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part of the Tyréns Group

Grange Farm
Foul Water Strategy Study

Grange Farm

The Pampisford Estate

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Issue

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Rev 5	23/9/2025	Client Name Updated

We have sought to ensure that this document is accessible for all users. Should you have any comments on how we can improve accessibility of our documents please do let us know. We are happy to provide this report in a HTML format should this be required.

Contents

1. Introduction

This report has been prepared to identify the options for a foul water strategy for a proposed development at Grange Farm. Hilson Moran have been appointed to prepare this foul water drainage strategy with the overall aim to demonstrate the deliverability of the site and therefore its suitability for an allocation in the emerging local plan for Greater Cambridge.

Greater Cambridge is one of the driest areas in the UK and in 2021 was identified by the Environment Agency (EA) as an area of serious water stress. Whilst the focus of the response to this declaration has typically been Cambridge Water and abstraction of groundwater for consumption, there are parts of the region where the treatment and disposal of sewage also needs to be considered.

The report defines the likely range of water needed to support the new community at Grange Farm and provides several possible strategy options for the management of water within the site and therefore, the foul sewage generated, treated and options for disposal.

One of the drivers for the development it's not just to create a safe deliverable solution for the site but how can the development support the longer-term role in the stewardship of water in this part of Cambridge and therefore, the strategy will seek to maximise the environmental benefits of the water generated. The landowners of Grange Farm are committed to creating an exemplar scheme and have worked with the Environment Agency and other local bodies for decades in riverine restoration and more recently water conservation and recycling projects.

The need to capture the different benefits are likely to evolve over time as the uses within the catchment change and the needs of the regulators and stakeholders are better defined. Therefore, this report has been prepared to define the options to be explore, which can be refined as the scheme progresses working towards identification of a preferred solution for the development to inform the site masterplan.

2. Site Description and background

2.1. Site Location and Topography

The proposed development is situated to the southeast of Cambridge, adjacent to the A11 and east of the villages of Little and Great Abington, and close to Granta Park (to the south) and Babraham Research Institute (to the west). The land identified for the proposed development is split between an initial core site (brought forward by the The Pampisford Estate, edged red) and a possible expansion area (owned by Mr Franklin, edged yellow).

This submission accompanies a broader submission on behalf of the The Pampisford Estate, and a letter of intent has been provided by Franklin family, indicating the intent to participate in an expanded proposal.

The southern portion of the site lies within the catchment of the River Granta, which ultimately flows into the River Cam. The northern part of the site naturally drains towards the eastern outskirts of Cambridge.

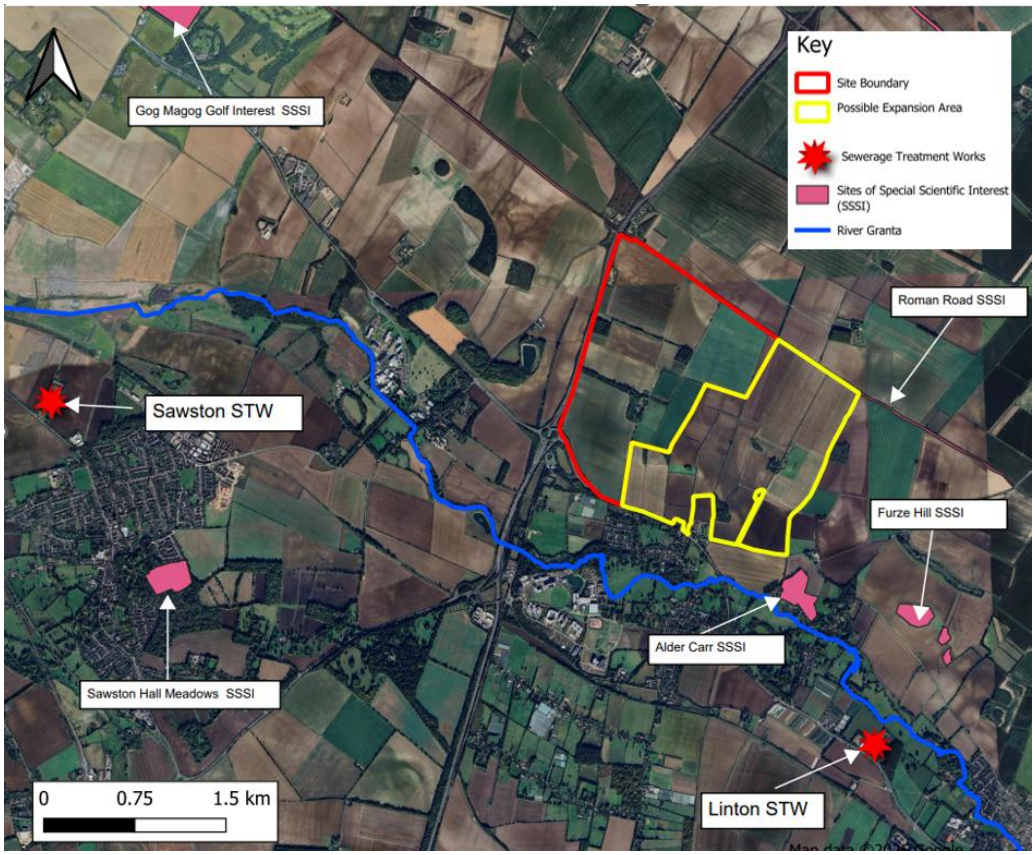

Figure 1 Site Location Plan

The combined site's topography has a high point generally at the centre of the site. This core site slopes from east to west and from north to south, with elevations ranging from approximately 62–64 metres down to around 29 metres

above sea level. With the expansion land raising slightly higher to 70m before draining towards the River Granta at a level of 20m. These natural gradients present opportunities to design on-site drainage strategies that effectively work with the existing landform.

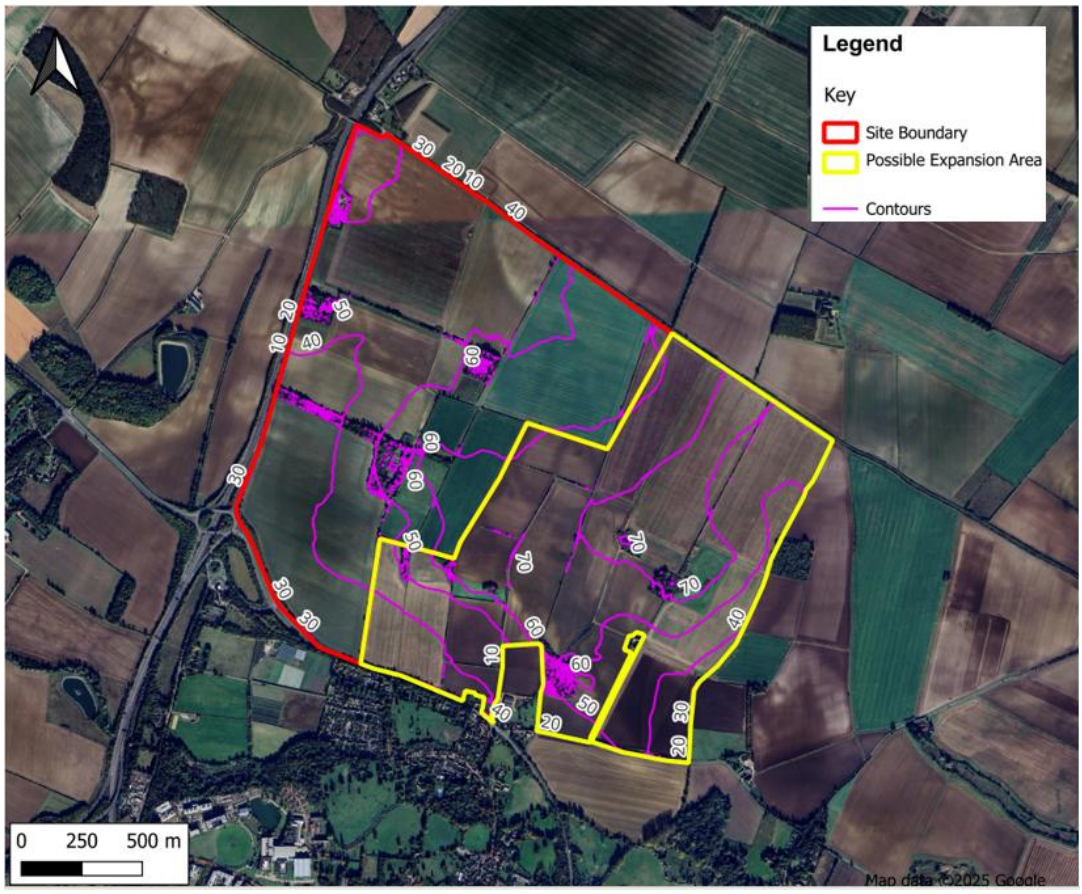

Figure 2 Topographical data for LIDAR records

2.2. Geology and Infiltration Potential

The site is underlain by strategic chalk strata, comprising both the New Pit Chalk and Holywell Nodular Chalk formations, with some overlying sand and gravel deposits. These geological formations are relatively permeable and are therefore likely to support the infiltration of water into the wider aquifer system.

Figure 3 Geological Information (based on date from Defra's MAGIC website)

2.3. Regional Geological Context

The geological strata underlying the site form a significant regional feature that extends across East Anglia, Cambridgeshire, and Hertfordshire. These chalk formations constitute the principal aquifer that supplies water to Cambridge and the surrounding areas.

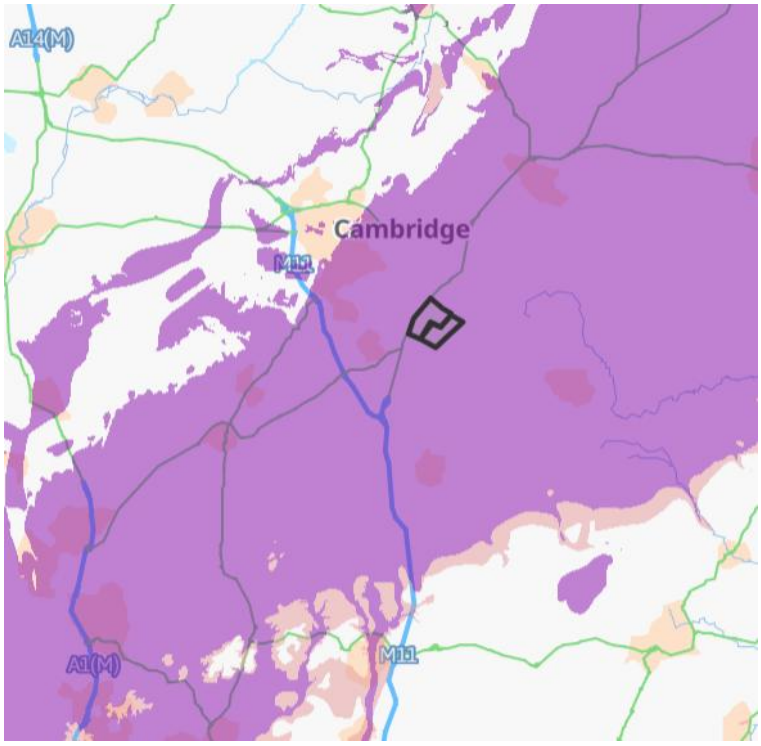

Figure 4 Strategic Aquifer (based on date from Defra's MAGIC website).

2.4. Groundwater Abstractions and Source Protection

Within this wider aquifer, there are several abstraction points used by Cambridge Water to supply the city and surrounding areas. A number of these boreholes are located within the River Granta catchment and are currently subject to licence modifications aimed at reducing abstraction volumes to support low flows in the River Granta.

One of these boreholes is associated with a designated Source Protection Zone (SPZ, the plan below shows these in relation to the site - red defines zone 1, green zone 2 and blue the wider catchment) that extends beneath the proposed development site. As such, any proposals for the site must be developed in accordance with the Environment Agency's guidance on groundwater protection, specifically the *Approach to Groundwater Protection* framework.

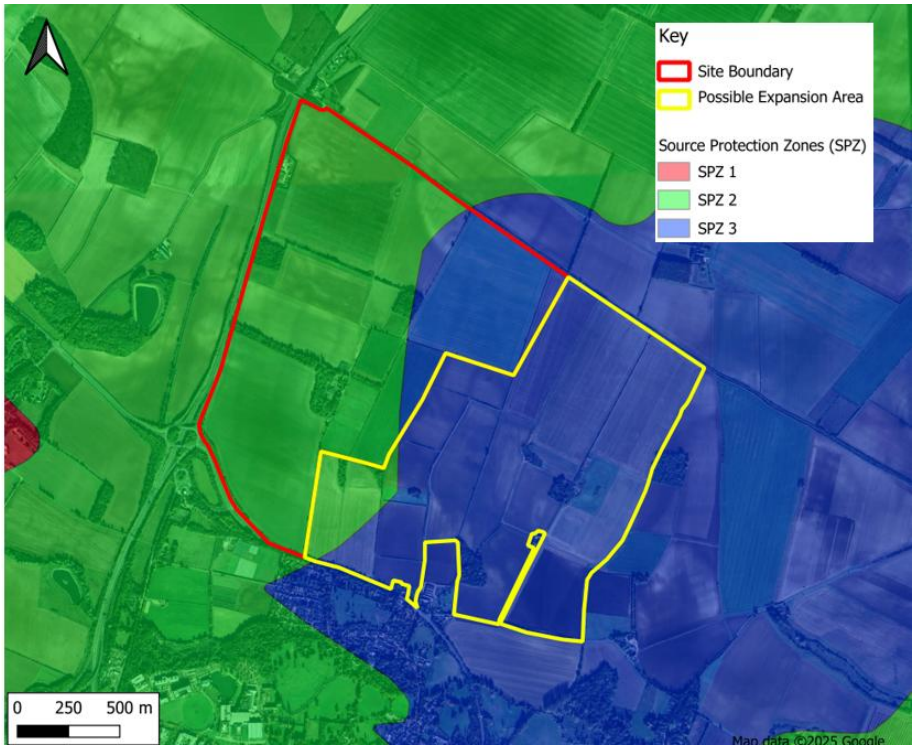

Figure 5 Source Protection Zones (based on date from Defra's MAGIC website).

2.5. River Granta Catchment and Flow Management

The southern part of the site lies within the catchment of the River Granta, a chalk-fed stream that experiences reduced flows during drier periods. A catchment-based approach is in place to manage and enhance flows within the River Granta, and the proposed development is committed to supporting these long-term objectives.

The landowner is working with Anglian and Cambridge Water (South Staffordshire water) to instigate rainwater harvesting techniques and develop new growing practices on its pioneering regenerative farm Flourish Produce, also being studied by the University of Cambridge. Separately a decades long project, working with the Environment Agency, the Wild Trout Trust and other key stakeholders, restoring the River Granta's habitat, water retention and flood mitigation capacities has also won awards as an exemplar.

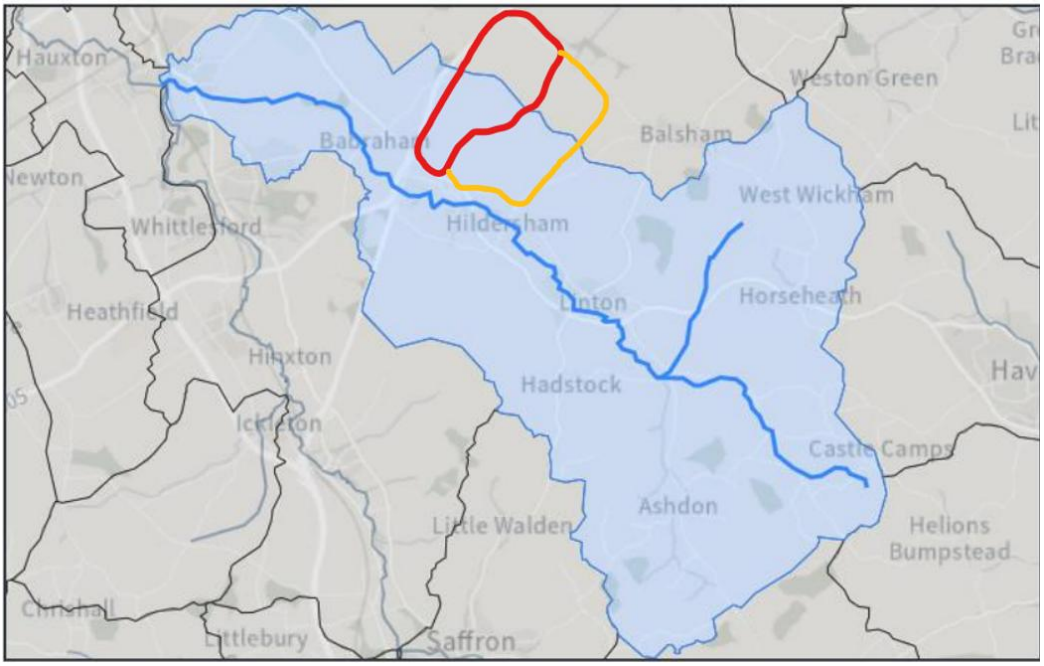

Figure 6 The site location on the Granta Catchment (from Granta-Background-Info website)

3. Development Proposals

The strategy has been prepared with consideration of the likely water resources needed to support the development, the opportunities for reuse and recycling, and the preferred water cycle and infrastructure requirements.

The project is at the very early stages of the process and while site capacity testing is still ongoing and will inform the basis of this initial assessment and strategy options report, the foul water demand has been estimated based on the following assumptions. These assumptions are intended to provide a sensible but robust assessment of water consumption, helping to establish the principles of the proposed options, which will be refined as the scheme progresses. These will however need to be refined as a more detailed development specification is developed and refined.

The baseline sewage generated by the development has been established based on building regulation usage figures, as lower water consumption can be achieved through rainwater reuse, while the volume of sewage generated remains unchanged. However, the use of grey water recycling can actually reduce the amount of sewage generated. The assessment has been developed in two stages with an initial development of up to 5,000 homes and then a second stage up to 8,000 homes in total.

Landuse	Quantity	Baseline Sewage Generated (m^3/day)
Proposed number of homes	Up to 5,000	
Proposed future population based upon 2.3 people / home.	11,500 Future residents	1,265.00
Jobs	500 – 750	26.25
Primary Schools	2 Nos at 4 FE (c1450 pupils)	50.75
Secondary Schools	1 No at 6 FE (c850 spaces)	29.75
Total		1,371.75

Table 1 Indicative Development Assumptions for the core site

Landuse	Quantity	Baseline Sewage Generated (m^3/day)
Proposed number of homes	Up to 8,000	
Proposed future population based upon 2.3 people / home.	18,400 Future residents	2024.00
Jobs	1000 – 1500	52.5
Primary Schools	3 Nos at 4 FE (c2320 pupils)	81.2
Secondary Schools	1 No at 10 FE (c1,360spaces)	47.6
Total		2,205.3

Table 2 Indicative Development Assumptions for the combined site

4. Planning and Regulatory Framework

4.1. Planning Policy

There are both national and local policies which are guiding new development

National Planning Policy Context

Paragraph 20(b) of the *National Planning Policy Framework* (NPPF) confirms that wastewater is a strategic matter. It states that strategic policies should set out an overall strategy for the pattern, scale, and design quality of places, and make sufficient provision for infrastructure, including water supply

Paragraph 187 of the NPPF further emphasises that planning policies and decisions should contribute to and enhance the natural and local environment. This includes preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water, or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions—such as air and water quality.

National Guidance: Water Supply, Wastewater and Water Quality

National planning guidance outlines how local plans should address water-related infrastructure and environmental quality. Specifically, local plans should include policies that:

- Ensure the sufficiency and capacity of wastewater infrastructure to support new development;
- Define the circumstances under which wastewater from new development would not be expected to drain to a public sewer (e.g. in remote or rural areas);
- Assess the capacity of the environment to receive effluent from development in different parts of a strategic policy-making authority's area, ensuring that statutory environmental objectives are not compromised

Emerging Greater Cambridge Local Plan (Regulation 18 Preferred Options 2021)

Policy CC/WE: Water efficiency in new developments – Proposed Policy Direction

Developments will be required to meet high standards of water efficiency:

- Residential developments should be designed to achieve a standard of 80 litres/person/ day unless demonstrated impracticable.

- Non- residential development will be required to achieve full credits for category Wat 01 of BREEAM unless demonstrated impracticable. (the current level in the Cambridge Local Plan).

Policy BG/GI: Green infrastructure

This policy identifies the existing green infrastructure network, and the strategic initiatives intended to enhance it and addresses how development proposals should relate to green infrastructure. Green infrastructure is the network of green spaces and routes, landscapes, biodiversity, water bodies and heritage, which provide a range of benefits for people, wildlife and the planet.

In particular it identifies the - Protecting and enhancing the water environment and within the list Revitalising the chalk stream networks of which the River Granta is part.

The Integrated Water Management Strategy (2021).

This report forms part of the initial evidence base to inform the direction of emerging local plan policy. It provides a baseline assessment for the area proposed development at Grange Farm, aligning with wider regional wastewater infrastructure planning. The distribution is shown on the plan below.

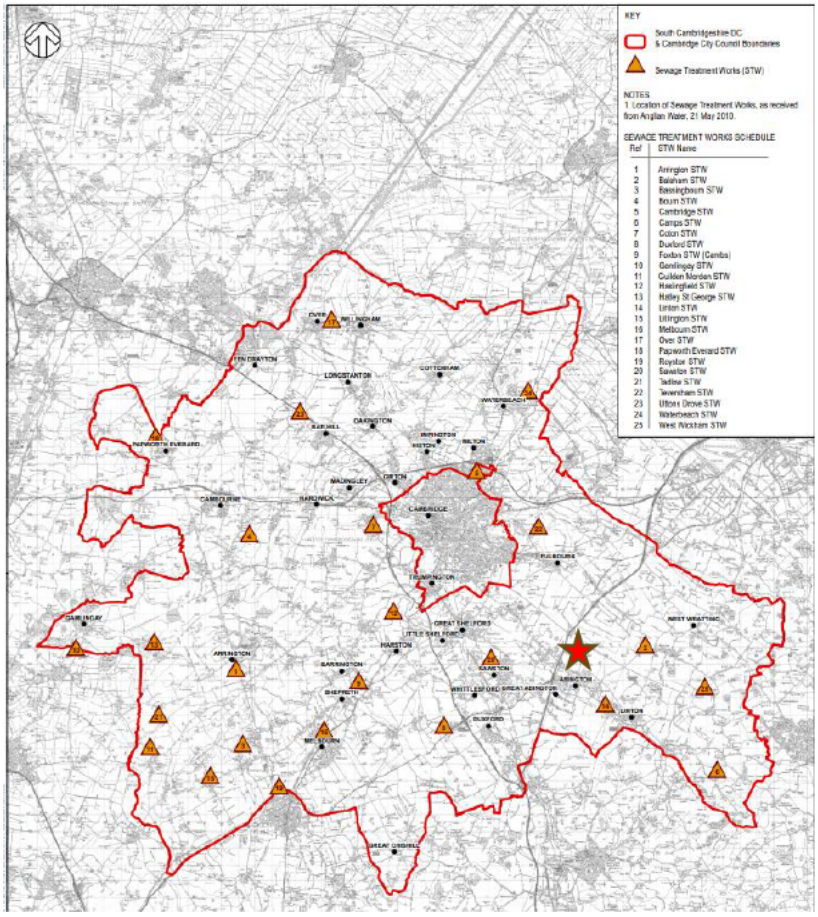

Figure 7 Plan showing the STP location - WSP water cycle report

Key Findings:

Regional Capacity: Across Greater Cambridge, there are 23 Water Recycling Centres (WRCs) serving smaller towns and villages. Some of these have spare capacity within their existing permits, while others may require investment in treatment upgrades to accommodate additional flows without harming the water environment.

New Sewerage Treatment Plant (STP): New development could be supported by green or natural treatment options, such as constructed wetlands, either at existing or new WRCs. These offer low-energy, low-carbon benefits, though feasibility will depend on site-specific constraints.

Effluent Reuse Opportunities:

- Irrigation: Treated effluent could be used for agricultural irrigation, helping to prioritise potable water for essential uses.
- Potable Supply: Subject to meeting stringent quality standards and infrastructure requirements, treated effluent could potentially be reused for potable supply.

- However, any reuse strategy must ensure that existing watercourses receiving treated flows are not adversely impacted, particularly in terms of sustainable flow levels and public health, especially where the food chain is involved.

Focus on Linton and Sawston STPs:

The report provides a regional overview of STP status but highlights Linton and Sawston as the two closest facilities to the site. A number of interrelated factors must be considered when assessing capacity at these works:

- Treatment capacity (flow and load);
- Surface water runoff impacts, which are likely to cause spills;
- Water quality implications for the receiving watercourse.

Each STP has been assessed in terms of:

- Current operational capacity (flow and population equivalent);
- Theoretical capacity under existing permit conditions, assuming treatment upgrades;
- This theoretical capacity is referred to as 'Load Standstill', representing the maximum development potential without exceeding current environmental permit limit.

STW	Current Permit (m3/day)	% used	Capacity Units (pop)	Load Standstill spare capacity Units (pop)	Current % of Low flow from STW
Linton	1,800	68%	1798	4,472	88%
Sawston	2,800	68%	2826	22,609	7-56%
Balsham	500	47%	817	3,199	N/A

Table 3 Capacity in local Sewage Treatment Works

The available data suggests that the lower reaches of the River Granta-characterised by highly permeable geology and a tendency to become ephemeral during drought conditions-may offer limited dilution capacity for treated effluent and other pollutants. As such, any proposals involving increased wastewater discharges into this part of the catchment will require detailed assessments of their potential impacts on low flow regimes and water quality.

Conversely, there may be opportunities to enhance river levels and improve water quality by increasing the volume of high-quality treated effluent discharged into the river. This approach could support baseflows during dry periods and contribute to the catchment's ecological recovery, provided that the effluent meets stringent environmental standards and is integrated into a broader water cycle strategy.

4.2. Water Industry Management Plans

Water Industry management plans

Both Cambridge and Anglian Water are mandated to prepare a 25-year Water Resources Management Plan (WRMP) and Drainage and Wastewater Management Plan (DWMP) respectively, under the Water Act 2003. This plan must reflect local growth ambitions to meet the additional demand for water from businesses and households, and must utilise (amongst other things) adopted and draft Local

Key Summary of the adopted Cambridge Water WRMP

The Cambridge WRMP was adopted in 2025, following a long negotiation with the Environment Agency given well publicised concerns about potable water supply in the region.

There are two key themes in this Management Plan: how can the plan reduce the abstraction needed to support growth by reducing the individual demands and secondly what alteration to the abstractions are needed to provide environmental protection – especially of the waterbodies such as chalk streams in close proximity to some abstraction locations

Environmental Protection and Sustainability Measures

- Cambridge Water operates a number of environmental protection schemes, all focused on ensuring no detriment to the environment.
    I. One such initiative is the **Lodes Grant Scheme**, which supports several rivers—including the River Granta. Cambridge Water will be working closely with the Environment Agency during dry conditions to monitor the effectiveness of these measures and the associated river support.
- Cambridge Water have agreed sustainability changes to be implemented from 2025. Which build upon the previous work and are based on the previous methodology for determining the no deterioration baseline under the Water Framework Directive (WFD) and are reflected in our baseline deployable output. Key Reductions to time-limited licences, as previously agreed, to prevent environmental deterioration (applying the former Environment Agency methodology for licence caps).

- Key measures include a licence aggregate to protect against deterioration in the River Granta catchment. In total, this represents an abstraction licence reduction of **4.9 Ml/d**.

Key Summary of the adopted Anglian Water DWMP

The key parts of the DWMP which apply to the site is the current plans for the local STP's . When the plan was prepared only limited growth was envisaged in this area, and as with all DWMP they need to be updated to reflect the growth aspirations of the local plan and the emerging objectives of the Government for housing and employment growth to be brought forward via the Cambridge Growth Company.

The summary of the proposals for the Linton and Sawston STP's are listed below, but both STP's are looking to improve the performance of both STP, through works within the network or within the STP itself.

Anglian Water have developed a plan for the Linton STP

- They intend to increase the capacity of the STW from 7324 - 10109 population – demonstrating that they believe there is some environmental capacity in the river Ganta (albeit this position needs to be confirmed)
- Mixed strategy for the network - intended to address sewer flooding in the catchment by SUDS
- Remove surface water from the effluent flow through SUDS
- Expand the STW

Anglian Water have developed a plan for the Sawston STW

- They intend to increase the capacity of the STW from 11,881 – 16,755 population
- Mixed strategy for the network - intended to address sewer flooding in the catchment by SUDS
- Remove surface water from the effluent flow through SUDS

4.3. The River Granta Catchment Strategy

The River Granta has been selected as a flagship project under the **Greater Cambridge Chalk Stream Project (GCCSP)**. The catchment goals are shaped by ecological, hydrological, and community priorities, and aim to restore and enhance the river's condition through collaborative, evidence-based action.

The landowner at Grange Farm has previously delivered measures / improvements to the land adjacent to the River set out by this strategy, and actively promotes the benefits with the wider farming cluster.

Ecological Restoration

- Improve Water Framework Directive (WFD) status from *Moderate* to *Good* and ultimately *High*.
- Protect and enhance biodiversity, focusing on indicator species such as brown trout, freshwater shrimp, white-clawed crayfish, and various aquatic plants and invertebrates.
- Address invasive species like Himalayan balsam and signal crayfish.

Sustainable Water Management

- **Reduce abstraction impacts** through Hands-Off Flow (HOF) conditions at key abstraction points (Linton, Rivey Hill, Horseheath).
- **Implement aquifer recharge schemes** and sustainable drainage systems (SuDS).
- **Explore reuse and recycling** of water to reduce demand and support river flows.

Flow Regime and Hydrology

- **Restore natural flow conditions**, especially in upper reaches prone to drying.
- **Maintain summer baseflows** through augmentation schemes (e.g., Ashdon borehole).
- **Commission hydrological and geomorphological studies** to inform long-term catchment planning.

Water Quality Improvement

- **Reduce phosphate and nitrate pollution**, particularly from sewage treatment works and agricultural runoff.
- **Monitor and manage effluent discharges**, including citizen science initiatives.
- **Introduce innovative treatments**, such as UV light in culverts and artificial aquatic habitats.

Habitat and Channel Restoration

- **Address physical pressures** such as straightened, incised, and over-wide channels.
- **Reconnect floodplains** and improve riparian vegetation.
- **Remove or modify barriers** to fish passage (e.g., weirs, mills, gauging stations).

Stakeholder Engagement

- Collaborate with local authorities, water companies, landowners, and community groups.
- Engage agricultural stakeholders through farm clusters and demonstration projects.
- Promote water stewardship and education within the community, something that can be embedded and achieved through the site stewardship model

Current Landowner Actions

The landowner adopts a long term stewardship model both in its approach to land management in the area as for the proposed development, noting the proposal to establish a Community Stewardship Trust.

Part of the River Granta the project seeks to create a wider evidence base to encourage other farmers to undertake the rainwater harvesting works. This has already been undertaken by the Grange Farm Landowner in addition to the work to restore further stretches of the River Granta. This work used the same methodology as the Landowner adopted in its work to the River in Hildersham.

4.4. The summary of the issues and proposed response to the planning and technical background documents.

The proposed site strategy for development at Grange Farm will need to provide a solution to demonstrate that there is a location suitable for the treatment of sewage, The Integrated water Management Plan study 2021 (summarised above) provides part of the evidence base prepared for the local plan, the data presented has been used to identify two possible options (Linton and Sawston) in the vicinity of the site where additional capacity could theoretically be created. Both plants can be included as options going forward.

The planning documents also discuss the uncertainty that some additional highly treated sewage may provide a positive impact and a baseflow during very dry conditions.

To demonstrate that the water environment has sufficient capacity such that additional flow can be a positive contribution, further water quality modelling will need to be prepared in the future. This would need to demonstrate that through an appropriate process of sewage treatment, that the quality of the water discharged to the Granta is of sufficient quality to meet expected standards.

An alternative could be a groundwater recharge scheme, with sewage that has been sufficiently treated and cleaned, so that the future impact can be demonstrated.

The landowner has been delivering the goals and aspirations of the River Granta within their existing landownership. Their long term stewardship model provides

an ideal background to ensure the wider benefits can be captured as the scheme developed.

These key points are taken through to the site proposals to demonstrate that they are, in theory, deliverable. Further work will be needed to develop site specific proposals at Grange Farm, and to ensure that the processes adopted and capacity of the system are sufficient to provide confidence to all parties that strict water quality standards will be met and maintained – either through recharge of the River Granta, or to the aquifer.

5. Options for onsite strategy

5.1. Water Cycle Strategy

The development will adopt a water cycle approach to ensure that infrastructure planning aligns with both the aspirations of the scheme and the physical and environmental constraints of the site and the wider area.

The overarching goal is to maximise the benefits of water managed within the site. This includes minimising water consumption, supporting aquifer recharge, and contributing to wider initiatives such as the River Granta Low Flows Scheme through the provision of additional water where feasible, and where water quality standards can be met.

A key aim of the strategy is to collaborate with stakeholders and interest groups to ensure that water management within the development contributes positively to the broader objectives for the River Granta catchment.

5.2. Water minimisation

The foundation of the strategy is to minimise water consumption within the development using low-water-use fixtures and fittings. In the Cambridge region, residential water consumption typically ranges from:

- **80 litres per person per day** (policy-compliant developments), to
- **110 litres per person per day** (building regulation-compliant developments).

This variation reflects differing developer approaches to water reuse and recycling. Grange Farm as an exemplar will improve on these figures by adopting additional water recycling methods such as Grey Water Recycling.

Water consumption is influenced by the type of fixtures and fittings installed, as well as the extent of non-potable water reuse. The table below illustrates typical consumption scenarios:

Water Consumption (l/per/day)	Reuse (l/per/day)	Net consumption (l/per/day)
110	33	77
90	20	70

Table 4 – typical water consumption savings and goals by reusing water.

The table above demonstrates that is feasible to achieve a consumption less than the policy goal of 80l/person/day. Therefore, the proposal for this development is to achieve **a net water consumption of less than 80 litres per person per day**, through a combination of water minimisation measures and reuse strategies. The ambition will be to achieve the lowest possible levels of water consumption, and

it may be that a further improvement can be realised through the system design. At this stage, we are unable to commit to a further reduction until more detailed analysis and design has been undertaken, but this remains an ambition for the project. There are examples within Cambridge (such as Clay Farm) where the principles and lessons learnt can be applied in on this site to achieve these lower consumption figures.

This could reduce the overall sewage generated by the development which will need to be discharged (under a discharge consent). The core site is summarised below.

Land Use	Quantity	Baseline Sewage Generated (m3/day)	Reduced Sewage with reuse (m3/day)
Proposed number of homes	Up to 5,000	1,265.00	885.5
Proposed future population based upon 2.3 people / home.	11,500 Future residents		
Jobs	500 – 750	26.25	18.4
Primary Schools	2 Nos at 4 FE (c1450 pupils)	50.75	35.5
Secondary Schools	1 No at 6 FE (c850 spaces)	29.75	25.9
Total		1,371.75	965.3

Table 5 Predicted Site Scale Savings by the Reuse of water.

The expanded site is summarised below.

Land Use	Quantity	Baseline Sewage Generated (m3/day)	Reduced Sewage with reuse (m3/day)
Proposed number of homes	Up to 8,000	2024.00	1416.8
Proposed future population based	18,400 Future residents		

upon 2.3 people / home.			
Jobs	1000 – 1500	52.5	36.8
Primary Schools	3 Nos at 4 FE (c2320 pupils)	81.2	56.8
Secondary Schools	1 No at 10 FE (c1,360spaces)	47.6	33.32
Total		2,205.3	1543.7

Table 6 Predicted Site Scale Savings by the Reuse of water.

5.3. Reuse and recycling opportunities

There are several options for water reuse and recycling, primarily distinguished by the scale of the reuse systems and the type of water being reused. The Enabling Water Smart Communities initiative, supported by Anglian Water and OFWAT, has provided a strong evidence base and roadmap for delivering reuse at a larger scale. Notably, successful examples such as Clay Farm in Cambridge demonstrate that large-scale community reuse schemes can be implemented ahead of regulatory changes.

This development is intending to adopt the philosophy of Water Smart Communities—creating a place where water is central to design, where residents embrace water stewardship, and where infrastructure empowers people to use water wisely and sustainably.

A community-scale approach is proposed as the most cost-effective and sustainable option for long-term water stewardship. While the final mix of greywater and rainwater recycling will be determined as the scheme progresses, each option offers distinct benefits:

- Greywater recycling provides a more consistent and reliable source of non-potable water. It also reduces the volume of treated wastewater discharged into the environment by up to 30%.
- Rainwater harvesting allows surface water to be redirected for aquifer recharge, supporting local hydrological balance and contributing to the River Granta low flows initiative.

The strategy will be refined in collaboration with stakeholders to ensure that the selected reuse systems align with both environmental goals and community needs. We are aware of recent issues with the Drinking Water Inspectorate approvals at North West Cambridge, and until such matters are resolved, the precise design philosophy will need to remain flexible.

5.4. Onsite - Water Cycle Options

There are two options for the site when we apply the water cycle approach which the site can potentially adopt, these essentially focus on how water will be used within the site and the options for use of any water at the end. With all these options for some additional works will be required either to the local treatment infrastructure or within the site as a private network. The scale of the works needed is likely to be in line with developments of this scale.

Option 1 – Traditional Approach

In this option, water demand is managed on-site through reuse and recycling, with wastewater conveyed to an existing Anglian Water sewage treatment plant (STP). The closest STP is **Linton**, which discharges directly into the River Granta. Another potential facility is **Sawston STP**. Each has distinct constraints and opportunities:

Linton STP

- Anglian Water has plans to improve performance, including phosphate reduction and surface water removal to enhance water quality.
- Anglian Water has long-term plans include STP expansion.
- Anglian Water has plans to remove surface water from the network which will reduce the number of spills.
- The Integrated Water Management Plan (IWMP) suggests that a '**load standstill**' scenario—where pollutant loads remain within current permit limits—could theoretically accommodate growth.
- However, STP upgrades and water quality modelling would be required to assess the full impact of the development.
- Notably, increased summer flows may benefit the River Granta, especially following changes in local groundwater abstraction that support low-flow conditions.

Sawston STP

- Anglian Water is implementing network management strategies to reduce spills.
- The IWMP also identifies a theoretical 'load standstill' scenario that could accommodate the development, subject to STP upgrades.
- This STP is less sensitive to low flows, but water quality modelling would still be necessary to confirm no adverse impacts.

Option 2 – Onsite STP

In this scenario, potable water is supplied by **Cambridge Water**, while wastewater is treated on-site using a new, purpose-built STP. This approach aligns with recommendations in the Council's Integrated Water Management Study and offers several advantages:

- **Advanced treatment technologies** can achieve higher environmental standards, particularly in nutrient removal and effluent quality.
- Innovative systems such as **Organica- Innovative Solutions for Wastewater Treatment**
- This type of treatment works has been tried and tested with over 110 operational plants, covering a range of size from small communities to city scale. They are designed to deliver high environmental treatment standards, using less energy and substantially smaller footprint. They are designed to be integrated into the community and therefore, many of the nuisance issues around odour have been eliminated. They have been tested at different scales and can be used in isolation with different technologies to almost achieve any water quality standards.

Key benefits of an on-site STP include flexibility in managing treated effluent:

- **Discharge to the River Granta**, supporting flow regimes during dry periods.
- **Discharge to ground** as part of an aquifer recharge scheme.

- **Offsetting existing abstractions** for non-potable uses. For example, water generated from the site could possibly be used to replace current water abstraction near Alder Carr SSSI. This approach could both provide indirect support to sensitive sites, reducing the abstraction from the river and therefore provide additional positive impacts on the river.

These options can be managed independently or integrated with the site's Sustainable Drainage Systems (SuDS) strategy, enhancing water resource availability and improving water quality. Integration with catchment-wide plans will be essential, and further technical modelling and testing will be required to determine how best to maximise community and environmental benefits. Given the intention to deliver substantial scale green spaces within the development, SuDS will have a critical role as part of the multi-functional landscape design.

This integrated approach will provides the opportunities for the site, to close the water cycle using a strategic recharge of the aquifer to site to become as close to water neutral as possible in terms of the impact on the aquifer.

Determination of the most appropriate design and technical solution will require extensive consultation with a range of interested parties, including GCSP, the water companies, the Environment Agency and local interest groups.

6. Summary

Grange Farm offers the unique opportunity to implement an exemplary solution combining best in class rainwater harvesting, grey water recycling and water treatment approaches which provide solutions for the Greater Cambridge Chalk Stream Project's sustainable water management and flow regime goals.

The landowner at Grange Farm, is committed to the long-term stewardship of the wider estate including this site. Their current and proposed approach to the stewardship of the land generates the opportunities which will deliver a strategy that seeks to capture the long-term benefits needed by the wider catchment.

This report draws on this approach and outlines a range of initial options for the management and delivery of water infrastructure on the site, including both on-site solutions and the use of existing Anglian Water infrastructure. The site has the potential to deliver its own sewage treatment plant (STP), enabling local water reuse and providing a viable, self-contained solution.

Depending on the scale of development that comes forward, be that 5000- 8000 homes, there are a range of solutions that can cater for either scenario each with their own merits. We look forward to working collaboratively with the utility companies, relevant stakeholders Anglian Water, Cambridge Water, The Environment Agency, Enabling Smart Water Communities, WRE and the River Cam Partnership and the Granta Geographical Working Group and the GCSP officers to develop the right solution for this site.

In order to demonstrate that site is suitable for an allocation for development, through the planning process, we have identified that there is a deliverable strategy to dispose of treated sewage.

We have identified 2 different STP options; 2 Anglian Water plants offsite with a theoretical capacity to be expanded and a new modern purpose-built option onsite delivery highly treated sewage. These STP options can then be combined with 2 clear different methods of safe disposal of treated sewage either to ground as part of an aquifer recharge scheme or a watercourse likely to support the augmentation of low flows with highly cleaned treated effluent.

However, the final preferred approach will need to be developed in close collaboration with a range of stakeholders to ensure that the scheme delivers the greatest possible benefit to the River Granta catchment. This may result in a hybrid solution that combines elements of the proposed options.

As the scheme progresses through the planning process, further testing and modelling will be required—particularly to assess the benefits of recent changes to groundwater abstraction. These assessments will help stakeholders understand how the proposed development can build on those changes to deliver additional environmental and community benefits.

With a lead time for the delivery of first occupants by c. 2030, we are confident that appropriate solutions can be identified, developed and implemented to enable delivery of a sustainable new community at Grange Farm, with solutions tailored to the ultimate scale of development that comes forward.

Hilson Moran
part of the Tyréns Group

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