOD in the northeast.

3.6 The topographical survey and surface water flow paths indicate the existence of on-site ditches at the site's eastern boundary, following the topography of the site which slopes from southwest to northeast.

Geology

3.7 British Geological Survey (BGS) mapping suggests the site is wholly underlain by a bedrock geology comprising Gunthorpe Member - Mudstone.

3.8 The site is also shown to be underlain by a superficial geology comprising Bosworth Clay Member – Clay and Silt and surrounded by both Wigston Member – Sand and Gravel and Oadby Member – Diamicton. This suggests a limited potential for infiltration due to containing subordinate layers of clays and silts.

3.9 BGS records do not show any publicly available boreholes within or in the vicinity of the site boundary.

3.10 The site does not fall within a Source Protection Zone (SPZ).

4.0 ASSESSMENT OF FLOOD RISK

Desk-based Information

4.1 The NPPF states that all potential sources of flood risk must be identified and appraised. Flooding can occur from a variety of sources individually, or in combination and can result from both natural and artificial processes.

4.2 Table 4.1 provide an initial desk-based review of the level of flood risk from all sources, which are then assessed in further detail where the risk is considered significant and merits further investigation.

Table 4.1 : Desk-Based Assessment of Flood Risk

Source	Risk		
	High	Medium	Low
Fluvial			X
Coastal & Tidal			X
Surface Water			X
Groundwater			X
Sewer			X
Canals			X
Reservoirs & Waterbodies			X

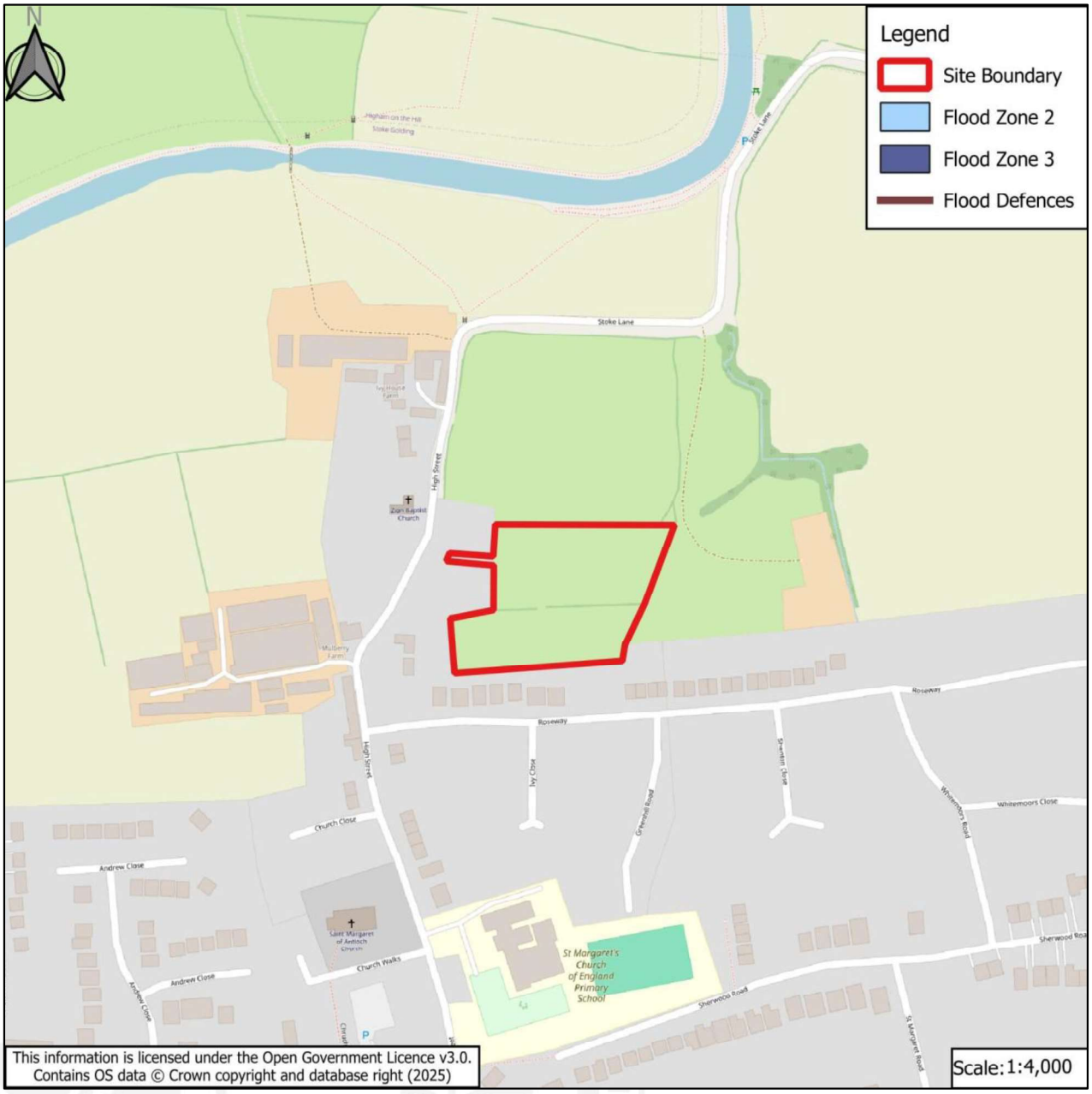
Risk of Flooding from Rivers and Seas

4.3 The Environment Agency (EA) has produced a resource known as the Flood Map for Planning, which identifies areas at risk of flooding from Main Rivers and the sea. An extract of this mapping is included for reference as Figure 4.1.

4.4 The site is shown to be wholly within Flood Zone 1 (Low Probability). Flood Zone 1 is defined in the NPPF as land having less than a 0.1% annual probability of river or sea flooding.

4.5 A review of historic flood mapping the Environment Agency (EA) shows there are no recorded instances of flooding from fluvial sources near to the site, however, this does not mean that no flooding has occurred around the site in the past.

Figure 4.1 Risk of Flooding from Rivers and Seas



4.6 As such, the site is considered at low risk of flooding from fluvial sources.

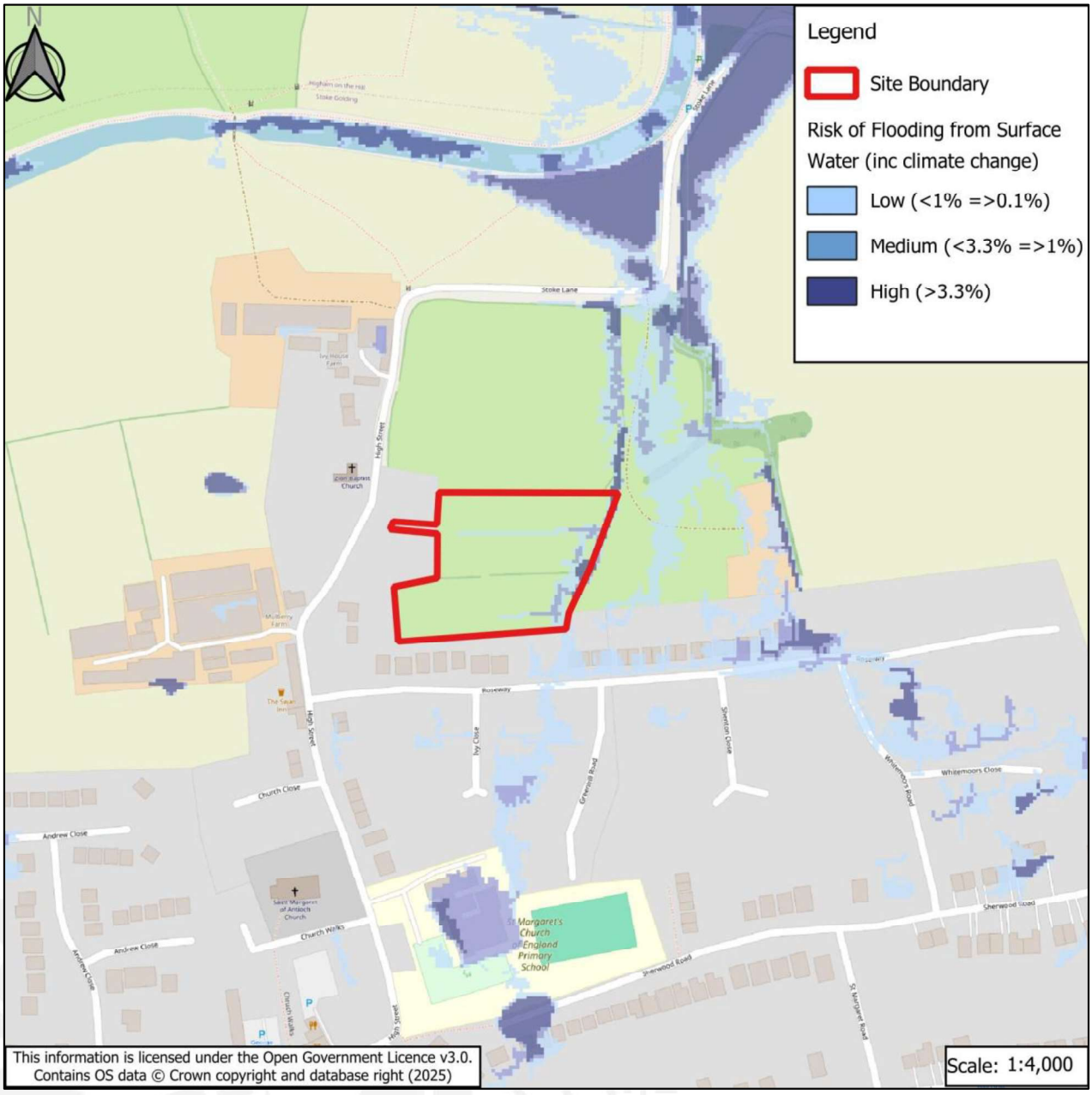
Risk of Flooding from Surface Water

4.7 The risk of flooding from surface water has been mapped by the EA on a strategic scale to understand areas that may be susceptible to ponding or routing of surface water during periods of extreme rainfall. An extract of this mapping including a 2050s epoch climate change uplift is included as Figure 4.2.

4.8 The mapping shows most of the site to be at a very low risk of flooding from surface water, with a small area of low-high risk found along the eastern boundary.

4.9 This area of high risk to the east also is indicated to extend northwards beyond the site boundary towards Stoke Lane and the Ashby-de-la-Zouch Canal which indicates an existing surface water flow path or on-site ditch flowing south to north.

Figure 4.2 Risk of Flooding from Surface Water



4.10 Since the vast majority of the site is at very low risk of surface water flooding, the risk of flooding from surface water is considered low.

Sewers

4.11 Flooding from sewers typically results from the network capacity being exceeded or because of blockage to key elements. Flooding usually occurs by way of surcharging manholes, gullies, or other features that allow water from the sewers to reach the surface, resulting in overland flows that can affect nearby properties.

4.12 Sewer Asset Plans from Severn Trent Water, included as **Appendix D**, shows a foul sewer within the site boundary and a combined sewer junction north of the site boundary which receives foul and surface water drainage from Stoke Golding from the south.

4.13 Elevations on site and the surrounding area, suggest any potential surcharged flows from the combined sewer to the north would be encouraged, with topography, to the south, away from the site.

4.14 Asset records do not show private sewers and Severn Trent Water are unable to rule out the existence of a private network within the site boundary.

4.15 Given the above, the site is at low risk of flooding from sewers.

Canals

4.16 The Ashby-de-la-Zouch Canal is approximately 180m north of the site. However, due to the intervening topography as the canal is substantially downhill from the site, the risk of flooding from this source is negligible.

Reservoirs

4.17 The EA has produced strategic scale mapping showing the potential risk of flooding from the failure of large waterbodies and reservoirs, if the relevant impounding structure were to fail.

4.18 The mapping confirms the site is far removed from the extent of any modelled flooding from such sources. Furthermore, a review of OS mapping does not identify any other reservoirs or waterbodies nearby to the site that could pose a risk of flooding.

4.19 Therefore, the risk of flooding from reservoirs and large waterbodies is low.

5.0 FLOOD RISK MITIGATION

Vulnerability Classification of Proposed Development

5.1 The National Planning Practice Guidance: Flood Zone and Flood Risk Tables provide information on the vulnerability classification of various developments. The proposed residential development end use of this site falls in the 'more vulnerable' classification. A comparison of the 'more vulnerable' use within the development proposals in Flood Zone 1, suggests development proposals are acceptable and in accordance with the NPPF, as shown in Table 5.1.

Table 5.1: Flood Risk Vulnerability and Flood Zone 'Compatibility' from Flood Risk and Coastal Change – Planning Practice Guidance.

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

Key: ✓ Development is appropriate x Development should not be permitted

Sequential Arrangement

5.2 All types of development are considered acceptable uses within Flood Zone 1 (Low Probability) in line with the Sequential Test guidance included within the NPPF and PPG.

5.3 The site is inherently sequentially preferable due to its location in Flood Zone 1 and concluded to be at low risk of all other sources, and therefore passes the requirements of the Sequential Test.

5.4 Whilst areas at low risk of surface water flooding are likely to be resolved as part of initial groundworks and surface water that falls directly from the site is to be attenuated within the sites positively drained system, the presence of an existing flow path may require further arrangements to pass the sequential test.

Development Levels

5.5 It is recommended that appropriate design of external levels and their relation to building thresholds considers the residual risk from groundwater and overland flows.

5.6 Finished floor levels should be designed so there is a nominal threshold above surrounding ground levels, in accordance with the relevant building regulations, and external levels should be designed so any surface flows shed away from buildings and towards positively drained areas.

5.7 As an existing surface water flow path is shown on site the surface water flood risk mapping and due to the use classification of development, to mitigate against this source of flood risk it is recommended that any proposed dwellings situated in areas of high to medium surface water flood risk have finished floor levels raised 300mm above that of the estimated flood level. If certainty about the estimated flood level cannot be discerned, then raising finished floor levels 600mm may be appropriate.

5.8 If not feasible to raise finished floor levels, then it may be appropriate to propose flood resilience or resistance measures installed to appropriate standards and codes of practice.

6.0 SURFACE WATER MANAGEMENT STRATEGY

Context

6.1 This section of the report will focus on the surface water management strategy for the site. It will set out the principles of the proposed drainage strategy and demonstrate how the local and national guidance has been considered. This will include justification of; specific surface water discharge rates, the volume of attenuation required and sustainable drainage systems to be included.

Sources of Information

6.2 A review of relevant information and guidance from a range of sources has been undertaken and includes the following key documents;

- National Planning Policy Framework (NPPF), February 2025
- Non-Statutory Technical Standards for Sustainable Drainage Systems, March 2015
- Water UK, Sewage Sector Guidance, October 2019
- CIRIA, C753 The SuDS Manual, 2015
- HM Government, The Buildings Regulations 2010, Drainage and Water Disposal (Part H), 2015
- Hinckley and Bosworth Borough Council 'The Good Design Guide' Supplementary Planning Document, February 2020

6.3 The NPPF specified that surface water arising from a developed site should, as far as is practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development.

6.4 Opportunities to reduce the flood risk to the site itself and elsewhere, taking climate change into account, should be investigated. The drainage proposals within this strategy have been prepared to meet planning policy requirements.

6.5 In their role as Lead Local Flood Authority (LLFA), Leicestershire County Council (LCC) has prepared a supplementary planning guidance document titled 'Lead Local Flood Authority Statutory Consultation Checklist.' This section of the report has aligned with these requirements to prepare the necessary information.

Surface Water Outfall

6.6 Prevailing Surface water arising from developed sites should, as far as practical, be managed in a sustainable manner to mimic the surface water flows arising from the undeveloped site. When considering the surface water discharge the SuDS hierarchy needs to be adhered to. The SuDS hierarchy states that runoff from the development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy:

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

Priority 1: Collected for non-potable use

6.7 Consideration should be given to the implementation of rainwater harvesting systems including but not limited to; water buts or green planters to ensure water re-use. The first 5mm of rainfall will be collected via rainwater harvesting techniques. However, given the scale of development, and attenuation requirements calculated, it is, at this stage, not considered feasible to have collection of rainwater for non-potable uses to provide a wholesale means of surface water runoff attenuation within the site boundary. As such, an alternative method of disposal should be investigated.

Priority 2: Infiltrated to the ground

6.8 The site is underlain by of clay and silt with superficial deposits of Bosworth Clay Member. This suggests a limited potential for infiltration due to the generally impermeable nature of clay.

6.9 The site is also shown to be wholly underlain by a superficial geology comprising Gunthorpe Member - Mudstone. This suggests a limited potential for infiltration due to containing subordinate layers of clays and silts.

6.10 The actual ground conditions and how the sub-strata perform in infiltration is to be confirmed with on-site soil and soakage testing at a later date.

6.11 Based on the available geographical and hydrological information, it is assumed that infiltration will be unfeasible at this development.

Priority 3: Discharged to an above ground surface water body

6.12 According to the EA Main River map, no main rivers exist within the vicinity of the site.

6.13 There is an existing surface water flow path that abuts the eastern site boundary and from review of the existing topography and sewer maps looks to be fed by surface water sewers in Stoke Golding to the south. This would indicate a ditch flowing south to north however heavy vegetation means this was not able to be wholly surveyed.

6.14 However, on-site investigations are inconclusive to whether any ditch has connectivity to a wider watercourse network and whether on-site levels provide the necessary cover to connect the positively drained system without substantive regrading of any existing ditch.

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

6.15 There are no existing surface water sewers within the site as upstream surface water sewers subsequently discharge into combined sewer networks.

Priority 5: Discharged to a combined sewer

6.16 Combined sewers are shown directly to the north and are feasible to connect to. It is therefore proposed that surface water is to discharge to Manhole 9601, shown in sewer records in **Appendix D**, subject to Severn Trent Water approval.

Land Use

6.17 Table 6.1 below summarises the existing and proposed land uses for the site. The site currently comprises open green space, with this being used to inform the existing land use. The proposed land use has been calculated using the proposed layout, which is also included as **Appendix B**.

Table 6.1: Land Use Summary

Land Use Type	Existing Site Areas		Proposed Site Areas	
	ha	%	ha	%
Impermeable Areas	0.00	0	0.46	58
Green Landscape / Permeable Areas	0.79	100	0.34	42
Total	**0.79**	**100**	**0.79**	**100**

Urban Creep Allowances

6.11 Urban Creep in the conversion of permeable surfaces to impermeable ones over time, e.g., extensions to existing buildings. It has been shown that, over the lifetime of development, urban creep can increase impermeable areas by as much as 10%. An allowance of 10% for increases in the impermeable area due to urban creep over the lifetime of the development will be included within the drainage calculations. The impermeable area is therefore adjusted to 0.504ha.

Climate Change Allowances

6.12 The influence of climate change on rivers and watercourses is likely to increase the frequency and likelihood of flood events across the UK. When considering surface water runoff from the site, the increase in peak rainfall intensity varies over the lifetime of the development.

6.13 When residential developments with a lifetime beyond the 2070s are proposed, the Flood Risk Assessments: Climate Change Allowances Guidance requires the use of the Upper End allowance for the 2070s epoch (2061 to 2125). This means a climate change uplift of 40% is to be applied to any calculations.

6.14 Table 6.2 below, provides an extract of the climate change allowances from the Flood Risk Assessments: Climate Change Allowances Guidance.

Table 6.2: Peak Rainfall Itensity Allowances from the Flood Risk Assessments: Climate Change Allowances Guidance

	Total potential change anticipated for the '2050s' (2022 to 2060)		Total potential change anticipated for the '2070s' (2061 to 2125)	
Annual Exceedance Probability	**Central**	**Upper End**	**Central**	**Upper End**
3.3% AEP	20	35	25	35
1% AEP	20	40	25	40

Discharge Rate

6.15 In its current form, the site is considered undeveloped. The greenfield QBAR was calculated using the FEH module within Causeway Flow. For an impermeable area plus urban creep of 0.504ha, the QBAR greenfield rate has been calculated as 0.2l/s.

6.16 However, as this rate is low, the discharge rate has been increased to 2.0l/s in line with Leicestershire County Council guidance to decrease the risk of blockage.

Drainage Strategy

6.17 The overall drainage strategy has been based on the land use table, discharge rates and the current concept masterplan presented in **Appendix B**. In accordance with the National SuDS Standards, the strategy involves conveying surface water flows to attenuation features across the site before discharging to an offsite sewer to an existing chamber in Stoke Road to the north. This chamber is shown to be part of an overflow sewer from the combined sewers in the adjacent field to the north, as shown in the STW sewer maps in **Appendix D**.

6.18 Surface water flows for an impermeable area plus urban creep of 0.504ha will be conveyed to the proposed geocellular tank and attenuation basin on site. A total storage volume of 360.0m^3 is required within the geocellular tank and attenuation basin to allow surface water to discharge at 2.0l/s into the proposed off-site sewer and cater for all events up to and including the 1%AEP40CC.

6.19 The geocellular tank is proposed under a private driveway and parking bays and provides a storage volume of 200.2m^3 to cater up to and including the 1%AEP40CC.

6.20 The attenuation basin is at the sites northeast corner at the bottom of the positively drained system and a storage volume of 159.8m^3 is required in to allow surface water to discharge at 2.0l/s into the proposed off-site sewer and cater for all events up to and including the 1%AEP40CC. The basin has been designed to accommodate a 1:3 gradient for the internal slopes and additional topography is to be determined to calculate the requirements for the outer batter slopes in the detailed design stage.

6.21 Additional drainage features are included as part of the proposed development in the form of permeable paving in private driveways to provide extra storage and provide a first treatment stage for any runoff. The storage provided by permeable paving has been excluded from storage calculations at this stage.

6.22 The calculations for the proposed design can be seen in **Appendix F**, and a drainage strategy based on the principles above is shown in drawing 29782_02_010_01 in **Appendix G**.

Applicable SuDS Techniques

6.23 The National Standards for Sustainable Drainage Systems that deals with SuDS cover a whole range of sustainable approaches to surface water drainage management including:

- source control measures including rainwater recycling and drainage;
- filter strips and swales, which are vegetated features that hold and drain water downhill mimicking natural drainage patterns;
- filter drains and porous pavements to allow rainwater and run-off to infiltrate into permeable material below ground and provide storage if needed; and
- basins and ponds to hold excess water after rain and allow controlled discharge that avoids flooding.

6.24 Each of the five SuDS considerations listed above is discussed below in Table 6.4, with reference to their suitability for the proposed development.

Table 6.4: Suitability of SuDS techniques

	COMPONENT	SUITABILITY	REASON
Source Control	Rainwater Harvesting	Yes	Water butts could be used to store run-off from roofs before discharge into the drainage system. Any storage is not to be included in calculations.
	Bio-retention Systems/ Rain Gardens	No	More appropriate SuDS features can be accommodated within the development and are preferred.
	Permeable Paving	Yes	Permeable paving is suitable for the proposed development within private parking bays.
Proprietary Systems	Proprietary bio-retention systems	No	More appropriate SuDS features can be accommodated within the development and are preferred.
Infiltration	Infiltration trenches/ Soakaways	No	Infiltration is unlikely to be feasible.
Filtration	Open Swales, Filter Strips/ Drains	No	Placement of proposed dwellings mean a conveyance swale is unfeasible.
Retention/ Detention	Detention Basin, Attenuation Pond/ Tanks	Yes	The proposed geocellular tank and attenuation basin will provide surface water storage before discharging from the site.

Surface Water Quality

6.25 The CIRIA SuDS Manual C753, indicates the minimum treatment indices appropriate for contributing pollution hazards for different land use classifications. To deliver adequate treatment, the selected SuDS components should have a total pollution mitigation index (for each contaminant) that equals or exceeds the pollution hazard index.

6.26 When using more than one SuDS component in series the mitigation indices are multiplied by a factor of 0.5. This is to account for the reduced performance of secondary or tertiary components associated with the already reduced inflow concentrations. The SuDS Mitigation Index from the additional components will be added together up to a maximum value of 0.95, regardless of the number of components in series.

6.27 Surface water runoff from residential roofs will have a very low pollution hazard level, whilst the residential parking areas will have a low pollution hazards index.

6.28 The pollution hazard indices, mitigation indices of each SuDS component and the accompanying calculations are provided in Table 6.5.

Table 6.5: SuDS Mitigation Indices (from CIRIA SuDS Manual)

SuDS Component	Mitigation Indices		
	Total Suspended Solids	*Metal*	*Hydrocarbons*
Residential Roofs	0.2	0.2	0.05
Residential Parking Areas and Low Traffic Roads	0.5	0.4	0.4
Permeable Paving	0.7	0.6	0.7
Attenuation Basin	0.5	0.5	0.6
SuDS Mitigation Index	**0.95**	**0.85**	**0.95**
Mitigation Requirement Met?	**Yes**	**Yes**	**Yes**

6.28 For the very low to low pollution hazard levels generated at the site, the proposed permeable paving, swales and attenuation basins would provide sufficient treatment in accordance with the Simple Index Approach.

Exceedance and Flow Routing

6.29 The risk of overland flooding from adjacent land to dwellings is very low. The design of levels and features on the site will follow best practice by ensuring any overland flow on the site is routed safely away from dwellings and to areas of lowest risk on site. Any surcharging and subsequent flooding of sewers on or in the vicinity of the site will also be mitigated by the flood routing described above. As such the risk of flooding on site from exceedance events and flood flow routes is very low.

Maintenance and Management

6.30 An integrated approach to the maintenance and management of SuDS systems is a requirement of the NPPF and by the Flood & Water Management Act 2010. The aim of a maintenance and management plan is to ensure that there is a clear understanding of drainage responsibilities and that a maintenance regime is

implemented for all new drainage systems for the lifetime of the development, so they can continue to function as required.

6.31 Surface water systems will be offered to Severn Trent Water for adoption.

6.32 All private drainage systems will be maintained by individual occupiers and landowners, or an appointed management company.

6.33 A proposed maintenance schedule that breaks down the maintenance requirements of the various proposed assets can be found in **Appendix I** and is in accordance with CIRIA C753 SuDS Manual guidance.

7.0 FOUL WATER DRAINAGE

7.1 According to The Building Regulations (2010), foul water drainage from new developments should be discharged into the following in order of priority:

- A public sewer, or;
- A private sewer communicating with a public sewer, or;
- A septic tank which has an appropriate form of secondary treatment, or;
- A cesspool.

7.2 Sewer records have been obtained from Severn Trent Water (see **Appendix D**). The sewer records show the presence of a foul water sewer of 225mm within the site adjacent to the proposed site access. There is also a 225mm combined water sewer running through the adjacent field immediately north of the site.

7.3 Severn Trent Water has confirmed that a proposed connection into the on-site foul sewer via Manhole 8403 is acceptable in a developer enquiry response. Severn Trent Water are statutorily obligated to accept foul flows from the development with the benefit of planning consent. The STW foul developer enquiry can be found in **Appendix E**.

7.4 Due to on-site levels a pumping station and subsequent rising main will be required to achieve a connection to the sewer with a new chamber. The rising main terminates and a gravity fed connection is shown to discharge into the existing sewer.

7.5 All foul water assets are to be offered to Severn Trent Water for adoption under an agreement under S104 of the Water Industry Act 1991.

7.6 The proposed foul water drainage options can be seen on drawing 29782_02_010_01 in **Appendix G**. Full details of the design, including the pumping station, will be confirmed at the detailed design stage.

8.0 CONCLUSIONS

8.1 MEC has been commissioned by A.R. Cartwright Construction Ltd to undertake a Flood Risk Assessment for a proposed residential development at Land off High Street, Stoke Golding. This assessment has been undertaken to ascertain the constraints of the development to the site and to assess the impact of the design, with respect to flood risk.

- The Flood Map for Planning shows the site is located within Flood Zone 1, which is defined as land with a 0.1% annual probability of flooding from rivers or the sea.
- The Environment Agency Risk of Flooding from Surface Water Map indicates that the majority of the site is at very low risk of surface water flooding. There is a vein of medium and high risk demonstrating an existing flow path at the site's eastern extent.
- To mitigate against surface water flood risk, it is recommended that any proposed dwellings situated in areas of high to medium surface water flood risk have finished floor levels raised 300mm above that of the estimated flood level. If certainty about the estimated flood level cannot be discerned, then raising finished floor levels 600mm may be appropriate.
- The site is at low risk of flooding from all other sources.
- Existing runoff conditions have been calculated using the FEH module within Flow Causeway. For an impermeable area plus urban creep of 0.504ha, the QBAR Greenfield Rate has been calculated as 0.2/s.
- In accordance with the National SuDS Standards, the strategy involves conveying surface water flows to a geocellular tank and attenuation basin before discharging to a proposed off -site surface water sewer. This sewer proposes to discharge into the combined sewer to the north at Manhole 9601.
- In total a storage volume of 360.0m^3 would be required within the attenuation to accommodate the 1%AEP40CC storm event.
- Additional drainage features such as permeable paving will be used across the site and will provide extra storage on-site. Permeable paving will act as a first treatment stage for any run-off and will ensure adequate surface water treatment is provided. These features have been excluded from calculations at this stage.
- It is proposed that foul water from the development will connect into the existing foul water systems within the site and this has been accepted by Severn Trent Water in a Developer Enquiry response.

8.2 With the above measures in place, the development of the site is unlikely to create any flood risk issues to the wider area.

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APPENDICES

APPENDIX A

MEC Consulting Group Ltd
The Old Chapel
Station Road
Hugglescote
Leicestershire
LE67 2GB

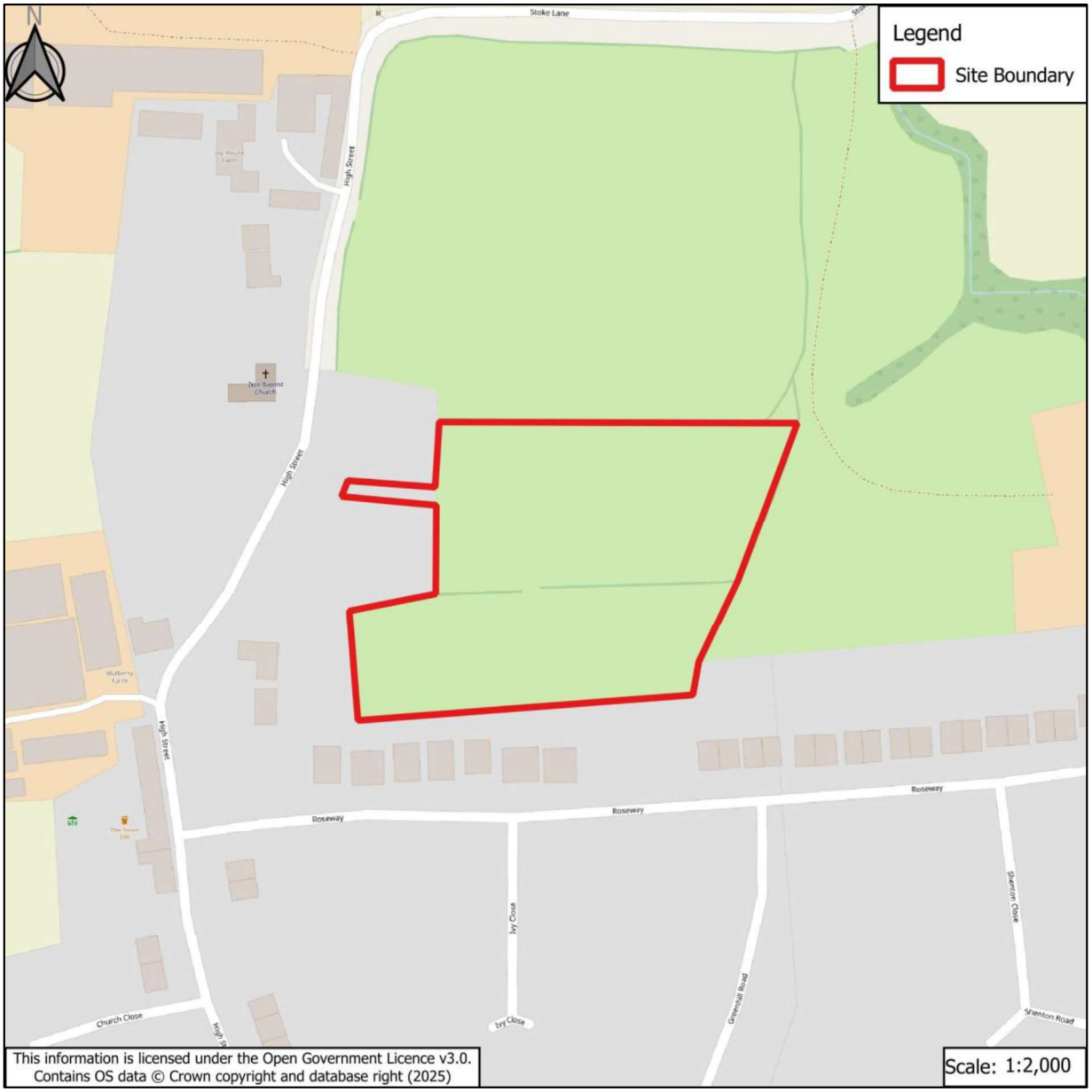
SITE LOCATION PLAN

Project: Stoke Golding, Hinckley

File Ref: 29782

O.S. Grid Ref: Easting: 439819 Northing: 297479

Postcode: CV13 6HA



MEC Ordnance Survey Licence No. 100055865

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APPENDICES

APPENDIX B

Proposed Residential Develoment @ *High Street , Stoke Golding*

Proposed Site Layout

Note: RED LINE IS APPROXIMATE

- Site Area (0.79ha)
- POS Area (1,230m²)
- Affordable Housing
- Existing house to be demolished
- Existing hedge to be removed
- Existing tree (TBC)
- Root Protection Area

HBBC required Housing Mix

Market	%	11.4	Affordable	%	7.6
1 bed	5	0.57	1 bed	30	2.28
2 bed	35	3.99	2 bed	40	3.04
3 bed	45	5.13	3 bed	25	1.9
4 bed	15	1.71	4 bed	5	0.38

	1 bedroom	2 bedrooms	3 bedrooms	4+ bedrooms
Market Housing	5%	35%	45%	15%
Affordable home ownership	20%	40%	30%	10%
Affordable housing (rented)	30%	40%	25%	5%

Table 1 Housing Mix required by tenure (Source: Leicester & Leicestershire Housing and Economic Needs Assessment (2022)

Stoke Golding
25NJ-StokeG-SCH01

Accommodation Schedule

Gross Site Area 0.79ha
Total Building area 1608m²

Cartwright

	HT ref	HT name	ft²	m²	No	Total ft²	Total m²
1 Beds							
Total 2							
AFF	1b1p_f	flat	408	37.9	2	816	75.8
2 Beds							
Total 3							
AFF	2b3p	Hartshill	700	65.0	3	2100	195
	HLL	Hartshill	760	70.6	4	3028	282.4
3 Beds							
Total 6							
AFF	3b4p	house	908	84.4	3	2724	253.2
	WAR	Warwick	1039	96.0	3	3117	288
4 Beds							
Total 4							
	New 4 Bed		1528	142.0	2	3056	284
	FIL	Fillongley	1238	115.0	2	2475.72	230
		Total:			19	17317 ft²	1608 m²

hayward ARCHITECTS LTD
19 Station Rd
Hinckley
Leicestershire
LE10 1AW
Tel: 01455 635665
Fax: 01455 618971
www.hayward-architects.co.uk

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Drawing No: 25-31-SK01-C

Drawing Stage: Design Development

Scale: 1:500@A3

Date: 03.04.25

Drawn By: JET

Rev	Date	By	Description
A	07.04.25	JET	Red line amended to exclude current informal access strip
B	08.04.25	JET	RPAs added and amends for PS email (07.04.25@10.30)
C	22.04.25	JET	New 4 bed type changed as per AC email

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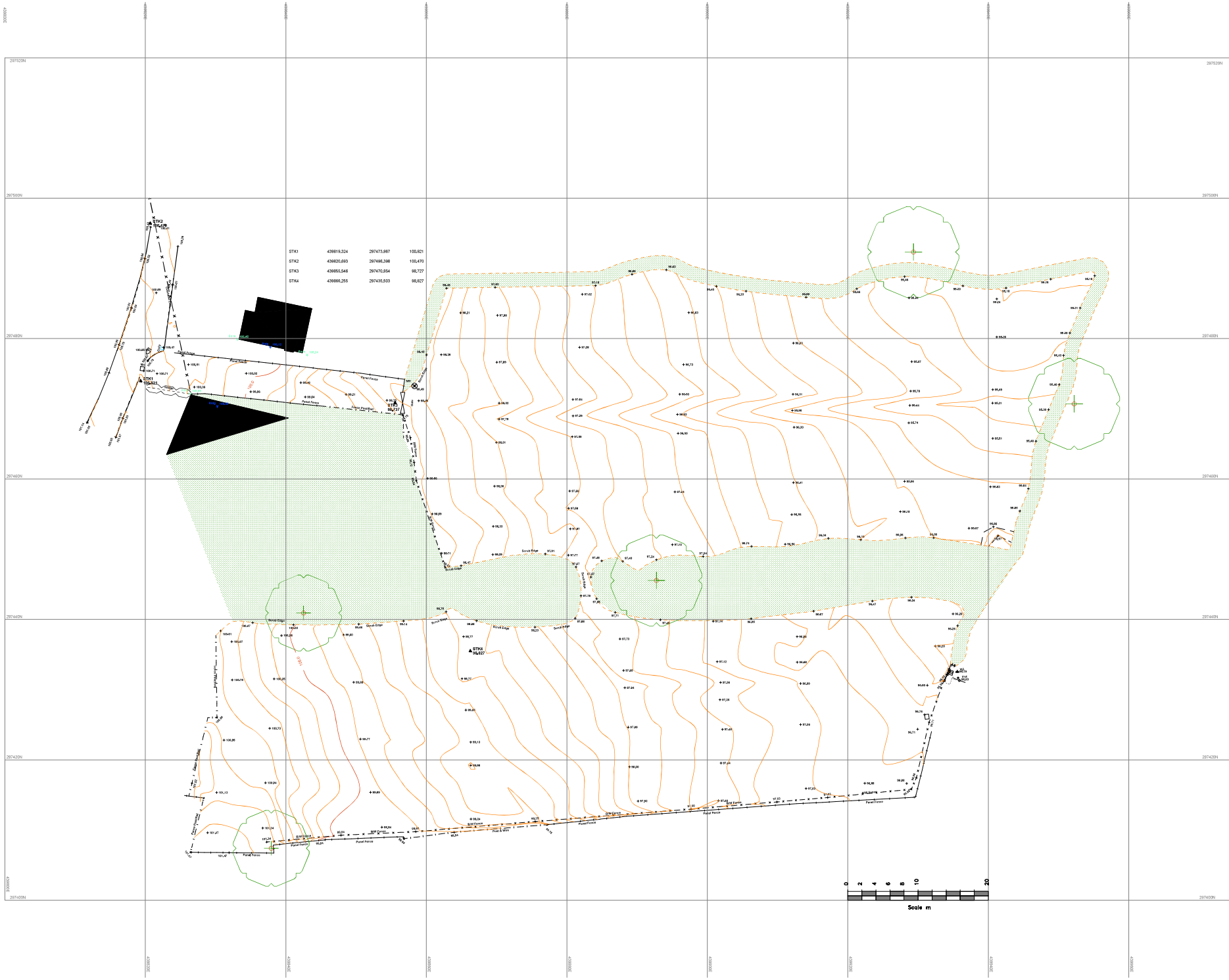
APPENDICES

APPENDIX C



N

Notes :

This plan should only be used for its original purpose. SV Surveying Ltd accepts no responsibility for this plan if supplied to any other party other than the original client.

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

Drainage information (where applicable) has been visually inspected from the surface and should be treated as approximate only.

Tree information (where applicable) has been surveyed from ground level and therefore should be treated as approximate only.

Contours are drawn at 0.2m intervals

The survey has been fixed to GPS OSGB 1936 using the active GPS network.

Legend:

Building Canopy / Overhang		Trig	Trig Pillar
Buildings / walls		Ridg	Ridge Level
Verge line		Eave	Eave Level
Concrete edge		DPC	Dpc Level
Centre Line		FL	Floor Level
Barrier		Soff	Soffit Level
Hedge		TBo	Control Box
Security Fence		LP	Lamp Post
Panel Fence		SP	Sign Post
Open Fence		post	Post
Overhead Powerline		FS	Flag Staff
Chambers		MG	Gas Marker
STN1	Survey Station & Name	EP	Electric Post
BM	Bench Mark	TP	Telegraph Post
TBM	Temporary Bench Mark	inv	Pipe Invert
		GU	Gully
	Tree / Sapling	RP	Rodding Point
		BT	BT Cover
		CO	Cover Unknown
		EC	Electricity Cover
	Area Of Undergrowth	FH	Fire Hydrant
		GAS	Gas Cover
	Gate	SV	Stop Valve
IC	Inspection chamber	TV	Tv Cover
CL	Cover level	WM	Water Meter
IL	Invert level	BB	Bollard
Inv Ø0.25	Pipe invert (diameter)	BS	Bus Stop
Gy	Gully	ER	Earthing Rod
Rg	Back Gully	BOL	Post Box
MH	Manhole	MS	Mile Stone
		TL	Traffic Light
		GV	Gas Valve
		PEG	Peg

LAND SURVEYS + COMPUTER MODELLING
BUILDING SURVEYS + SITE ENGINEERING

SV SURVEYING LTD

76B MARKET STREET
ASHBY-DE-LA-ZOUCH
LEICESTERSHIRE
LE65 1AP

Tel 01530 560837
Fax 01530 560123
Email: info@svsurveying.co.uk
www.svsurveying.co.uk

Project

CARTWRIGHT HOMES STOKE GOLDING

Drawing

TOPOGRAPHIC SITE SURVEY

Scales	Drawn/Paper Size
1:200	KM/A1
Survey Date	**Drawing No**
01/10/2021	21279-21-01

DO NOT SCALE

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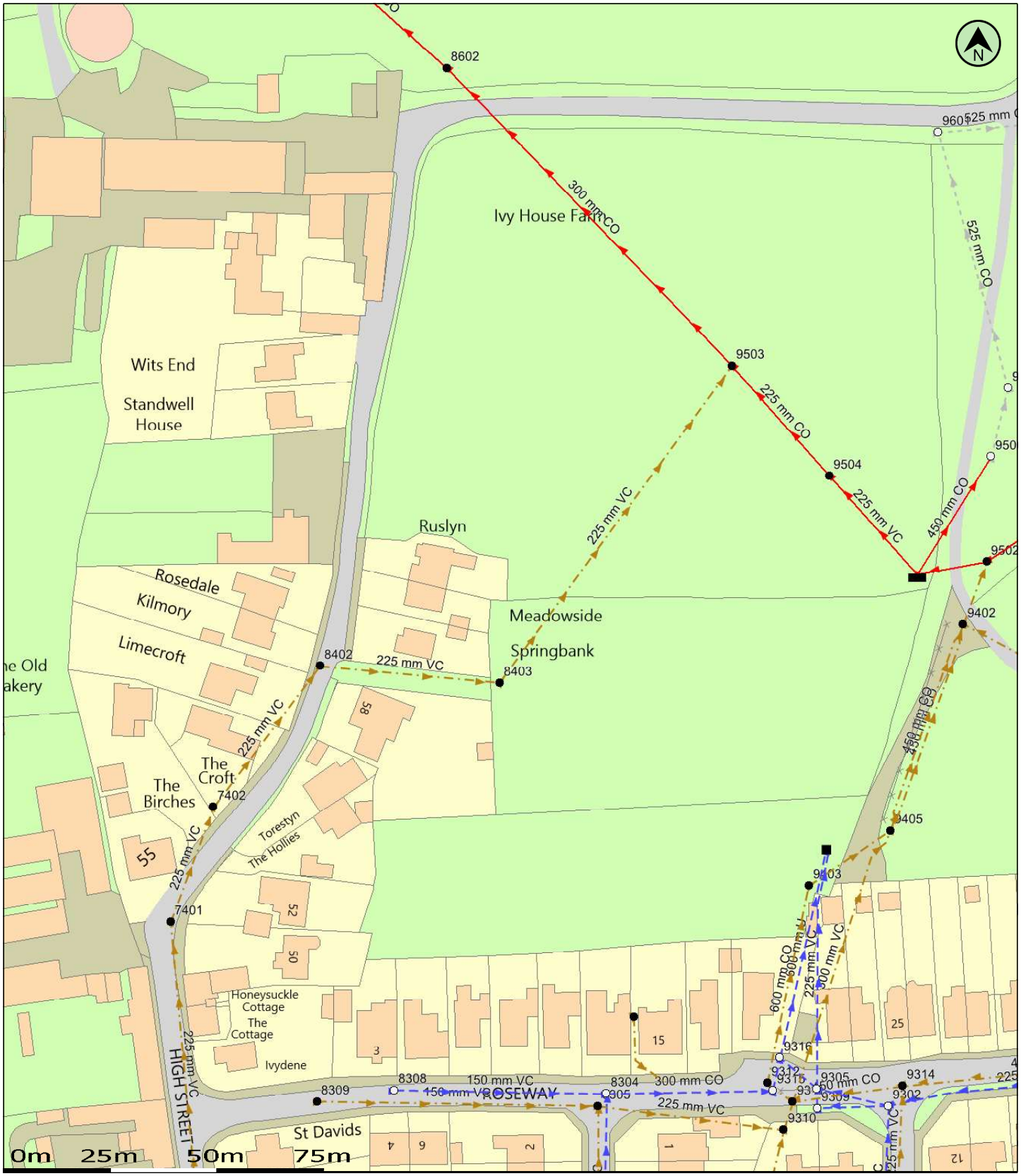
APPENDICES

APPENDIX D



(c) Crown copyright and database rights 2025 Ordnance Survey AC0000808122

Data updated: 14/06/25	Map Centre: 439862,297495	Our Ref: 1825711 - 1	Powered by digdat
(c) Crown copyright and database rights 2025 Ordnance Survey AC0000808122	Scale: 1:1250	Date: 15/07/25	Wastewater Plan A4

Public Foul Gravity/Lateral Drain
Public Combined Gravity/Lateral Drain
Public Surface Water Gravity/Lateral Drain
Pressure Foul
Pressure Combined
Pressure Surface Water
Highway Drain
Overflow Pipe
Disposal Pipe
Culverted Water Course
Pumping Station
Fitting
Manhole Foul
Manhole Surface
Abandoned Pipe
Chamber
Section 104 sewers are shown in green
Private sewers are shown in magenta

emma.harris@m-ec.co.uk

29782

SEVERN TRENT

Do not scale off this map. The plan and any information supplied with it is furnished as a general guide, is only valid at the date of issue and no warranty as to its correctness is given or implied. In particular this plan and any information shown on it must not be relied upon in the event of any development or works (including but not limited to excavations) in the vicinity of SEVERN TRENT WATER assets or for the purposes of determining the suitability of a point of connection to the sewerage or distribution systems. Reproduction by permission of Ordnance Survey on behalf of HMSO. ©Crown Copyright and database rights 2025 All rights reserved. Ordnance Survey licence number AC0000808122. Document users other than SEVERN TRENT WATER business users are advised that this document is provided for reference purpose only and is subject to copyright, therefore, no further copies should be made from it.

GENERAL CONDITIONS AND PRECAUTIONS TO BE TAKEN WHEN CARRYING OUT WORK ADJACENT TO SEVERN TRENT WATER'S APPARATUS

Please ensure that a copy of these conditions is passed to your representative and/or your contractor on site. If any damage is caused to Severn Trent Water Limited (STW) apparatus (defined below), the person, contractor or subcontractor responsible must inform STW immediately on:
0800 783 4444 (24 hours)

a) These general conditions and precautions apply to the public sewerage, water distribution and cables in ducts including (but not limited to) sewers which are the subject of an Agreement under Section 104 of the Water Industry Act 1991(a legal agreement between a developer and STW, where a developer agrees to build sewers to an agreed standard, which STW will then adopt); mains installed in accordance with an agreement for the self-construction of water mains entered into with STW and the assets described at condition b) of these general conditions and precautions. Such apparatus is referred to as "STW Apparatus" in these general conditions and precautions.

b) Please be aware that due to The Private Sewers Transfer Regulations June 2011, the number of public sewers has increased, but many of these are not shown on the public sewer record. However, some idea of their positions may be obtained from the position of inspection covers and their existence must be anticipated.

c) On request, STW will issue a copy of the plan showing the approximate locations of STW Apparatus although in certain instances a charge will be made. The position of private drains, private sewers and water service pipes to properties are not normally shown but their presence must be anticipated. This plan and the information supplied with it is furnished as a general guide only and STW does not guarantee its accuracy.

d) STW does not update these plans on a regular basis. Therefore the position and depth of STW Apparatus may change and this plan is issued subject to any such change. Before any works are carried out, you should confirm whether any changes to the plan have been made since it was issued.

e) The plan must not be relied upon in the event of excavations or other works in the vicinity of STW Apparatus. It is your responsibility to ascertain the precise location of any STW Apparatus prior to undertaking any development or other works (including but not limited to excavations).

f) No person or company shall be relieved from liability for loss and/or damage caused to STW Apparatus by reason of the actual position and/or depths of STW Apparatus being different from those shown on the plan.

In order to achieve safe working conditions adjacent to any STW Apparatus the following should be observed:

1. All STW Apparatus should be located by hand digging prior to the use of mechanical excavators.

2. All information set out in any plans received from us, or given by our staff at the site of the works, about the position and depth of the mains, is approximate. Every possible precaution should be taken to avoid damage to STW Apparatus. You or your contractor must ensure the safety of STW Apparatus and will be responsible for the cost of repairing any loss and/or damage caused (including without limitation replacement parts).

3. Water mains are normally laid at a depth of 900mm. No records are kept of customer service pipes which are normally laid at a depth of 750mm; but some idea of their positions may be obtained from the position of stop tap covers and their existence must be anticipated.

4. During construction work, where heavy plant will cross the line of STW Apparatus, specific crossing points must be agreed with STW and suitably reinforced where required. These crossing points should be clearly marked and crossing of the line of STW Apparatus at other locations must be prevented.

5. Where it is proposed to carry out piling or boring within 20 metres of any STW Apparatus, STW should be consulted to enable any affected STW Apparatus to be surveyed prior to the works commencing.

6. Where excavation of trenches adjacent to any STW Apparatus affects its support, the STW Apparatus must be supported to the satisfaction of STW. Water mains and some sewers are pressurised and can fail if excavation removes support to thrust blocks to bends and other fittings.

7. Where a trench is excavated crossing or parallel to the line of any STW Apparatus, the backfill should be adequately compacted to prevent any settlement which could subsequently cause damage to the STW Apparatus. In special cases, it may be necessary to provide permanent support to STW Apparatus which has been exposed over a length of the

excavation before backfilling and reinstatement is carried out. There should be no concrete backfill in contact with the STW Apparatus.

8. No other apparatus should be laid along the line of STW Apparatus irrespective of clearance. Above ground apparatus must not be located within a minimum of 3 metres either side of the centre line of STW Apparatus for smaller sized pipes and 6 metres either side for larger sized pipes without prior approval. No manhole or chamber shall be built over or around any STW Apparatus.

9. A minimum radial clearance of 300 millimetres should be allowed between any plant or equipment being installed and existing STW Apparatus. We reserve the right to increase this distance where strategic assets are affected.

10. Where any STW Apparatus coated with a special wrapping is damaged, even to a minor extent, STW must be notified and the trench left open until the damage has been inspected and the necessary repairs have been carried out. In the case of any material damage to any STW Apparatus causing leakage, weakening of the mechanical strength of the pipe or corrosion-protection damage, the necessary remedial work will be recharged to you.

11. It may be necessary to adjust the finished level of any surface boxes which may fall within your proposed construction. Please ensure that these are not damaged, buried or otherwise rendered inaccessible as a result of the works and that all stop taps, valves, hydrants, etc. remain accessible and operable. Minor reduction in existing levels may result in conflict with STW Apparatus such as valve spindles or tops of hydrants housed under the surface boxes. Checks should be made during site investigations to ascertain the level of such STW Apparatus in order to determine any necessary alterations in advance of the works.

12. With regard to any proposed resurfacing works, you are required to contact STW on the number given above to arrange a site inspection to establish the condition of any STW Apparatus in the nature of surface boxes or manhole covers and frames affected by the works. STW will then advise on any measures to be taken, in the event of this a proportionate charge will be made.

13. You are advised that STW will not agree to either the erection of posts, directly over or within 1.0 metre of valves and hydrants,

14. No explosives are to be used in the vicinity of any STW Apparatus without prior consultation with STW.

TREE PLANTING RESTRICTIONS

There are many problems with the location of trees adjacent to sewers, water mains and other STW Apparatus and these can lead to the loss of trees and hence amenity to the area which many people may have become used to. It is best if the problem is not created in the first place. Set out below are the recommendations for tree planting in close proximity to public sewers, water mains and other STW Apparatus.

15. Please ensure that, in relation to STW Apparatus, the mature root systems and canopies of any tree planted do not and will not encroach within the recommended distances specified in the notes below.

16. Both Poplar and Willow trees have extensive root systems and should not be planted within 12 metres of a sewer, water main or other STW Apparatus.

17. The following trees and those of similar size, be they deciduous or evergreen, should not be planted within 6 metres of a sewer, water main or other STW Apparatus. E.g. Ash, Beech, Birch, most Conifers, Elm, Horse Chestnut, Lime, Oak, Sycamore, Apple and Pear. Asset Protection Statements Updated May 2014

18. STW personnel require a clear path to conduct surveys etc. No shrubs or bushes should be planted within 2 metre of the centre line of a sewer, water main or other STW Apparatus.

19. In certain circumstances, both STW and landowners may wish to plant shrubs/bushes in close proximity to a sewer, water main of other STW Apparatus for screening purposes. The following are shallow rooting and are suitable for this purpose: Blackthorn, Broom, Cotoneaster, Elder, Hazel, Laurel, Privet, Quickthorn, Snowberry, and most ornamental flowering shrubs.

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
8602	C	96.2	94.07	2.13
9502	C	95.81	94.52	1.29
9503	C	96.07	94.36	1.71
9504	C	95.18	94.4	0.78
	F			
7401	F	103.43	101.74	1.69
7402	F	101.91	100.99	0.92
8305	F	99.06	97.38	1.68
8309	F	103.36	101.33	2.03
8402	F	100.69	99.9	0.79
8403	F	98.5	97.55	0.95
9310	F	98.41	97.25	1.16
9311	F	97.9	97.1	0.8
9312	F	97.91	95.14	2.77
9314	F	97.65	95.51	2.14
9402	F	95.9	94.77	1.13
9403	F	96.68	94.84	1.84
9405	F	96.38	94.73	1.65
8304	S	98.96	97.06	1.9
8308	S	103.26	101.51	1.75
9302	S	97.69	96.54	1.15
9305	S	97.83	96.1	1.74
9309	S	98.02	96.21	1.82
9315	S	97.97	96.16	1.81
9316	S	97.81	95.76	2.05
9505	S	94.59	93.45	1.14
9506	S	95.16	94.04	1.12
9601	S	93.71	92.46	1.25

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APPENDICES

APPENDIX E

WONDERFUL ON TAP

Severn Trent Water Ltd
Oxley Moor Road
Wolverhampton
WV9 5HN

www.stwater.co.uk
network.solutions@severntrent.co.uk

Contact: Jasveer Bullock
Contact No: 07970198053

Your ref:
Reference: 1153909

Emma Harris
MEC Consulting Group Ltd
The Old Chapel
Station Road
Hugglescote
LE67 2GB

16th July 2025

Dear Emma

Proposed Development: Land at High Street, Stoke Golding, Nuneaton, CV13 6HG (X – 439874, Y – 297436)

I refer to your 'Development Enquiry Request' for the development of 19 new dwellings at the above named site. Please find enclosed the sewer records that are included in the fee together with the Supplementary Guidance Notes which refer to surface water disposal from development sites.

Public Sewers in Site – Required Protection

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 within your client's land. These sewers would also have protective strips 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 be advised, the records show that there is 225mm diameter public foul sewer and a 225mm diameter public surface water sewer located within the site boundary, which require a 6-metre protective strip (3 metres on either side) from any new buildings. There is also a 600mm diameter public foul sewer, 600mm diameter public surface water sewer located within the site, these require a 10 metre protective strip (5 metres on either side) from any new buildings.

Foul Water Drainage

I can confirm we would not have any objections to the anticipated additional foul flows of approximately 0.30 litres/second 2xDWF for a gravity connection to the receiving 225mm diameter public foul sewer located within your site, as this will not have an adverse impact

on the network. Alternatively, a connection to the 225mm diameter public combined water sewer to manhole 9504 would also be acceptable.

Therefore, a connection to the public sewer (direct or indirect) is acceptable subject to a formal Section 106 sewer connection approval (see later.)

Surface Water Drainage

If following testing, it is demonstrated that soakaways would not be possible on the site; satisfactory evidence will need to be submitted from the SI consultant **(extract or a supplementary letter**).

If soakaways are not possible, there appears to be an outfall to a ditch located within the site you would need to investigate for the disposal of the surface water run-off, at a rate of 5 litres /second /hectare (greenfield rate). This would satisfy SGN1 (enclosed), in accordance with Leicestershire Council SUDS Policy as the Lead Local Flood Authority (LLFA) for the area and statutory consultee in the planning process. Please see the guidance notes attached for further information.

Subject to flows being agreed with the Lead Local Flood Authority.

New Connections

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

Please quote ref: 1153909 in any future correspondence (including e-mails) with STW Limited. Please note that 'Development Enquiry' responses are only valid for 6 months from the date of this letter.

Yours sincerely,

J Bullock

Jasveer Bullock (Mrs)
Network Solutions - Developer Services

MEC
Consulting Group

APPENDICES

APPENDIX F

The Old Chapel, Station Road, Hugglescote, Leicestershire, LE67 2GB
Telephone 01530 264753
Email group@m-ec.co.uk
www.m-ec.co.uk

MEC Consulting Group

Doc. Ref.	29782-CALC-0101
Sheet	1 of 11
Engineer	L. Hyland
Date	11 Aug 25
Revision	-

DESIGN CALCULATIONS FRONT SHEET

SCHEME	Stoke Golding, Hinckley
CLIENT	A.R. Cartwright Construction Ltd
ASPECTS OF SCHEME TO BE DESIGNED	Surface Water and Foul Sewer Design Surface water attenuation design and simulation results for the 50%AEP, 3.3%AEP35CC, and 1%AEP40CC event for the development site.
CODES OF PRACTICE, DESIGN SPECIFICATIONS & BRITISH STANDARDS	• Design and analysis of urban storm drainage. Wallingford Procedure Vol.1 • Sustainable Drainage Systems- Non-Statutory technical standards for Sustainable drainage systems- 2015 • The SuDS Manual – CIRIA C753
NOTES	Proposed runoff conditions have been calculated using FEH to calculate the Greenfield Discharge rate for the impermeable area plus urban creep of 0.504ha, the QBAR Greenfield rate has been calculated at 0.2l/s. This has been uplifted to discharge at 2l/s to reduce risk of system blockage. The strategy involves conveying surface water flows through a series of permeable paving, geo-cellular tank and an attenuation basin before discharging into a proposed off-site sewer. The calculations for the attenuation basin and tank have been carried out using Flow Causeway.

INDEX

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.084	5.00	98.842	1800	439868.995	297439.027	4.111
9	0.084	5.00	99.915	1350	439840.387	297481.999	1.425
10	0.084	5.00	99.100	1200	439857.881	297478.544	2.373
2	0.084	5.00	98.674	1800	439865.091	297474.128	4.013
3	0.084	5.00	97.600	1800	439874.826	297479.522	2.961
4	0.084	5.00	96.100	1800	439921.838	297479.533	1.555
5	0.000		95.850		439932.264	297479.784	1.326
6	0.000		95.850		439945.546	297483.681	1.551
7	0.000		96.287	3000	439951.118	297486.377	2.000
8			95.150	1200	439954.087	297491.727	0.900

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	35.317	0.600	94.731	94.661	0.070	504.5	750	5.48	50.0
2.000	9	10	17.832	0.600	98.490	96.727	1.763	10.1	225	5.07	50.0
2.001	10	2	8.455	0.600	96.727	95.186	1.541	5.5	225	5.10	50.0
1.001	2	3	11.130	0.600	94.661	94.639	0.022	505.9	750	5.63	50.0
1.002	3	4	47.012	0.600	94.639	94.545	0.094	500.1	750	6.25	50.0
1.003	4	5	10.429	0.600	94.545	94.524	0.021	496.6	750	6.39	50.0
1.004	5	6	13.842	0.600	94.524	94.299	0.225	61.5	750	6.46	50.0
1.005	6	7	6.190	0.600	94.299	94.287	0.012	515.8	750	6.54	50.0
1.006	7	8	6.119	0.600	94.287	94.250	0.037	165.4	225	6.64	0.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.239	547.3	15.2	3.361	3.263	0.084	0.0	85	0.556
2.000	4.138	164.5	15.2	1.200	2.148	0.084	0.0	46	2.617
2.001	5.623	223.6	30.4	2.148	3.263	0.168	0.0	56	3.967
1.001	1.237	546.5	60.7	3.263	2.211	0.336	0.0	167	0.828
1.002	1.244	549.7	75.9	2.211	0.805	0.420	0.0	186	0.886
1.003	1.249	551.6	91.1	0.805	0.576	0.504	0.0	204	0.934
1.004	3.571	1577.7	91.1	0.576	0.801	0.504	0.0	120	1.994
1.005	1.225	541.2	91.1	0.801	1.250	0.504	0.0	206	0.921
1.006	1.014	40.3	0.0	1.775	0.675	0.504	0.0	0	0.000

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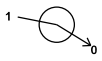
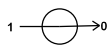
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	35.317	504.5	750	Circular_Default Sewer Type	98.842	94.731	3.361	98.674	94.661	3.263
2.000	17.832	10.1	225	Circular_Default Sewer Type	99.915	98.490	1.200	99.100	96.727	2.148
2.001	8.455	5.5	225	Circular_Default Sewer Type	99.100	96.727	2.148	98.674	95.186	3.263
1.001	11.130	505.9	750	Circular_Default Sewer Type	98.674	94.661	3.263	97.600	94.639	2.211
1.002	47.012	500.1	750	Circular_Default Sewer Type	97.600	94.639	2.211	96.100	94.545	0.805
1.003	10.429	496.6	750	Circular_Default Sewer Type	96.100	94.545	0.805	95.850	94.524	0.576
1.004	13.842	61.5	750	Circular_Default Sewer Type	95.850	94.524	0.576	95.850	94.299	0.801
1.005	6.190	515.8	750	Circular_Default Sewer Type	95.850	94.299	0.801	96.287	94.287	1.250
1.006	6.119	165.4	225	Circular_Default Sewer Type	96.287	94.287	1.775	95.150	94.250	0.675

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1800	Manhole	Adoptable	2	1800	Manhole	Adoptable
2.000	9	1350	Manhole	Adoptable	10	1200	Manhole	Adoptable
2.001	10	1200	Manhole	Adoptable	2	1800	Manhole	Adoptable
1.001	2	1800	Manhole	Adoptable	3	1800	Manhole	Adoptable
1.002	3	1800	Manhole	Adoptable	4	1800	Manhole	Adoptable
1.003	4	1800	Manhole	Adoptable	5		Junction	
1.004	5		Junction		6		Junction	
1.005	6		Junction		7	3000	Manhole	Adoptable
1.006	7	3000	Manhole	Adoptable	8	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	439868.995	297439.027	98.842	4.111	1800				
						0	1.000	94.731	750
9	439840.387	297481.999	99.915	1.425	1350				
						0	2.000	98.490	225
10	439857.881	297478.544	99.100	2.373	1200	1	2.000	96.727	225
									
						0	2.001	96.727	225
2	439865.091	297474.128	98.674	4.013	1800	1	2.001	95.186	225
						2	1.000	94.661	750
									
						0	1.001	94.661	750
3	439874.826	297479.522	97.600	2.961	1800	1	1.001	94.639	750
									
						0	1.002	94.639	750
4	439921.838	297479.533	96.100	1.555	1800	1	1.002	94.545	750
									
						0	1.003	94.545	750
5	439932.264	297479.784	95.850	1.326		1	1.003	94.524	750
									
						0	1.004	94.524	750
6	439945.546	297483.681	95.850	1.551		1	1.004	94.299	750
									
						0	1.005	94.299	750

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
7	439951.118	297486.377	96.287	2.000	3000		1	1.005	94.287	750
							0	1.006	94.287	225
8	439954.087	297491.727	95.150	0.900	1200		1	1.006	94.250	225

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	✓	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	0	0	0
30	0	0	0	100	40	0	0
30	30	0	0				

Node 7 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	94.287	Product Number	CTL-SHE-0063-2000-1300-2000
Design Depth (m)	1.300	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 6 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	94.299
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	45.0	0.0	1.250	213.0	0.0	1.550	269.0	0.0

Node 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	94.731
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	247.5	0.0	0.800	247.5	0.0	0.801	0.0	0.0

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	1	464	94.862	0.131	6.3	32.8594	0.0000	OK
15 minute summer	9	10	98.535	0.045	14.8	0.0649	0.0000	OK
15 minute summer	10	10	96.786	0.059	29.5	0.0671	0.0000	OK
480 minute winter	2	464	94.862	0.201	7.5	0.5125	0.0000	OK
480 minute winter	3	464	94.862	0.223	9.2	0.5685	0.0000	OK
480 minute winter	4	464	94.863	0.318	31.7	0.8092	0.0000	OK
480 minute winter	5	472	94.866	0.342	56.4	0.0000	0.0000	OK
480 minute winter	6	464	94.862	0.563	44.4	46.6909	0.0000	OK
480 minute winter	7	464	94.863	0.576	8.5	4.0695	0.0000	SURCHARGED
15 minute summer	8	1	94.250	0.000	1.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	1	1.000	2	-4.5	-0.157	-0.008	2.5897	
15 minute summer	9	2.000	10	14.7	2.109	0.090	0.1252	
15 minute summer	10	2.001	2	29.4	3.725	0.132	0.0668	
480 minute winter	2	1.001	3	7.2	0.396	0.013	1.1399	
480 minute winter	3	1.002	4	9.3	0.434	0.017	6.7563	
480 minute winter	4	1.003	5	31.5	0.667	0.057	1.9406	
480 minute winter	5	1.004	6	44.4	0.685	0.028	3.8095	
480 minute winter	6	1.005	7	8.5	0.215	0.016	2.2210	
480 minute winter	7	Hydro-Brake®	8	1.7				58.2

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	1	585	95.118	0.387	10.0	96.6549	0.0000	OK
15 minute summer	9	10	98.562	0.072	36.5	0.1025	0.0000	OK
15 minute summer	10	10	96.827	0.100	72.9	0.1134	0.0000	OK
600 minute winter	2	585	95.118	0.457	9.6	1.1619	0.0000	OK
600 minute winter	3	585	95.118	0.479	9.6	1.2179	0.0000	OK
600 minute winter	4	585	95.118	0.573	24.4	1.4572	0.0000	OK
600 minute winter	5	600	95.117	0.593	59.2	0.0000	0.0000	OK
600 minute winter	6	585	95.118	0.819	42.5	81.8570	0.0000	SURCHARGED
600 minute winter	7	585	95.118	0.831	7.2	5.8763	0.0000	SURCHARGED
15 minute summer	8	1	94.250	0.000	1.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	1	1.000	2	-7.1	-0.178	-0.013	8.9938	
15 minute summer	9	2.000	10	36.4	2.614	0.221	0.2490	
15 minute summer	10	2.001	2	72.6	4.635	0.325	0.1325	
600 minute winter	2	1.001	3	7.4	0.390	0.013	3.2117	
600 minute winter	3	1.002	4	8.6	0.389	0.016	15.4493	
600 minute winter	4	1.003	5	34.5	0.609	0.062	3.8294	
600 minute winter	5	1.004	6	42.5	0.815	0.027	5.6324	
600 minute winter	6	1.005	7	7.2	0.108	0.013	2.7243	
600 minute winter	7	Hydro-Brake®	8	1.7				75.4

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Results for 30 year +30% CC Critical Storm Duration. Lowest mass balance: 99.75%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	1	600	95.285	0.554	12.9	138.4914	0.0000	OK
15 minute summer	9	10	98.572	0.082	47.4	0.1175	0.0000	OK
15 minute summer	10	10	96.846	0.119	94.6	0.1343	0.0000	OK
600 minute winter	2	600	95.285	0.624	12.6	1.5879	0.0000	OK
600 minute winter	3	600	95.285	0.646	9.2	1.6438	0.0000	OK
600 minute winter	4	600	95.285	0.740	25.9	1.8827	0.0000	OK
600 minute winter	5	600	95.285	0.761	51.9	0.0000	0.0000	SURCHARGED
600 minute winter	6	600	95.285	0.986	33.5	109.6781	0.0000	SURCHARGED
600 minute winter	7	585	95.285	0.998	6.6	7.0552	0.0000	SURCHARGED
15 minute summer	8	1	94.250	0.000	1.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	1	1.000	2	-8.7	-0.199	-0.016	13.0693	
15 minute summer	9	2.000	10	47.3	2.759	0.287	0.3061	
15 minute summer	10	2.001	2	94.3	4.898	0.422	0.1628	
600 minute winter	2	1.001	3	7.1	0.378	0.013	4.4231	
600 minute winter	3	1.002	4	8.7	0.379	0.016	19.7984	
600 minute winter	4	1.003	5	27.1	0.593	0.049	4.5839	
600 minute winter	5	1.004	6	33.5	0.759	0.021	6.0922	
600 minute winter	6	1.005	7	-6.6	0.335	-0.012	2.7243	
600 minute winter	7	Hydro-Brake®	8	1.8				80.1

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	1	705	95.244	0.513	10.6	128.2568	0.0000	OK
15 minute summer	9	10	98.570	0.080	45.5	0.1150	0.0000	OK
15 minute summer	10	10	96.843	0.116	90.8	0.1307	0.0000	OK
720 minute winter	2	705	95.244	0.583	10.5	1.4835	0.0000	OK
720 minute winter	3	705	95.244	0.605	8.7	1.5395	0.0000	OK
720 minute winter	4	705	95.244	0.699	25.6	1.7789	0.0000	OK
720 minute winter	5	705	95.244	0.720	51.5	0.0000	0.0000	OK
720 minute winter	6	705	95.244	0.945	42.6	102.5199	0.0000	SURCHARGED
720 minute winter	7	705	95.245	0.958	7.8	6.7694	0.0000	SURCHARGED
15 minute summer	8	1	94.250	0.000	1.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	1	1.000	2	-7.1	-0.174	-0.013	12.1516	
15 minute summer	9	2.000	10	45.4	2.737	0.276	0.2963	
15 minute summer	10	2.001	2	90.5	4.858	0.405	0.1576	
720 minute winter	2	1.001	3	6.7	0.366	0.012	4.1614	
720 minute winter	3	1.002	4	7.4	0.369	0.014	18.9891	
720 minute winter	4	1.003	5	32.0	0.576	0.058	4.4928	
720 minute winter	5	1.004	6	42.6	0.773	0.027	6.0519	
720 minute winter	6	1.005	7	7.8	0.112	0.014	2.7243	
720 minute winter	7	Hydro-Brake®	8	1.7				90.2

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	1	705	95.546	0.815	14.6	200.1989	0.0000	SURCHARGED
15 minute summer	9	10	98.587	0.097	63.7	0.1381	0.0000	OK
15 minute summer	10	10	96.874	0.147	127.2	0.1659	0.0000	OK
720 minute winter	2	705	95.545	0.884	14.4	2.2500	0.0000	SURCHARGED
720 minute winter	3	705	95.545	0.906	8.5	2.3054	0.0000	SURCHARGED
720 minute winter	4	705	95.545	1.000	22.7	2.5450	0.0000	SURCHARGED
720 minute winter	5	705	95.545	1.021	44.8	0.0000	0.0000	SURCHARGED
720 minute winter	6	720	95.545	1.246	34.6	160.4859	0.0000	SURCHARGED
720 minute winter	7	720	95.546	1.259	10.9	8.8979	0.0000	SURCHARGED
15 minute summer	8	1	94.250	0.000	1.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	1	1.000	2	-9.8	-0.168	-0.018	15.5437	
15 minute summer	9	2.000	10	63.5	2.904	0.386	0.3892	
15 minute summer	10	2.001	2	126.7	5.171	0.567	0.2069	
720 minute winter	2	1.001	3	6.0	0.354	0.011	4.8985	
720 minute winter	3	1.002	4	7.9	0.367	0.014	20.6910	
720 minute winter	4	1.003	5	29.6	0.577	0.054	4.5900	
720 minute winter	5	1.004	6	34.6	0.759	0.022	6.0922	
720 minute winter	6	1.005	7	10.9	0.335	0.020	2.7243	
720 minute winter	7	Hydro-Brake®	8	2.0				98.5

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Design Settings

Frequency of use (kDU)	1.00	Minimum Velocity (m/s)	0.75
Flow per dwelling per day (l/day)	4000	Connection Type	Level Soffits
Domestic Flow (l/s/ha)	0.0	Minimum Backdrop Height (m)	0.200
Industrial Flow (l/s/ha)	0.0	Preferred Cover Depth (m)	1.200
Additional Flow (%)	0	Include Intermediate Ground	✓

Nodes

Name	Dwellings	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	13	98.712	1200	439870.745	297440.645	3.312
2	0	98.586	1200	439866.767	297472.641	3.427
3	0	98.000	1200	439874.563	297477.213	3.210
4	6	96.400	1200	439912.155	297477.656	2.300
5		96.300	1200	439912.038	297483.474	2.243

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
1.000	1	2	32.242	1.500	95.400	95.159	0.241	134.0	150
1.001	2	3	9.038	1.500	95.159	94.790	0.369	24.5	150
1.002	3	4	37.595	1.500	94.790	94.100	0.690	54.5	150
1.003	4	5	5.819	1.500	94.100	94.057	0.043	134.0	150

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	0.264	0.756	13.4	0.6	3.162	3.277	0.000	13	0.0	0.0	22	0.375
1.001	0.479	1.775	31.4	0.6	3.277	3.060	0.000	13	0.0	0.0	15	0.682
1.002	0.363	1.188	21.0	0.6	3.060	2.150	0.000	13	0.0	0.0	18	0.515
1.003	0.297	0.756	13.4	0.9	2.150	2.093	0.000	19	0.0	0.0	26	0.419

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	32.242	134.0	150	Circular_Default Sewer Type	98.712	95.400	3.162	98.586	95.159	3.277
1.001	9.038	24.5	150	Circular_Default Sewer Type	98.586	95.159	3.277	98.000	94.790	3.060
1.002	37.595	54.5	150	Circular_Default Sewer Type	98.000	94.790	3.060	96.400	94.100	2.150
1.003	5.819	134.0	150	Circular_Default Sewer Type	96.400	94.100	2.150	96.300	94.057	2.093

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1200	Manhole	Adoptable	2	1200	Manhole	Adoptable
1.001	2	1200	Manhole	Adoptable	3	1200	Manhole	Adoptable
1.002	3	1200	Manhole	Adoptable	4	1200	Manhole	Adoptable
1.003	4	1200	Manhole	Adoptable	5	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	439870.745	297440.645	98.712	3.312	1200				
						0	1.000	95.400	150
2	439866.767	297472.641	98.586	3.427	1200	1	1.000	95.159	150
									
						0	1.001	95.159	150

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
3	439874.563	297477.213	98.000	3.210	1200	1	1.001	94.790	150
									
						0	1.002	94.790	150
4	439912.155	297477.656	96.400	2.300	1200	 1	1.002	94.100	150
						0	1.003	94.100	150
5	439912.038	297483.474	96.300	2.243	1200	1	1.003	94.057	150
									

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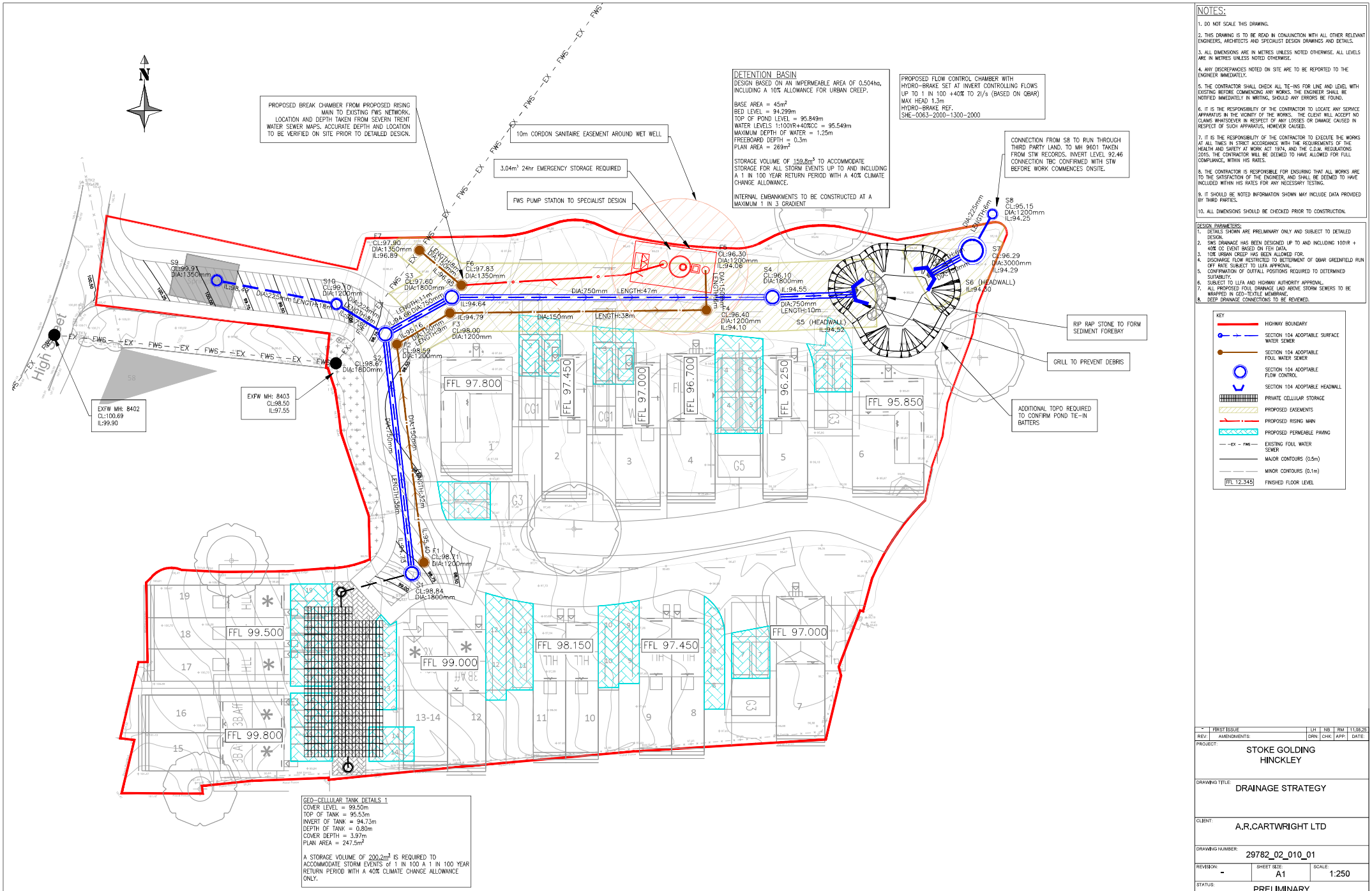
APPENDICES

APPENDIX G



NOTES:

1. DO NOT SCALE THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS, ARCHITECTS AND SPECIALIST DESIGN DRAWINGS AND DETAILS.
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.
5. THE CONTRACTOR SHALL CHECK ALL TIE-INS FOR LINE AND LEVEL WITH EXISTING BEFORE COMMENCING ANY WORKS. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY IN WRITING, SHOULD ANY ERRORS BE FOUND.
6. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ANY SERVICE APPARATUS IN THE VICINITY OF THE WORKS. THE CLIENT WILL ACCEPT NO CLAIMS WHATSOEVER IN RESPECT OF ANY LOSSES OR DAMAGE CAUSED IN RESPECT OF SUCH APPARATUS, HOWEVER CAUSED.
7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EXECUTE THE WORKS AT ALL TIMES IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE HEALTH AND SAFETY AT WORK ACT 1974, AND THE C.D.M. REGULATIONS 2015. THE CONTRACTOR WILL BE DEEMED TO HAVE ALLOWED FOR FULL COMPLIANCE, WITHIN HIS RATES.
8. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL WORKS ARE TO THE SATISFACTION OF THE ENGINEER, AND SHALL BE DEEMED TO HAVE INCLUDED WITHIN HIS RATES FOR ANY NECESSARY TESTING.
9. IT SHOULD BE NOTED INFORMATION SHOWN MAY INCLUDE DATA PROVIDED BY THIRD PARTIES.
10. ALL DIMENSIONS SHOULD BE CHECKED PRIOR TO CONSTRUCTION.

DESIGN PARAMETERS:

1. DETAILS SHOWN ARE PRELIMINARY ONLY AND SUBJECT TO DETAILED DESIGN.
2. SWS DRAINAGE HAS BEEN DESIGNED UP TO AND INCLUDING 100YR + 40% CC EVENT BASED ON FEH DATA.
3. 10% URBAN CREEP HAS BEEN ALLOWED FOR.
4. DISCHARGE FLOW RESTRICTED TO BETTERMENT OF QBAR GREENFIELD RUN OFF RATE SUBJECT TO LLFA APPROVAL.
5. CONFIRMATION OF OUTFALL POSITIONS REQUIRED TO DETERMINED SUITABILITY.
6. SUBJECT TO LLFA AND HIGHWAY AUTHORITY APPROVAL.
7. ALL PROPOSED FOUL DRAINAGE LAID ABOVE STORM SEWERS TO BE WRAPPED IN GEO-TEXTILE MEMBRANE.
8. DEEP DRAINAGE CONNECTIONS TO BE REVIEWED.

KEY

- HIGHWAY BOUNDARY
- SECTION 104 ADOPTABLE SURFACE WATER SEWER
- SECTION 104 ADOPTABLE FOUL WATER SEWER
- SECTION 104 ADOPTABLE FLOW CONTROL
- SECTION 104 ADOPTABLE HEADWALL
- PRIVATE CELLULAR STORAGE
- PROPOSED EASEMENTS
- PROPOSED RISING MAIN
- PROPOSED PERMEABLE PAVING
- -EX - FWS- EXISTING FOUL WATER SEWER
- MAJOR CONTOURS (0.5m)
- MINOR CONTOURS (0.1m)
- FFL 12.345 FINISHED FLOOR LEVEL

REV.	AMENDMENTS	DRN	CHK	APP	DATE
-	FIRST ISSUE	LH	NB	RM	11.08.25

PROJECT: STOKE GOLDING HINCKLEY

DRAWING TITLE: DRAINAGE STRATEGY

CLIENT: A.R.CARTWRIGHT LTD

DRAWING NUMBER: 29782_02_010_01

REVISION:	SHEET SIZE:	SCALE:
-	A1	1:250

STATUS: PRELIMINARY

MEC Consulting Group
Birmingham | Brighton | Leicester
Telephone: 01530 264 753
Email: group@m-ec.co.uk
Website: www.m-ec.co.uk

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Consulting Group

APPENDICES

APPENDIX H

The Old Chapel Station Road Hugglescote Leicestershire LE67 2GB
Telephone 01530 264753
Email group@m-ec.co.uk
www.m-ec.co.uk

MAINTENANCE AND MANAGEMENT

A proposed maintenance plan is shown in the table below and breaks down the maintenance requirements of the various proposed assets in accordance with the CIRIA C753 SuDS Manual guidance.

Table 1.1: Proposed Maintenance Regime

Drainage Asset	Responsible Organisation	Maintenance Work	Frequency
Pipework / Manholes	Severn Trent Water	Inspect pipework and clear blockages	Annually or after severe storms.
		Inspect manholes and clear blockages	
		Repair any defects in the network	
		Inspect flow control, ensure operating freely and pivoting bypass door and penstock valve operating correctly	
Headwalls	Severn Trent Water	Inspect the structure and remove any debris/litter on the structure.	Annually or after severe storms
		Replace malfunctioning parts or structures	As required
Catchpits	Management Company	Inspect structure and remove any debris/litter on structure	Annually or after severe storms
		Replace malfunctioning parts or structures	As required
Gullies	Highway Authority	Inspect structure and remove any debris/litter on structure	Annually or after severe storms
		Replace malfunctioning parts or structures	As required
Foul Pumping Station	Severn Trent Water	Inspect wet well, kiosk and valve chamber	Annually or after severe storms
		Inspect structure and remove any debris from the wet well	
		Replace malfunctioning parts or structures	As required
Flow Control Chamber	Severn Trent Water	Inspect structure and remove excessive silt build-up	Monthly during construction and then annually or after severe storms
		Inspect pipework and manholes also clear blockages	Annually or after severe storms
		Inspect manholes and clear blockages	
		Inspect flow control, ensure operating freely and pivoting bypass door and penstock valve operating correctly	
		Replace malfunctioning parts or structures	
		Inspect for evidence of poor operation	6 monthly
		Inspect sediment accumulation rates and establish appropriate removal frequencies	
		Test control structure to ensure operating as per original design	5 yearly

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www.m-ec.co.uk

Permeable Pavements	Management Company	Brushing and vacuuming (standard cosmetic sweep over the whole surface)	Once a year after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging of manufacturer's recommendations.
		Stabilise and mow contributing and adjacent areas	As required
		Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than sweeping	
		Remediate any landscaping which, through vegetation maintenance of soil slip, has been raised to within 50 mm of the level of the paving	
		Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users and replace lost jointing material	
		Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required
		Initial inspection	Monthly for 3 months after installation
		Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	3 monthly, 48 hours after large storms in first 6 months
		Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
		Monitor inspection chambers	
Attenuation/Detention Basin	Management Company	Remove litter and debris	Monthly
		Cut grass – for spillways and access routes	
		Cut grass – meadow grass in and around the basin	
		Manage other vegetation and remove nuisance plants	
		Inspect inlets, outlets and overflows for blockages, and clean if required	
		Inspect banksides, structures for silt accumulation. Establish appropriate silt removal frequencies	
		Check any penstocks and other mechanical devices	Annually
		Tidy all dead growth before the start of the growing season	
		Remove the sediment from inlets, outlets and forebay	
		Manage wetland plants in outlet pool – where provided	

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Email group@m-ec.co.uk
www.m-ec.co.uk

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

- CIVIL ENGINEERING
- TRANSPORT
- FLOOD RISK & DRAINAGE
- STRUCTURES
- GEO-ENVIRONMENTAL
- ACOUSTIC AIR
- UTILITIES
- GEOMATICS
- LIGHTING
- EXPERT WITNESS

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