

9.0 Water Quality Treatment

In accordance with CIRIA C753 (The SuDS Manual, 2015), the drainage strategy has been developed to incorporate water quality treatment measures that address pollutant removal and protect receiving environments. The following water quality treatment components are integrated into the design:

Sediment Control:

Permeable paving and associated granular sub-base layers will provide primary treatment for surface water runoff. These materials filter suspended solids, hydrocarbons, and other particulates from surface water runoff before it enters the wider drainage network.

Filtration:

The drainage design includes a filtration system that captures and treats the initial runoff, particularly the first 5mm of rainfall. Runoff passes through permeable surfaces that promote filtration and the removal of contaminants such as oils and debris, reducing the impact on water quality.

Pollutant Removal:

A combination of permeable surfaces and landscaped areas ensures that water quality is protected throughout the drainage system. These features reduce the mobilisation of pollutants and minimise the discharge of untreated surface water into the environment.

The design incorporates permeable surfaces to intercept and treat the first 5 mm of rainfall, enabling runoff to be filtered close to its source. This approach assists in improving water quality through source control measures before runoff enters the wider surface water drainage system.

By utilising these techniques, the drainage system aligns with best practices, ensuring that surface water runoff is effectively managed and treated. The strategy is based on source control, attenuation storage, and controlled discharge to Slate Brook. The retention and treatment of the first 5 mm of rainfall will be achieved through on-site source control measures, attenuation storage, and controlled drainage features.

Consequently, no additional off-site water quality mitigation measures are necessary.

10.0 Maintenance and Management

The proposed drainage system at Groby Lodge Farm has been designed to ensure the long-term, sustainable management of both surface water and foul water systems. Regular maintenance is essential to ensure that the system operates efficiently, particularly during periods of heavy rainfall and climate change.

A maintenance and management plan for the lifetime of the development will be secured to ensure the continued operation and effectiveness of the drainage system.

This will include:

- Regular inspection and maintenance of SuDS features
- Responsibility allocation (e.g. management company)
- Long-term management arrangements

10.1 Surface Water Drainage Maintenance

To maintain the functionality of the surface water drainage system, the following maintenance procedures will be undertaken:

Attenuation Pond:

- Regular inspection of the pond for signs of silt accumulation, debris, and vegetation that may block flow.
- Annual sediment removal as needed to ensure proper storage capacity.
- Vegetation management to maintain the pond's structural integrity and water quality.

Permeable Paving:

- Cleaning and sweeping of permeable surfaces annually or as necessary to ensure that debris does not impair surface water drainage performance.
- Surface inspections every 6 months to ensure no damage to the permeable paving system and that flow paths remain unobstructed.

Drainage Channels & Conveyance System:

- Regular cleaning of drains, manholes, and catch basins to remove sediment, silt, and debris.
- Inspection and maintenance after major storm events to ensure no blockages or damage.

10.2 Foul Water Drainage Maintenance

For the foul drainage system, the following measures will be taken to ensure optimal performance:

- Regular inspections of the foul water sewer network for any blockages or signs of wear.
- Annual CCTV surveys to monitor the condition of the underground sewer network and identify potential issues.
- Maintenance of manholes to prevent any debris or blockages from obstructing flow.
- Periodic cleaning and removal of grease or solids from the system to maintain proper functionality.

Responsibility and Compliance

- The site owner or an appointed management company will be responsible for carrying out all maintenance works, ensuring that these actions are completed regularly and in compliance with Severn Trent Water (STW) and LLFA requirements.

10.3 [Maintenance](#)

- All maintenance works will be carried out in accordance with Building Regulations Part H, CIRIA C753, and any relevant local or national regulations.
- Records of maintenance actions and inspections will be kept and made available upon request by STW, LLFA, or other relevant authorities.

10.4 [Conclusion](#)

The Maintenance Plan ensures the continued functionality of the drainage systems while minimizing the risk of blockages, flooding, or degradation of water quality. The proposed strategy meets regulatory requirements and ensures long-term protection for the development, the surrounding environment, and public safety.

11.0 [Sewerage Infrastructure and Connection Strategy](#)

11.1 [General Approach](#)

The proposed drainage strategy for the development at Groby Lodge Farm has been designed in compliance with Planning Condition 9 and best practices in sustainable drainage. This strategy aims to provide a coordinated approach to the management of both surface water and foul water systems, ensuring that the development does not exacerbate flood risks either on-site or off-site.

Surface water runoff will be managed through a Sustainable Drainage System (SuDS), incorporating collection, conveyance, attenuation, and controlled discharge to a nearby watercourse. Foul drainage will be managed separately and conveyed to the existing public sewer network.

11.2 [Surface Water Drainage Strategy](#)

The surface water drainage strategy follows the SuDS hierarchy, which considers various options for surface water management: infiltration, discharge to a watercourse and discharge to the public sewer.

- Infiltration was initially considered but was determined to be unsuitable due to site conditions.
- The chosen strategy involves controlled discharge to Slate Brook via an attenuation pond located on the opposite side of the Brook, making use of the site's natural topography. The pond will provide sufficient storage capacity for the development.

Key features of the surface water drainage system include:

- Accommodating runoff from the 1 in 100 year storm event, plus a 40% climate change allowance;

- Restricting discharge to greenfield equivalent runoff rates;
- Providing additional water quality treatment and amenity benefits.

11.3 [Existing Sewer Infrastructure](#)

An existing 375mm diameter public foul sewer, operated by STW, runs parallel to Slate Pit Lane, as identified in the statutory sewer records.

This sewer lies outside the development area and does not constrain the proposed layout. Sufficient clearance distances will be maintained to avoid any conflict, and no build-over is proposed.

11.4 [Foul Drainage Strategy](#)

Foul water generated by the development is proposed to connect via a short length of pumping main to the existing Severn Trent Water public foul sewer at manhole MH5701. The final foul connection details will be confirmed at a later stage and subject to approval by STW under Section 106 of the Water Industry Act 1991.

Details of connection, including any requirement for a pump station, will be confirmed at detailed design stage.

Key aspects of the foul drainage strategy include:

- Foul and surface water systems will remain fully separate.
- The detailed foul drainage design will be finalised at the Building Control stage and constructed in accordance with Building Regulations Part H and STW approval.
- The final point of connection, pipe routes, gradients, and manhole locations will be confirmed at the detailed design stage and agreed with Severn Trent Water.
- On-site drainage infrastructure will remain the responsibility of Biroman Limited or an appointed management company.

11.4.a [Connection to Public Sewer](#)

The foul flow generated by the proposed development has been calculated as 1.48 l/s, based on 6 x DWF.

The proposed development will require a connection to the public foul sewer network. This will be subject to formal approval from Severn Trent Water under Section 106 of the Water Industry Act 1991.

11.4.b [Foul Drainage Connection](#)

Foul drainage is proposed to connect to the existing public foul sewer, with an indicative connection to manhole 5701, as identified from statutory sewer records.

11.4.c [Final Confirmation](#)

The final point of connection, pipe routes, gradients, and manhole locations will be confirmed at the detailed design stage and agreed with Severn Trent Water.

11.5 [Summary](#)

The proposed drainage strategy for Groby Lodge Farm is summarised as follows:

RSC/26109-DS Report Groby Lodge Farm, Slate Pit Lane, Groby

- Surface water runoff will be attenuated within a pond-based SuDS system;
- Discharge will be controlled and directed to Slate Brook;
- Foul drainage will connect to the existing Severn Trent Water sewer network;
- Existing infrastructure constraints, including the 375mm diameter sewer, have been accounted for in the design;
- All on-site drainage infrastructure within the site boundary will be private and maintained by the property owner or appointed management company;
- The strategy ensures no increase in flood risk and adherence with current planning and drainage standards.

12.0 Summary

- 12.1 This Drainage Strategy (DS) and SuDS Report has been prepared in accordance with the National Planning Policy Framework (NPPF), National Planning Practice Guidance (NPPG), and CIRIA C753 (The SuDS Manual).
- 12.2 Hydraulic modelling and drainage calculations demonstrate that the proposed system can accommodate storm events up to the 1 in 30 year return period without flooding, and safely manage exceedance flows during the 1 in 100 year event plus 40% climate change allowance.
- 12.3 The drainage system has been designed to retain and manage the first 5 mm of rainfall on site, supporting water quality treatment and pollution control.
- 12.4 This approach ensures that exceedance flows are safely managed on-site, with no flooding of buildings and no increase in flood risk off-site, complying with LLFA requirements and the sustainable drainage principles.
- 12.5 A comprehensive maintenance and management plan has been prepared in accordance with CIRIA C753, ensuring the long-term performance and operation of the drainage infrastructure.
- 12.6 The drainage layout, hydraulic calculations, product specifications, and supporting technical information are provided within the appendices.
- 12.7 The proposed drainage strategy will not increase flood risk on or off site and provides a sustainable, robust, and resilient solution appropriate for the proposed development.

13.0 Conclusion

- 13.1 The proposed development at Groby Lodge Farm has been assessed in accordance with national and local drainage policy, LLFA guidance, and accepted industry practice.

- 13.2 The drainage system has been designed to achieve greenfield equivalent runoff rates, delivering a minimum 50% betterment in surface water runoff compared to the existing site conditions.
- 13.3 Hydraulic modelling confirms that the system accommodates the 1 in 30 year storm event without flooding, and safely manages exceedance flows during the 1 in 100 year event plus 40% climate change allowance. This approach ensures that exceedance flows are safely managed on-site, with no flooding of buildings and no increase in off-site flood risk.
- 13.4 Foul drainage will drain to the existing public sewer network, subject to approval from STW and compliance with Building Regulations Part H.
- 13.5 A structured maintenance and management regime has been established to ensure the long-term performance, operation, and sustainability of the drainage infrastructure.
- 13.6 The proposed surface water drainage system will not increase flood risk on or off site and represents a sustainable, robust, and deliverable solution appropriate to support the discharge of Planning Condition 9.
- 13.7 The surface water flow management system, including Hydro-Brake flow control devices and attenuation ponds, has been specifically designed to meet LLFA guidelines, ensuring compliance with flood risk mitigation measures and providing a resilient drainage solution that effectively manages exceedance flows and prevents off-site flood risks.

14.0 Recommendations

- 14.1 Prior to commencement of construction, all relevant statutory undertaker records and site information will be reviewed to identify any existing easements, wayleaves, or other legal constraints that may affect the proposed drainage infrastructure. This review should also be used to identify any potential site constraints.
- 14.2 Detailed site investigations and service searches will be undertaken to confirm the presence and location of existing underground utilities, to avoid damage during excavation and construction works. Additionally, prior to commencement of construction, the site information will be reviewed to identify any existing easements, wayleaves, or other legal constraints that may affect the proposed drainage infrastructure.
- 14.3 Appropriate construction practices will be adopted during excavation and installation of drainage infrastructure to maintain ground stability and protect adjacent structures and services.
- 14.4 The contractor will review any additional site constraints not identified at the design stage and notify the project team of any issues that may affect the drainage installation.

- 14.5 All drainage works will be carried out by suitably qualified contractors in accordance with the approved drawings, specifications, and recognised industry standards.
- 14.6 The drainage system will be inspected and, where necessary, tested prior to occupation to confirm it has been constructed in accordance with the approved Drainage Strategy.
- 14.7 Any future amendments to the development layout or drainage design should be supported by updated drainage assessments, where required. Any amendments must also account for potential changes in climate change allowances or the latest LLFA guidance to ensure the drainage strategy remains up to date.
- 14.8 The approved drainage strategy will be implemented in full prior to occupation and thereafter retained and maintained for the lifetime of the development.

15.0 Further Information

- 15.1 Ground conditions are considered unsuitable for infiltration due to the underlying clay subgrade and alluvial deposits. Surface water is therefore managed via on-site attenuation and controlled discharge, in accordance with the SuDS hierarchy.
- 15.2 This Drainage Strategy (DS) and SuDS Report has been reviewed and updated in response to the LLFA's planning consultation comments to ensure that all drainage related requirements and recommendations have been fully addressed.
- 15.3 Supporting documentation, including hydraulic calculations, drainage layout drawings, product specifications, and maintenance arrangements, is provided within this report and accompanying appendices.
- 15.4 Should any further information be required by the LPA or the LLFA during the determination process, this will be provided promptly upon request.

16.0 Acknowledgements

The preparation of this Drainage Strategy and SuDS Report has been informed by guidance and consultation responses provided by the Lead Local Flood Authority (LLFA), Hinckley & Bosworth Council (HBC), the Environment Agency (EA), and Severn Trent Water (STW). Their input during the planning process is gratefully acknowledged.

The authors also acknowledge the assistance of Urban Designs in providing drawings and technical information, and Thomas Taylor Planning, together with the cooperation of the client, Mr John Barker, in appointing Road & Sewer Consulting Ltd (RSC Ltd).

17.0 Disclaimer

This report has been prepared based on site observations, information provided by third parties, published guidance, and other data sources available at the time of preparation. The contents of this report are considered accurate and complete to the best of our knowledge and professional judgement at that time.

The opinions, conclusions, and recommendations presented in this report are based on the conditions encountered and the information reviewed during its preparation. No responsibility is accepted for any changes in site conditions, regulations, or available information occurring after the date of this report.

While reasonable skill, care, and diligence have been exercised in the preparation of this report, no liability is accepted for any errors or omissions arising from inaccurate, incomplete, or subsequently revised information supplied by others.

This report has been prepared solely for the use of the named client and for the specific purpose of supporting the associated planning application. No third party may rely upon this report without the prior written consent of Road & Sewer Consulting Ltd.

The report should be read as a whole and not in part.