

24028-PWA-00-XX-LTR-C-1001-P01

Local Planning Authority
Lancashire County Council
Simon Dean Bradshaw Farm
Long Heys Lane
Dalton Lancashire
WN8 7RS

14 July 2026

Dear Local Planning Authority

Re: Application Number: 3/2026/0356 – Drainage Strategy

This letter has been prepared in support of a planning application at the land off Whalley Road, Reed and sets out the proposed drainage strategy for the development. The purpose of this submission is to demonstrate that surface water and foul water drainage can be managed in a sustainable and appropriate manner, having regard to national planning policy, relevant drainage guidance and the requirements of the Local Planning Authority and Lead Local Flood Authority. Drainage Strategy

1.1. Previously Developed / Brownfield

If you are proposing to use an existing drainage system for surface water management on your development site, your drainage system can be designed to 'previously developed' standards. For sites covered by buildings or impermeable hard surfaces this may require a reduction to existing rates to be applied to satisfy local planning policies.

For the avoidance of doubt, 'use of an existing drainage system' means using the entirety of the existing drainage system on site and does not refer to simply the point of discharge.

Example: If you are proposing to demolish an existing building and replace it with a new building but will use the existing means of surface water removal in entirety, this would be classified as 'previously developed.'

1.2. Greenfield

If you are proposing to install a new drainage system for surface water management on your development site then your drainage system must be designed to 'greenfield' standards, even if the land has been previously developed. It may be worth checking your Local Planning Authority's Local Plan for a local policy position.

1.3. Proposed Development

The proposed application site is undeveloped agricultural land as existing. There is scope to implement a new drainage system to tackle surface water flooding issues therefore this site will using a greenfield design approach.

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1.4. Surface Water Drainage

In accordance with National Planning Policy Framework (NPPF), Building Regulations Approved Document H and the local LLFA guidance, options for disposal of surface water from new developments should follow the hierarchy below:

1. Reuse of rainwater for non-potable use
2. Discharge to ground via infiltration.
3. Discharge to watercourse/waterbody
4. Discharge to surface water sewer.
5. Discharge to a combined sewer.

Sustainable Drainage Systems (SuDS) should also be used wherever possible to mimic as far as practicable the natural run off regime, improve water quality, reduce run-off volume and attenuate peak flows. These should be designed in accordance with the current guidance, CIRIA C753 'The SuDS Manual'.

1.4.1. Reuse for non-potable use

In accordance with the Sustainable Drainage Hierarchy, priority should be given to the collection and re-use of surface water before consideration is given to discharge, attenuation or other forms of management. To align with this principle, the proposed development incorporates rainwater harvesting measures in the form of rainwater butts connected to at least one roof drainage downpipe serving each dwelling.

Rainfall collected from roof areas will be diverted to the rainwater butts and stored for subsequent non-potable uses, such as garden watering, vehicle washing and general external cleaning. This provides a practical means of reducing potable water consumption while also reducing the volume and rate of surface water runoff entering the wider drainage network during smaller and more frequent rainfall events.

The provision of rainwater butts on each plot represents a distributed source control measure and accords with the first preference of the Sustainable Drainage Hierarchy by promoting the collection and re-use of surface water at source. The stored water can be reused by future residents, providing an ongoing sustainable drainage benefit throughout the lifetime of the development. Consequently, the proposed drainage strategy incorporates opportunities for surface water re-use before reliance on downstream attenuation measures within the wider SuDS network.

1.4.2. Infiltration

PWA attended a site walkover on 14/02/2024. During the visit, it was observed to have waterlogged, with areas of standing water and saturated ground conditions evident across most of the lower areas of the site. These observations indicate that the underlying soils exhibit poor natural drainage characteristics and that infiltration of surface water is likely to be significantly constrained.

The observed saturated ground conditions suggest that infiltration rates are likely to be low and that soakaways or other infiltration-based SuDS features may not drain effectively between storm events. This could result in reduced storage capacity, prolonged ponding and an increased risk of localised flooding.

In the absence of infiltration testing data and given the clear evidence of waterlogged ground conditions, infiltration has not been considered a viable means of surface water disposal for this development. Accordingly, the drainage strategy has been developed on the basis of attenuation and controlled discharge, with infiltration measures excluded from the design. Should future site investigation works demonstrate infiltration to be feasible, opportunities to incorporate infiltration drainage can be reviewed at the detailed design stage.

1.4.3. Watercourse/waterbody

Should infiltration on the site be unviable for the surface water drainage system, then the next method in order of the hierarchy is to discharge a watercourse or waterbody.

After a desktop study, UK River maps located Clough Skye Brook. Located the southwest boundary. it is recommended a dialogue with the Environment Agency and LLFA is entered to discuss feasibility of a surface water outfall at this location. Below, *Figure 1* presents the location of the watercourses in relation to the development area(edged in red)

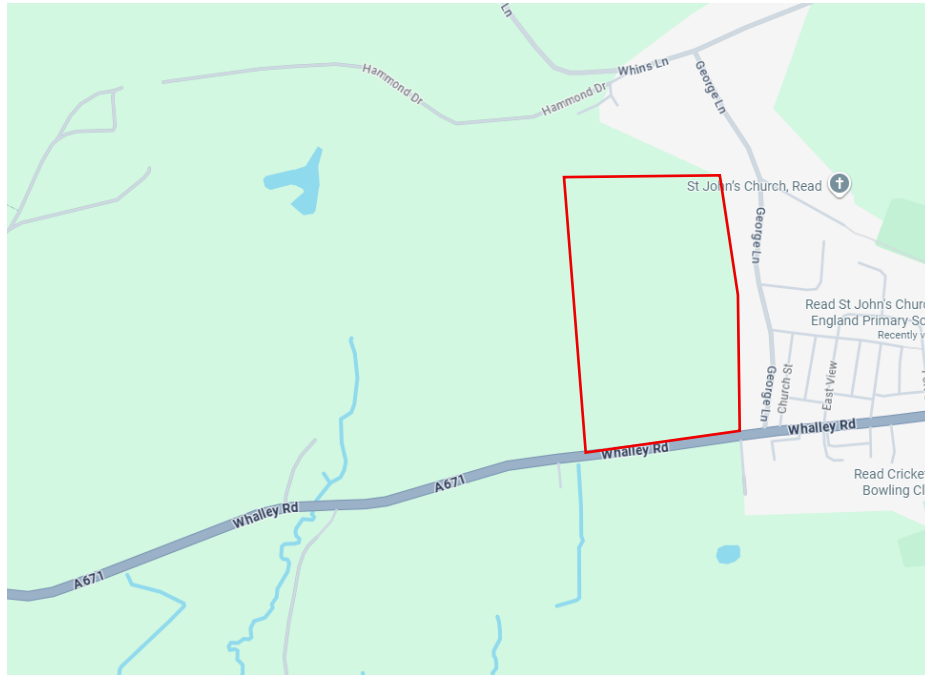


Figure 1 Watercourse Location

1.4.4. Greenfield Rate

As the site is greenfield, final outfall pipe from the proposed drainage system will discharge to the beck at a controlled rate.

The current greenfield site shows a 2.062 ha; no significant land changes have occurred or been made on the site therefore using this area the greenfield rate can be calculated. Fixed greenfield rate for surface water to be discharged is 18.40l/s.

Table 1 Run off analysis

Runoff Event	Flow Rate (l/s)
Q1 (1 in 1 year)	16.0
Q30 (1 in 30 years)	31.20
Q100 (1 in 100 years)	38.30
QBAR	18.40

1.4.5. Surface Water Drainage Proposals

To manage the surface water proposals and limit the discharge to the aforementioned greenfield discharge rate, it is proposed to utilise a positive below ground drainage system with a flow control device and attenuation in the form of a cellular attenuation structure.

Table 2 Storage Requirements

Drainage Feature	Volume (m³)
Pond	2829.21

1.4.6. Climate Change

Peak rainfall intensities should be utilised for the design as below

Table 3 Ribble Management Catchment Peak River Flow Allowances

Allowance Category	3.3% annual exceedance rainfall event		1% annual exceedance rainfall event	
	Central allowance	Upper end allowance	Central allowance	Upper end allowance
'2050s' (2024 to 2060)	25%	35%	25%	35%
'2070s' (2061 to 2125)	30%	40%	40%	50%

1.4.7. Management of Everyday Rainfall

To manage everyday rainfall events, the first 5mm of runoff from each storm should be collected for re-use, infiltrated into the ground, or captured and conveyed within Sustainable Drainage System (SuDS) features.

To achieve this objective, the proposed development incorporates rainwater butts connected to the rear rainwater downpipes of all dwellings, together with a SuDS attenuation basin designed to provide storage equivalent to, or greater than, the runoff volume generated by the first 5mm of rainfall falling on all impermeable areas within the development, including an allowance for urban creep.

Rainwater Harvesting

Rainwater butts will be installed on at least one rainwater downpipe at the rear of each dwelling. These will facilitate the collection and re-use of rainwater for non-potable purposes, such as garden watering and vehicle washing. In addition to promoting water re-use, the rainwater butts provide distributed source control storage across the site, contributing to the management of the initial 5mm of rainfall.

Storage Within SuDS Basin

The proposed SuDS basin, which provides attenuation for runoff from the entire development, includes a forebay designed to accommodate a storage volume equal to, or greater than, the runoff generated by the first 5mm of rainfall falling on the impermeable surfaces.

The required storage volume has been calculated as follows:

$$21,972\text{m}^2 \text{ (impermeable area + 10\% Urban Creep)} \times 0.005\text{m} = 109.86\text{m}^3.$$

The proposed forebay, with a storage depth of 0.5m, provides a storage volume of 116.715m³ and therefore exceeds the required storage volume of 109.86m³.

The forebay will remain unlined to maximise any available infiltration into the underlying ground. However, based on the findings of the ground investigation, infiltration rates are anticipated to be limited and have therefore not been relied upon within the drainage design. The forebay has been designed to drain down into the main basin between storm events via a permeable bund arrangement, ensuring that the storage volume remains available for subsequent rainfall events.

The drainage strategy provides storage capacity equivalent to the runoff generated by the first 5mm of rainfall falling on the developed impermeable area and therefore accords with the requirement to manage the first 5mm of rainfall on-site.

1.5. Foul Water Drainage Proposals

As priority, foul water drainage systems should seek to follow the below hierarchy for the discharge location, using the highest option up the list as reasonably practicable.

1. Public sewer
2. Private / shared sewer
3. Package treatment plant
4. Septic tank
5. Cesspit

1.5.1. Public Sewer

United utilities sewer records have been reviewed, and it has been determined that public combined main sewers are located within Whalley Road. Below, presented in *Figure 2*, are the public sewer records (development area edged in red).

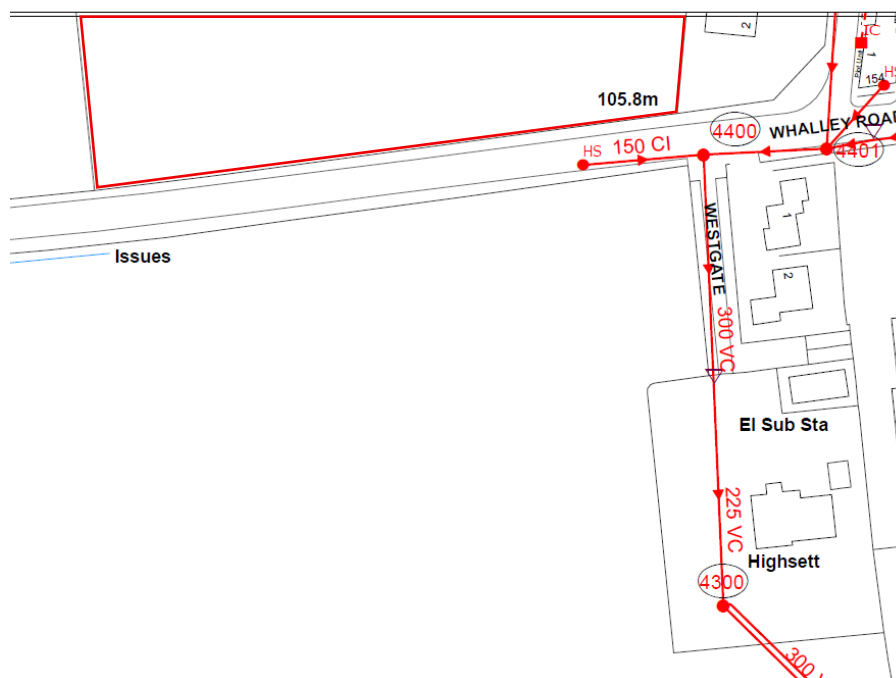


Figure 2 Public Sewer Records

2. Management and Maintenance

2.1. Responsibilities

Table 4 Maintenance Responsibilities

Feature	Responsibility
Main Spine Network (foul and surface)	United Utilities
Pond / Swales	United Utilities
Gullies and tails	Lancashire County Council
Plot drainage	Homeowner

2.2. Activities

Following development, the end users will have responsibility to ensure that continued inspections and maintenance of the proposed private drainage system and SuDS features are managed and maintained by a suitably qualified professional.

Table 5 Maintenance Requirements

Drainage System	
Regular maintenance	Frequency
Visually inspect gutters to ensure they are kept clear of leaves, debris, etc.	Annually. No triggers other than maintenance to be taken on regular schedule.
Lift covers of drainage to inspect chambers for debris and build-up of silts	
Occasional tasks	Frequency
Remove leaves and debris from gutters. Remove debris from inspection chambers to ensure outlets are kept clear of debris to ensure adequate drainage.	As required. indicator of problem/trigger for maintenance when surcharging or flooding of drains occurs or gutters and chambers full of debris and leaves, etc.
Remedial works	Frequency
Should drains be heavily blocked or damaged, contact drainage maintenance company for unblocking/repair works.	As required. Indicator of problem/trigger for maintenance when drainage not functioning and unblocking pipes and chambers etc not effective.
Gullies	
Regular Maintenance	Frequency
Lift covers of channels and gullies to visually inspect for the build up of silt and debris.	Bi-annually
Occasional Tasks	Frequency
Remove debris from channels and gullies.	Annually or as required
Remedial Work	Frequency
Should the channels or gullies be heavily blocked or damaged jet out/repair/replace them.	As required.
Hydrobrake Flow Control Unit	
Regular Maintenance	Frequency

Drainage System

Lift cover of flow control chamber and visually inspect flow control for debris.

Bi-annually

Remedial Work

Frequency

Should flow control unit be heavily blocked or damaged jet out/repair/replace flow control unit.

As required.

Pond

Regular Maintenance

Frequency

Remove litter and debris, cut grass for spillways, access routes, meadow grass in and around basin, along with management of other vegetation and remove nuisance plants. Tidy dead growth before the start of the growing season.

Monthly or as required. To be undertaken by management and maintenance company.

Inspection of inlets, outlets, banksides, structures, pipework for blockages, or physical damage.

Monthly. To be undertaken by United Utilities.

Check penstock and other mechanical devices.

Annually. To be undertaken by United Utilities.

Hand cut-submerged and emergent aquatic plants (at min of 0.1m above pond base. Include max 25% of pond surface.

Annually. To be undertaken by management and maintenance company.

Remove 25% of bank vegetation from water's edge to a minimum of 1m above water level.

Annually. To be undertaken by management and maintenance company.

Occasional Work

Frequency

Reseed areas of poor vegetation growth

As required.

Prune and trim trees and remove cuttings.

Every 2 years, or as required. To be undertaken by management and maintenance company.

Remove sediment from the inlets, outlets, forebay and main basin when required

Every 5 years, or as required. To be undertaken by United utilities upon adoption.

Remove the sediment from the main body of the basin when the pool volume is reduced by 20%.

3 – 10 years, or as required. To be undertaken by United Utilities.

Inspect banksides, structures, pipework for evidence of poor operation or physical damage.

Every 6 months. To be undertaken by United Utilities.

Inspect water body for signs of eutrophication.

Monthly, in the months May to October. To be undertaken by United Utilities.

Inspect silt accumulation rates establish appropriate removal.

Every 6 months. To be undertaken by United Utilities.

Pond

Remedial Work	Frequency
Repair erosion or other damage by reseeding or re-turfing.	As required. To be undertaken by management and maintenance
Realignment of rip-rap. Repair / rehabilitation of inlet, outlet and overflows. Relevel uneven surfaces and reinstate design levels.	As required. To be undertaken by United Utilities.

Swale

Regular Maintenance	Frequency
Remove litter and debris	
Cut grass – to retain grass height within specified design range	
Manage other vegetation and remove nuisance plants	
Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly, or half yearly.
Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for >48 hours.	
Inspect vegetation coverage	
Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies	
Occasional Taks	Frequency
Reseed areas of poor vegetation growth, alter plant types to better suit conditions, if required	As required or if bare soil is exposed over 10% or more of the swale treatment area
Remedial Actions	Frequency
Repair erosion or other damage by re-turfing or reseeding	
Relevel uneven surfaces and reinstate design levels	
Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soils surface	As required
remove build-up sediment on upstream gravel trench, flow spreader or at top of filter strip	
remove and dispose of oils or petrol residues using safe standard practices	

If you have any questions regarding the above, please do not hesitate to contact us.

Yours sincerely,



Liam Steadman
Senior Civil Engineer
For and on behalf of Paul Waite Associates Ltd

Enclosures

Enclosure 1 - 24028-PWA-00-XX-DR-1002 P02 Drainage Strategy.

Enclosure 2 - 24024-PWA-00-XX-CA-C-1000 P01 Surface Water Calculations



CONSULTING ENGINEERS

End of Report

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