

Hanmer Arms – Maintenance & Management Plan

Project:	SHF.244.003.HY.R.002.A
For:	Carlton Holdings Ltd
Status:	Issued
Date:	March 2021
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1. Introduction

Enzygo Ltd was commissioned by Carlton Holdings Ltd to prepare a Detailed Drainage Strategy (Reference: MAN.244.003.HY.R.002.A [September 2020]), in support of a planning application (P/2020/0554) for a touring park development at the Hanmer Arms, Hanmer (the 'Site').

2. Purpose

Following submission of the Drainage Strategy, the SuDS Approval Body asked for details on the maintenance and management of the SuDS features designed. A copy of the correspondence is included in Appendix 1.

3. Drainage Design Principles

A copy of the drainage strategy drawing (Drawing 101 P02) is included in Appendix 2, and a summary is included below:

Surface Water

- Surface water runoff would be directed to a swale via drainage gullies located around the perimeter of the amenity block. Landscaped areas should be incorporated into the layout where possible, and unit will allow a proportion of the rainfall to infiltrate into the soil substrate.
- The pitches and access road would be constructed using partially permeable paving. Runoff would be directed to the swale via perforated pipes.
- The swale would be positioned and contoured to achieve a gravity fed connection to the land drain located along the north eastern boundary.
- The amenity block and road would generate a low 1.0 l/s discharge rate. Attenuation will be provided for all storm events up to and including the 1 in 100-year (plus 40% climate change) assuming no infiltration. The attenuation volume is 21m³.

Foul Water

- The Site will discharge to the private sewer within the same land ownership before outfalling to the Welsh Water public sewer. This connection has been agreed with Welsh Water through a pre-development enquiry.

All sewerage should be designed in accordance with Building Regulations Part H. In areas where sewers are to be adopted by Welsh Water, sewerage should be designed in accordance with Sewers for Adoption (7th Edition) and supplemented with additional standards provided by Welsh Water. An application to enter into a Section 104 agreement for sewer adoption must be made in writing to Welsh Water prior to any works commencing on Site.

4. Drainage Layout

The drainage strategy drawing (Appendix 2) includes information on:

- Surface water runs, including pipe sizes, invert, and cover levels.
- The position of the onsite swale, including bed and bank levels, freeboard allowance, and cross sections.
- Flow control structures.
- Inlet and outfall arrangements.
- Exceedance routes.

5. Operation Phase

Principles of the Maintenance and Management Plan

Key areas of maintenance have been identified from the drainage layout. The following identifies how the drainage layout has considered access, the anticipated maintenance activities and who might be responsible for the maintenance.

Maintenance of the SuDS features would be in line with the SuDS Manual (CIRIA C753, 2015). The maintenance would be undertaken by a private maintenance company. It is standard for SuDS features within a new development to be maintained by a private maintenance company, unless the Council adopt it. If the maintenance company goes into administration, the Site will be contracted to a new maintenance company. The Site owner will pay a surcharge to the maintenance company. This will ensure maintenance throughout the lifetime of the development.

The schedule should be a living document as it may change, where inspections advise changes to the scheme maintenance requirements.

The SuDS attenuation features should be designed in line with design guidance by the Council if they are to be adopted.

Proprietary Systems

i. Flow Control Structures

Flow control structures (Hydrobrake) will be positioned downstream from the swale in a chamber which would allow access for inspection and maintenance. The Hydro-brake vortex flow control provides water quantity management for surface water across a wide range of flows and for a

variety of applications. It has no moving parts and no power requirements and provides reliable, low- maintenance, engineered flood management as part of green infrastructure developments.

Typical maintenance would include:

- Periodic de-silting of the Hydrobrake sump.
- Checking the emergency drain down mechanism is functioning.
- The sump should be emptied/checked at least as follows (but with an annual inspection and additional cleansing if required): The timetable of the maintenance would be on completion of drainage works, Year 1, Year 3, then every 5 years. This would allow for first year flush when sediment from construction would be greatest, then less frequently as the Site matures (i.e. compaction of ground and vegetation growth reduces erosion).

The flow control structure will be the responsibility of the private management company unless adopted. This is dependent on whether the Statutory Authority (SAB) is willing to adopt.

ii. Access Roads

Access Roads are readily accessible with traffic management in place.

Typical maintenance will include:

- Periodic desilting of catchpits and channel drains to ensure operation as per the design and prevent blockage. These should be emptied at least as follows (but with an annual inspection and additional cleansing if required): On completion of drainage works, Year 1, Year 3, then every 5 years. This would allow for first year flush when sediment from construction would be greatest, then less frequently as the Site matures (i.e. compaction of ground and vegetation growth reduces erosion).
- Gratings on channel drains to be kept clear of debris.
- Periodic jetting or rodding of pipework as required to clear blockages.

The above maintenance items will be the responsibility of the private maintenance company.

iii. Inlets and Outlets

The outlet from the swale will be set above the level of the receiving watercourse to allow the swale to run dry between rainfall events.

iv. Retention Separator

Retention separators will be positioned upstream from the attenuation features (swale). Separators will provide water quality benefits, before discharging surface water to watercourse.

Typical maintenance activities and frequency are summarised in Table 5.1.

Table 5.1: Retention Separator Maintenance Activities

Maintenance Frequency	Required Action	Maintenance Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly, if required take immediate remedial action.	Inspect every six months.
	Clean out any oil and silt from interceptor.	Audio Visual Alarm when 90% of the recommended maximum oil storage volume is reached.
Remedial Work	Repair physical damage if necessary.	As required.

v. Below Ground Drainage Pipes

Pipes between the swale and Hydrobrake chamber and from the chamber to outfalls will be the responsibility of a private management company, unless adopted.

Typical maintenance activities and frequency are summarised in Table 5.2.

Table 5.2: Below Ground Drainage Pipes

Maintenance Frequency	Required Action	Maintenance Frequency
Regular Maintenance	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 can cause risks to performance.	Monthly.
	Remove sediment from pre-treatment inlet structures and inspection chambers.	Annually/ss required.
	Maintain vegetation to design limits within the vicinity of the below ground drainage pipes/soakaways to avoid damage to the system.	Monthly/As required.
Remedial Work	Repair physical damage if necessary.	As required.
Monitoring	Inspect all inlets, outlets, and wets to ensure that they are in good condition and operating as designed.	Annually.
	Survey inside of pipe runs for sediment build up and remove if necessary.	Every 5 years/as required.

SuDS Features

i. Swale

The swale will be the responsibility of a private management company, unless adopted.

Typical maintenance activities and frequency are summarised in Table 5.3.

Table 5.3: Swale Maintenance Activities

Maintenance Frequency	Required Action	Maintenance Frequency
Regular Maintenance	Remove litter and debris	Monthly, or as required
	Cut Grass – to retain grass height within specified design range	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets, outlets, and overflows for blockages, and clear if required	Monthly
	Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for >48 hours	Monthly, or when required
	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
	Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies	Half yearly.
Occasional Maintenance	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
Remedial Work	Repair erosion or other damage by reseeding or re-turfing	As required.
	Relevel uneven surfaces and reinstate design levels	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

Watercourses

The layout includes an 4m easement free from development along the northern bank of the unnamed watercourse (an ordinary watercourse, conveying flows north along the south east boundary). Proposed easements would provide access for inspection and maintenance purposes, including vehicle access.

Ordinary watercourses are watercourses where flood risk work is undertaken by the Local Authority / riparian owner.

Land or property located next to a river, stream or ditch makes the landowner a 'riparian landowner'. Rights and responsibilities of riparian landowners are established in common law; however, they may be affected by other laws. Permission for some activities may be required from a third-party, such as the SAB or the Natural Resources Wales. These organisations are known as 'risk management authorities.'

Details of riparian landowner rights and responsibilities are detailed in the Natural Resources Wales document 'A Guide to Your Rights and Responsibilities of Riverside Ownership'. If riparian landowners do not carry out their responsibilities, they could face legal action.

The key points in relation to maintenance relevant to this Site include:

- Keeping banks clear of anything that could cause an obstruction and increase flood risk, either within the Site or downstream if it is washed away.
- The landowner is responsible for maintaining the bed and banks of the watercourse and the trees and shrubs growing on the banks. Litter should be cleared from the channel and banks, even if they did not come from within the Site.

The correct level of maintenance of watercourses varies from site to site depending on local conditions and characteristics. An important consideration is to ensure the proper flow of water by preventing obstructions, whilst maintaining a habitable and amenable space for wildlife. Inspection and maintenance should be monthly for the first year, then three times per year then as required (i.e. following major storm events).

River corridors often includes wildlife and their places of shelter, which are protected by legislation. Contravention e.g. recklessly damaging water vole burrows or disturbing nesting birds, otters or spawning fish are all offences of which may lead to prosecution. Therefore, before undertaking any maintenance work, riparian landowners may wish to contact the risk management authorities to seek advice.

6. Construction Phase

Mitigation measures are designed in to reduce the potential for impacts on hydrology, flood risk and water quality:

A summary of the mitigation measures during the construction phase, timetable for implementation and validation of the final drainage design is provided below.

- Good environmental practice based on legal responsibilities and guidance in accordance with the general overarching guidance on good environmental management in PPG1 (Environment Agency, 2013) and more specific guidance including:
 - CIRIA C650 (2005) Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors.
 - CIRIA C648 (2006) Control of Water Pollution from Linear Construction Projects.
 - PPG21: Pollution Prevention Guidelines. Incident Response Planning.
- Minimise where practicable the production of silt and contaminated water by minimising:
 - Dewatering and pumping of excavations and subsequent disposal of water.
 - Runoff from exposed ground and stockpiles.
 - Plant and wheel washing.
 - Site roads.
 - Fuel and other spillages.
 - Waste storage and disposal.
- Surface Water Management (SuDS) Scheme. The development will result in the construction of low permeability surfacing, increasing the rate of surface water run-off. The surface water drainage scheme ensures the runoff rates to the surrounding water

environment are maintained at pre-development greenfield rates incorporating the effects of climate change.

The maintenance and management of the SuDS during the construction phase is essential in managing runoff on and from the Site. It is also key in ensuring the prevention of sediment and pollutants entering the bounding watercourse.

A separate Construction Environmental Management Plan (CEMP) will be required to control environmental issues during the construction process. The CEMP forms part of the Project Management Plan, which integrates the core arrangements for health and safety, quality and environmental management for the construction phase. This integrated approach ensures that environmental aspects are considered at all stages of the design and construction process.

The construction phase will be undertaken in accordance with good practice guidelines on hydrology, flood risk and water quality for consultants and contractors, including:

- CIRIA Environmental Good Practice on Site (C502) (1999).
- CIRIA Control of Water Pollution from Construction Sites (C532) (2001).

Timetable for Implementation

The SuDS attenuation and conveyance features will be constructed before development begins, so that they are ready to accept runoff from impermeable areas (i.e. roofs and access roads) as these are constructed.

Validation

Proprietary systems will be jetted, and SuDS features de-silted, before being surveyed and inspected prior to final sign-off. This will ensure the drainage system is constructed in line with the detailed drainage design or subsequent (agreed) amendments.

7. Summary and Conclusions

The maintenance plan will ensure the ongoing monitoring and maintenance to ensure the effectiveness of the drainage strategy for the lifetime of development.

Appendix 1 – SAB Correspondence

Eric O'Connor

From: SAB <SAB@wrexham.gov.uk>
Sent: 17 November 2020 13:27
To: Eric O'Connor
Subject: RE: SAB Application Form - Hanmer Arms.

Good Afternoon Eric,

We are just in the process of validating your SAB application for the land north of Hanmer Arms. In order to fully evaluate the proposals we will require the following information:

- Ground Investigation Information
- Detailed Surface Water Drainage Layout (including invert levels, location of drainage gullies, details of road gullies, swale, outfalls/headwalls etc., connection to land drain, longitudinal section of swale)
- Surface water runoff calculations and swale storage volume
- SuDS Maintenance Plan and details of private maintenance company
- Construction Management Plan

If you have any questions please don't hesitate to contact us.

Kind regards
Jason

From: Eric O'Connor <eric.oconnor@enzygo.com>
Sent: 05 November 2020 16:34
To: SAB <SAB@wrexham.gov.uk>
Cc: Jason Russell <Jason.Russell@wrexham.gov.uk>
Subject: SAB Application Form - Hanmer Arms.

Security Notice: The attachments in this email were secured by a Wrexham Council Security Gateway.
The original attachments were not modified.

To whom it may concern,

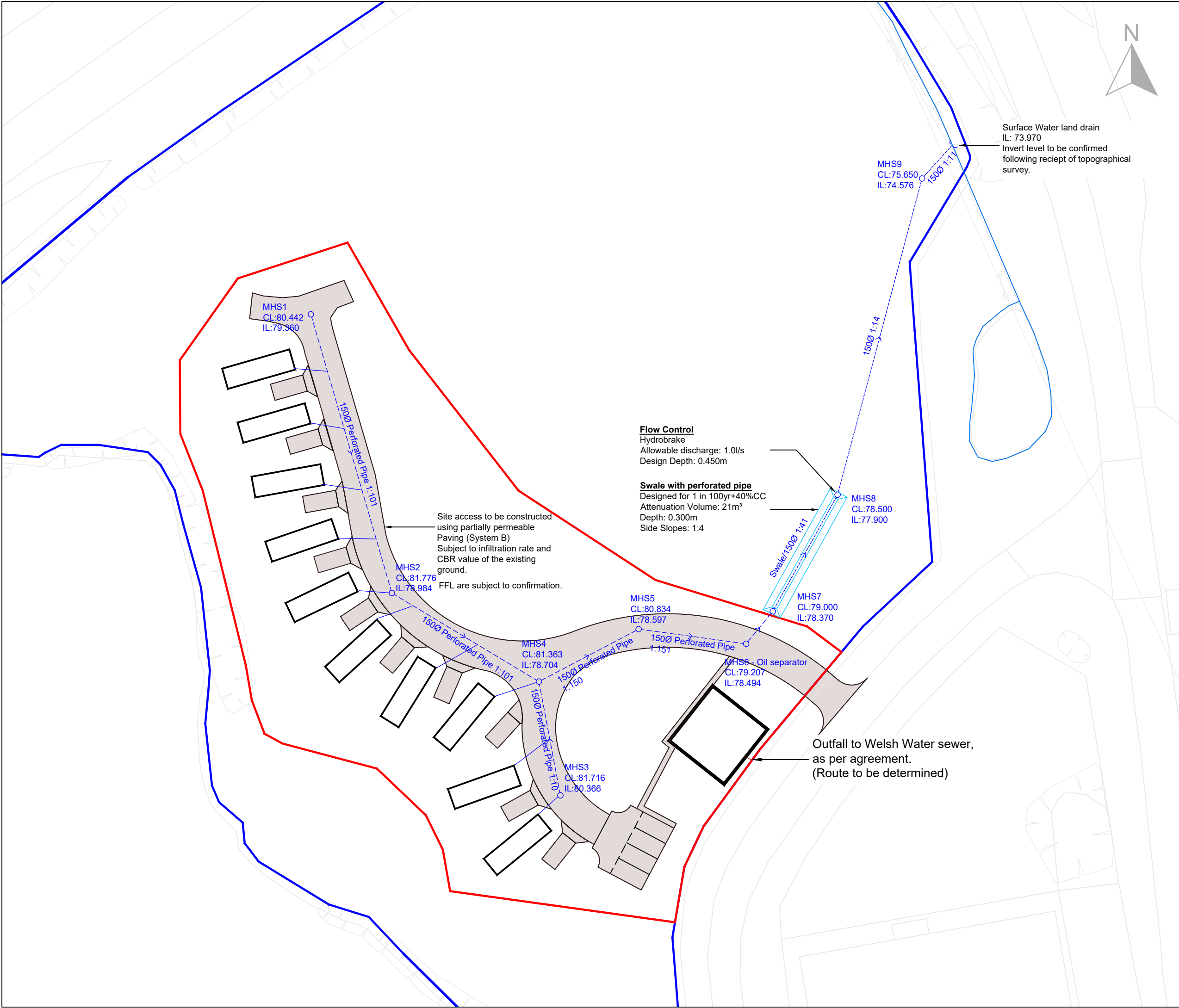
Please find attached SAB form along with submitted drainage strategy to review. If you could confirm costs and timescales as soon as possible it would be appreciated.

Kind Regards,

Eric

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Appendix 2 – Drainage Strategy Drawing



NOTES

- Do not scale from this drawing
- All dimensions are in meters unless stated otherwise
- This drawing is to be read in conjunction with all relevant drawings and documents associated with this project.
- All surveyed information including levels and layout is provided by others
- All existing and proposed dimensions, levels and locations to be checked and verified by the main contractor on site prior to the commencement of the works and any anomalies reported to the engineer.
- All works, workmanship and materials on private drainage to be in accordance with the civil engineering specification for water industry 7th edition published by the water research council.

KEY

	Site Boundary
	Site Ownership Boundary
	Surface Water Sewer
	Surface Water Manhole
	Headwall with Associated Pipework

P04	27/01/20	Further detail added to the design.	CH	WW	WW
P03	11/09/20	Foul drainage added.	CH	EO'C	EO'C
P02	31/01/20	Drainage updated to suit new layout.	CH	MGg	EO'C
P01	20/08/19	First Issue	CH	MGg	EO'C
REV:	DATE:	DETAIL:	DES:	CHK:	APP:

Samuel House, 5 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT: Carlton Holdings Partnership			
PROJECT: Hanmer Arms, Hanmer			
DRAWING TITLE: Surface and Foul Water Drainage Strategy			
DRAWN: CH	DESIGNED: CH	CHECKED: MGg	APPROVED: EO'C
DATE: 20/08/2019		SCALE @ A3: 1:500	
PROJECT NO.: MAN.244.002		DRAWING NO.: 101	
DRAWING STATUS: Preliminary		ISSUE: P04	