Drainage Impact Assessment

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Scottish & Southern Electricity Networks (SSEN)

Fort Augustus Substation Extension
29 November 2023



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Jacobs U.K. Limited

95 Bothwell Street
Glasgow, Scotland G2 7HX
United Kingdom

T +44 (0)141 243 8000
F +44 (0)141 226 3109
www.jacobs.com

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1. Introduction

1.1 Background

This Drainage Impact Assessment (DIA) has been produced in support of a planning application for the construction of an extension to the existing Fort Augustus Substation located to the south-west of Fort Augustus. The current proposal includes replacement of the two existing 275/132kV Super Grid Transformers (SGT) with 400/132kV SGTs and removal of the existing 275kV busbar from the site.

This DIA outlines the proposed drainage strategy to manage surface water runoff resulting from the new substation and access track.

The DIA has been completed in accordance with the guidance provided in:

- The National Planning Framework for Scotland 4 (NPF4), 2023;
- Scottish Planning Policy (SPP), 2014;
- Scottish Environment Protection Agency (SEPA) Technical Flood Risk Guidance for Stakeholders, 2022;
- SEPA Climate Change Allowances for Flood Risk Assessment in Land Use Planning, 2023;
- CIRIA SuDS Manual, 2015;
- The Highland Council - Flood Risk and Drainage Impact, 2013; and
- The Highland Council - Highland-wide Local Development Plan, 2012.

1.2 Site Details

The Proposed Development site comprises an area of approximately 3.4 hectares directly adjoining the existing substation platform and is located approximately 2 kilometres south-west of the town of Fort Augustus, with a grid reference of NH 35741 08288 (Figure 1). The Proposed Development is situated at the south-eastern extent of the existing substation platform. There are gentle elevation changes across the development site, with the existing levels falling from approximately 42 metres Above Ordnance Datum (AOD) to 40 metres AOD in a south-eastern direction. A preliminary development layout is provided in Appendix A.



Figure 1 - Site Location Map

1.3 Geological Features and Ground Investigations

British Geological Survey data indicates that the superficial deposits comprise Devensian Glaciofluvial Sheet Deposits comprised of sand, gravel, and boulders.

Trial pits and boreholes undertaken during Ground Investigation (GI) by Raeburn Geotechnical Ltd in August 2023 have confirmed the presence of medium to coarse sand and fine to coarse gravel with low to medium cobble and low boulder content across the area of the Proposed Development.

From existing borehole records, groundwater has been encountered between 8 and 13 metres below ground level (bgl).

For the purposes of this report and associated calculations, an infiltration rate of 5.6x10-5 m/s (0.20160m/hr) has been applied. The infiltration rate applied is the lowest value identified within trial pit FATP15, located adjacent to the existing pond, from analysis of the recent GI undertaken by Terra Tek. Increased infiltration rates were identified during testing within FATP15; however, this rate represents a worst-case infiltration scenario and has been chosen as part of a conservative approach applied in the calculation of run-off from the Proposed Development, LT92 and the existing substation.

This infiltration rate has been validated based on the subsoils from previous GI in the vicinity of the Proposed Development. The borehole records show sandy and gravelly strata to depths of 15 metres bgl. Table 25.1 of the SuDS Manual outlines estimated infiltration coefficients based on differing soil textures. The soil textures observed on site are considered to fall within the gravel and sand soil types outlined within Table 25.1. From the table, sand and gravel are noted as being a good infiltration media with typical infiltration coefficients in the range of $1x10^{-5}$ and $3x10^{-2}$ m/s.

The SuDS Manual notes that, infiltration viability should be considered where infiltration rates are greater than 0.000001 m/s. Acknowledging the satisfactory infiltration capacity of the underlying soils in the vicinity of the Proposed Development, infiltration as a means of drainage for collected surface water will be considered within the drainage hierarchy.

1.4 Hydrological Features

The Proposed Development is located within the surface water catchment of the Auchteraw Burn which originates in the steep terrain to the northwest of the site. The watercourse flows south then east, around the Proposed Development area, prior to discharging to the River Oich at a point 960m to the east of the Proposed Development. The River Oich outfalls into Loch Ness at Fort Augustus approximately 2.5km downstream of the site.

The Allt na Fearna watercourse runs immediately to the northeast of the site, approximately 200m from the Proposed Development. This watercourse flows southeast forming a tributary of the Auchteraw Burn.

In addition, there are minor unnamed engineered watercourses which run through the existing site. These watercourses intercept hillside runoff from the north of the site and discharge into a single point on the Auchteraw Burn, approximately 450m southeast of the Proposed Development.

1.5 Existing Drainage Arrangements

The existing substation which is located within the north-western extent of the site, discharges surface water into the engineered watercourse which flows along the eastern extent of the existing site.

An extension to the substation, referred to as LT92, was constructed in 2019 on the southern extent of the existing substation platform. SLR drawing number C8-9-002 indicates that LT92 has a network of filter drains collecting surface runoff from the internal access tracks and hardstanding areas which discharge to a small infiltration basin located at the southern corner of the extension.

Bunded transformers constructed as part of the LT92 extension have an oily water drainage network that drain to two separator tanks. Fuel delivery areas have been locally lowered and contain kerb drainage

conveying runoff via underground pipework to the separator tanks. The separators convey all flows via underground pipework to the small infiltration basin.

Foul water from the two buildings constructed as part of the LT92 extension are first treated in a septic tank located within the substation platform before being pumped via a rising main to a filter mound located at the north-western extent of the extension (refer to Section 6).

A second larger infiltration basin has been constructed to the southeast of the existing site which has not been connected to any drainage networks within the existing substation platform. It is the intention to utilise this larger basin to collect and allow infiltration of surface water from LT92 and the Proposed Development. It has been assumed that the existing substation catchment will also drain into the larger basin due to limited information regarding existing drainage arrangements. Any existing outfall to the ditch east of the existing site would be removed through the construction of the proposed extension.

Modelling set out later in this report has confirmed that this strategy is viable as the existing larger basin has sufficient capacity to store runoff for a 1:1000-year event from the existing substation, LT92 and the Proposed Development.

It is noted that the SLR report (no. 405.00660.00047) and drawing number C8-9-002, produced for the initial LT92 substation extension, outlined design and construction proposals for two basins located to the south of the site. These basins were designed to accommodate run-off from the existing substation and proposed extensions to the east and west of the site for a 1:1000 storm event, conservatively assuming the areas within these catchments were impermeable.

Neither of the basins constructed match the size, shape or location of those basins proposed within the SLR report and drawing. Both existing basins are deeper than those proposed in the SLR report, with the larger infiltration basin located on the southeast of the site also having a greater plan area than the eastern basin proposed in the SLR report.

2. Development Proposals

2.1 Description

The Proposed Development will comprise of a platform extension to the existing substation (including LT92) on undeveloped land immediately adjacent to the eastern and southern extent of the existing substation compound (Appendix A). The extension will provide a platform area for a new Gas Insulated Switchgear (GIS) building, two new 400/132kV SGTs, two new black start reactors, and associated apparatus including cable gantries. The platform will require a fill exercise to match ground levels of LT92 and the lower platform of the existing substation.

The proposed transformer upgrade works will comprise the construction of two new transformer bunds within the proposed extension. Multiple hardstanding areas to accommodate gantries and other substation apparatus will also be constructed.

A new 5-metre-wide sealed pavement internal access road will be constructed within the proposed extension, providing access to the new SGTs, GIS building and associated apparatus. This road will connect to the existing access roads within the existing substation platform and LT92. The access will be constructed with a combination of flush and raised pre-cast kerbs installed each side. The minimum crossfall will be 2.5%. Runoff from the access roads will be collected by the site drainage system using either filter drains located immediately adjacent to the roads or ACO type drainage kerbs where the road is locally lowered for fuel delivery areas.

The make-up of the platform will consist of three layers as per SSE's SP -NET-CIV-501 specification:

- A 75mm thick upper layer consisting of free draining angular gravel.
- A 200mm thick middle layer consisting of Specification for Highway Works (SHW) Type 3 permeable sub-base material.
- A 725mm thick lower layer consisting of selected granular material which will also be free draining.

Areas of the Proposed Development not used for equipment foundations, roads, hardstanding areas and buildings will generally be covered with 75mm of gravel to provide a free draining finish over the site.

The GIS building will contain a mess room and toilet. Foul water discharge is proposed to be via solid pipe gravity pipework from the relevant facilities to a septic tank to be located in-front of the GIS building, accessible via proposed access tracks. Following treatment, the effluent will be conveyed to an adjacent field soakaway.

After construction, the substation will normally be unmanned resulting in a low risk of contamination from vehicles or operatives. Equipment identified as having a special contamination risk, such as transformers, will be constructed with bunding, oil separation and flow controls to ensure the platform and drainage system is not contaminated.

Oily water and surface water will be conveyed from the proposed transformer bunds and fuel delivery areas to a new oil separator, which will in turn drain into the proposed surface water drainage network and then onwards to the infiltration basin located at the southeast of the existing site.

2.2 Planning Context

2.2.1 Planning Requirements

In accordance with the Highland Council Flood Risk & Drainage Impact Assessment Supplementary Guidance this report will seek to:

- Provide sufficient information to the relevant authorities to demonstrate that the Proposed Development will not increase flood risk and where there are already flooding issues within a catchment, demonstrate net betterment.

- Provide sufficient information to the relevant authorities to demonstrate that the Proposed Development will not be subject to an unacceptable risk of flooding as per SPP.
- Provide sufficient information to the relevant authorities to demonstrate that the Proposed Development will safeguard water quality and have adequate and effective maintenance arrangement.

2.2.2 Application of Planning Policy

The SPP contains a flood risk framework that should be used to guide planning and decision making in relation to flood risk. The framework uses the risk designations from the SEPA online indicative Flood Maps detailed below to categorise river and coastal flood risk:

- Low likelihood – The annual probability of a flood event occurring in the defined area is less than 0.1% (1:1000-year event);
- Medium likelihood - The annual probability of a flood event occurring in the defined area is 0.5% (1:200-year event); and
- High likelihood – The annual probability of a flood event occurring in the defined area is 10% (1:10-year event).

Storm and flood risks are typically expressed by the probability of occurrence of an event of stated magnitude in any one year, termed the Annual Exceedance Probability (AEP). This may be expressed as a percentage (0.1%, 0.5%, 10%) or by the equivalent chance of occurrence (1:1000, 1:200, 1:10).

The SSE policy guidance SP-NET-CIV-502 Revision 1.01 (2020) "Drainage Specification" sets out minimum design criteria for new site drainage systems for 1:20, 1:200 and 1:1000-year rainfall events over the lifetime of the Proposed Development. The surface water drainage system for the Proposed Development shall be designed and constructed to ensure that:

- For a 5% (1:20) AEP rainfall event, there should be no flooding to non-critical operational areas (e.g., laydown yards and car parks);
- For a 0.5% (1:200) AEP rainfall event, there should be no flooding on operational areas of the site; and
- For a 0.1% (1:1000) AEP rainfall event, standing water on the site should not affect critical equipment.

3. Climate Change

During the lifetime of the proposed substation development, surface water runoff rates and volumes from the roads, building and other paved areas may increase as a result of the potential increase in extreme rainfall due to climate change.

SEPA's climate change allowances for flood risk assessment in land use planning (2023) provides climate change allowances for peak rainfall intensity based on geographic location. For the North Highland Catchment where the Proposed Development is located, a peak rainfall allowance of 42% for future climate change is recommended. Where an allowance for future climate change has been considered, the abbreviation +CCA (plus Climate Change Allowance) will be used in this report.

4. Surface Water Drainage Strategy

4.1 Sustainable Drainage System

Surface water drainage systems developed in line with the ideals of sustainable development are referred to as Sustainable Drainage Systems (SuDS). The philosophy of SuDS is to replicate, as closely as possible, the natural drainage from a site before development. Their main aim is to prevent flooding of the development site without increasing the risk of flooding to downstream receptors for a wide range of design storms. They should also maximize water quality, amenity and biodiversity opportunities where appropriate.

CIRIA's The SuDS Manual is the current best practice guidance document and promotes sustainable water management using SuDS. The SuDS Manual outlines a hierarchy of SuDS for managing runoff, referred to as a management or treatment train:

- Prevention – preventing runoff and pollution through good site design and housekeeping measures on individual sites (e.g., minimising impermeable areas);
- Source Control – control of runoff at or as close to its source as possible (e.g., use of rainwater harvesting);
- Site Control – management of water from several sub-catchment including routing water from roofs/carparks/hardstanding areas to a soakaway or series of soakaways for the whole site; and
- Regional Control – management of runoff from several sites, typically in a pond or wetland.

Table 1.1 in the SuDS Manual presents a concise summary of sustainable drainage techniques that should be considered when developing a management train with more detailed descriptions of the techniques also presented within the manual.

4.2 Hierarchical Drainage Options

Following the guidance within The SuDS Manual, the information within Table 1 outlines the most appropriate option to dispose of surface water from the Development along with the rationale.

Table 1: Surface Water Disposal Methods

Disposal Route	Method Suitable? (Y/N)	Rationale
Re-use onsite	N	There is an existing water supply to the site, therefore no demand for water re-use.
Infiltration to ground	Y	Infiltration tests undertaken during Ground Investigation of the site suggest existing strata is suitable for infiltration.
Discharge to surface waters	N	Discharge to local watercourses will not be required as surface water runoff can be managed through infiltration.
Discharge to combined sewer	N	Connection to a public sewer is not viable due to the distance and elevation difference between the site and the closest sewer.

4.3 Proposed Outline SuDS Strategy

Table 1.1 in The SuDS Manual has been consulted to establish the most suitable SuDS techniques based on the hierarchical assessment of drainage options. It is proposed to manage surface water runoff from the impermeable areas of the Proposed Development via the following 'Source Control', 'Conveyance' and 'Site Control' options as set out in table 2 below:

Table 2 - Surface Water Management SuDS Options

SuDS Management Train Mechanism	Application	SuDS Features to be Used
Source Control	For the interception of surface water runoff at the source such as buildings, access roads and hardstanding areas.	Filter Drains or ACO type kerb drainage
Conveyance	To convey surface water runoff from 'Source Control' mechanisms to 'Site Control'.	Solid drains and filter drains
Site Control	Provides the required surface water attenuation of storage prior to controlled discharge to the ground	Infiltration basin

Areas of the Proposed Development will remain unsurfaced with the above noted 75mm granular (gravel) topping layer to allow free infiltration to the platform layers and will not require specific drainage features. Filter drains will also be provided as required. The new internal access road connecting the Proposed Development to LT92 and the existing substation will, as noted above, be sealed and drained with a filter drain network and ACO type drainage kerbs where the road is locally lowered. This drainage will be conveyed via the surface water drainage system to an outfall in the infiltration basin.

Roof drainage from the proposed GIS building will be drained via gutters and downpipes to the surface water network.

The bunded transformer areas and associated hard standing areas, noted in Section 2.1 of this report, will be drained via a sealed system to a new oil separator to be located within the eastern extent of the platform area. After separation, the treated water would be discharged to the local water environment. The oily water management will be designed in accordance with SSE specification, which includes the following features:

- Secondary containment systems, which will include bunded areas;
- A water control system within each bunded area, which includes two pumps discharging to an oil separator prior to discharge into the site SuDS system;
- A sensor system that differentiates between oil and water, raising an alarm on detection of high oil levels;
- Telemetry to an SSE control room to raise alarms on pump failure or high oil level; and
- Bund volume for proposed transformers.

It is proposed that the larger, currently unused infiltration basin constructed to the southeast of the existing site is utilised to collect and allow infiltration of surface water from the Proposed Development and LT92. For the purposes of the modelling included within this report, it has also been assumed that runoff from the existing substation will also discharge into the larger basin. The existing outfall for LT92, which currently discharges into the smaller infiltration basin on the southern extent of the existing substation platform, will require to be re-directed to the larger basin. An indicative surface water drainage layout and pipe schedule has been provided within Appendix B.

The existing basin has 1 in 5 slopes and a depth of 3.5m, measuring from base level at 35mAOD to 38.5mAOD at the top of the bund. Due to the location of the basin within a flood compensation area, it is proposed that the height of this bund is increased from 38.5mAOD to 38.9mAOD. For the purposes of the capacity assessment, the basin has been modelled in Micro Drainage with 300mm freeboard. A discharge

point with a headwall has been constructed with an invert level of 35.37mAOD; however, it is likely that this will be adjusted to receive the outfalls from LT92 and the Proposed Development.

4.4 Contributing Area

The area of the Proposed Development discharging run-off to the infiltration basin is approximately 3.4 hectares. This includes internal roads, the control building, hardstanding areas and two proposed transformer bunds.

In addition, a combined area of approximately 7.4 hectares run-off from LT92 and the existing substation will also discharge run-off to the infiltration basin. This is on the assumption that the existing substation drainage outfalls via the existing LT92 drainage network.

A conservative approach has been taken in the modelling and calculation with an impermeable (runoff) coefficient of 100% assumed for the areas noted above.

4.5 Control of Runoff Volume

Section 3.3.1 of The SuDS Manual sets out volume control criteria for two scenarios:

1. **Extreme rainfall events** - The SuDS Manual states that the drainage system should be designed so that the volume of runoff discharged from the site during extreme events is controlled. Where possible the volume of runoff from the development should not exceed the volume of runoff from the equivalent area in its natural "greenfield" state.

   Flows from the existing substation platform, the LT92 extension and Proposed Development will be collected within the infiltration basin. From modelling undertaken in Micro Drainage, a maximum storage capacity of approximately 10,643m^3 for a 1:1000 storm event (+42%CCA) can be accommodated within the existing basin whilst maintaining a freeboard greater than 300mm.

2. **Frequent rainfall events** – The SuDS Manual states that the drainage system should be designed so that runoff from the site to receiving surface water does not occur for the majority of small rainfall events. The prevention of runoff from site for the majority of small (frequent) rainfall events (or for the initial depth of rainfall for larger events) is referred to as Interception. The SuDS manual advises that Interception of about 5 millimetres is normally achievable.

   As detailed in Section 24.8 of The SuDS Manual, Interception can be delivered using one or a combination of processes:

   - Rainwater harvesting.
   - Infiltration.
   - Evapotranspiration using temporary shallow ponding or storage within the soil or upper aggregate layers.

   Interception of runoff through site will be achieved through a network of filter drains and drainage kerb which will then be conveyed to the infiltration basin.

Section 3.3.2 of The SuDS Manual sets out peak rate of runoff criteria for:

- Events likely to impact on morphology, ecology or capacity of the receiving surface waters, or the capacity of receiving sewers.
- Extreme events.

The design rainfall is based on Flood Studies Report (FSR) data within Micro Drainage software. The discharge rate from the Proposed Development will not exceed a 1:2-year greenfield event. In general, the measures should be designed to ensure that flow arising from a 1:10 year +CCA event is attenuated on site and then released at a rate no greater than the pre-development peak flow rate and that flooding does not occur in any operational area during a 1:200 year +CCA event, with no standing water which could affect critical equipment during a 1:1000-year +CCA event.

Results of modelling undertaken within Micro Drainage, confirming that a 1:1000 (+42%CCA) can be accommodated within the existing large infiltration basin with the minimum 300mm freeboard achieved, are attached within Appendix C.

4.6 Water Quality

The Proposed Development will involve the construction and operation of a substation involving less than 300 traffic movements per day. Table 26.2 of The SuDS Manual provides Pollution Hazard Indices for different land use classifications. From this, the water runoff generated by the impermeable areas of the site are considered to have a 'Low' Pollution Hazard Level as set out in Table 3.

Table 3: Pollution Hazard Indices

Land Use	Pollution Hazard Level	Total Suspended Solids	Metal	Hydrocarbons
Commercial/Industrial Roofs (low potential for metal leaching)	Low	0.3	0.2	0.05
General Access Roads	Low	0.5	0.4	0.4

The proposed SuDS strategy is required to demonstrate sufficient treatment capability to manage the specified Pollution Hazard Indices.

As outlined in Section 4.3, it is proposed for surface water runoff resulting from the Proposed Development to be intercepted by filter drains and collected within the infiltration basin. The SuDS Mitigation Indices provided by the proposed SuDS system for a discharge to surface water are compared to the Pollution Hazard Indices in Table 4 below.

Table 4: SuDS Mitigation Indices

Land Use	Pollution Hazard Level	Pollution Hazard and SuDS mitigation Comparison					
		Total Suspended Solids		Metal		Hydrocarbons	
		Pollution Index	SuDS Mitigation Index[1]	Pollution Index	SuDS Mitigation Index[1]	Pollution Index	SuDS Mitigation Index[1]
Commercial/ Industrial Roofs	Low	0.3	0.6	0.2	0.5	0.05	0.6
General Access Roads	Low	0.5	0.6	0.4	0.5	0.4	0.6

[1] While filter drains will be used for the collection and conveyance of surface water runoff from industrial roofs and access roads, the infiltration basin will be the primary method for attenuation of surface water runoff prior to discharge to groundwater. As such, the type of SuDS component for SuDS Mitigation Indices has been taken from Table 26.4 of The SuDS Manual. For the infiltration basin, the 'Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates' has been selected as 'a layer of dense vegetation underlain by a soil with good contaminant attenuation potential of at least 300mm in depth'.

As the SuDS Mitigation Index provided by the proposed SuDS measures are greater than or equal to the Pollution Hazard Index for discharge to surface waters, the quality assessment criteria are satisfied.

5. Principal Operation and Maintenance Requirement

It will be the responsibility of SSE to maintain effective drainage measures and rectify drainage measures that are not functioning adequately. A nominated person will also have responsibility for reporting on the functionality of drainage measures.

Where impermeable areas remain through the lifetime of the Proposed Development, the SuDS measures serving these areas will be checked on a regular basis. Should drainage measures require dredging or unblocking, this will be undertaken as soon as practicable by a local contractor engaged by SSE.

It is not anticipated that The Highland Council or Scottish Water will adopt the new drainage network. Therefore, it will be the responsibility of SSE to maintain effective drainage measures and rectify drainage measures that are not functioning adequately. Outline management/maintenance plans for the filter drains and infiltration basin to be provided as part of the Proposed Development are shown in Tables 5 and 6.

Table 5 - Outline Maintenance Plan - Filter Drains

Maintenance Schedule	Required Action	Recommended Frequency
Regular Maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)
	Inspect filter drain surface, inlet/outlet pipework and control systems for blockage, clogging standing water and structural damage	Monthly
	Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Six monthly
	Remove sediment from pre-treatment devices	Six monthly (or as required)
Occasional Maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (NJUG 2007 or BS3998:2010).	As required
	At location with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required
	Clear perforated pipework of blockages	As required

Table 6: Outline Maintenance Plan – Infiltration Basin

Maintenance Schedule	Required Action	Recommended Frequency
Regular Maintenance	Remove litter and debris	Monthly (or as required)

Maintenance Schedule	Required Action	Recommended Frequency
	Cut grass – landscaped areas and access routes	Monthly (or as required)
	Cut meadow grass	Half yearly (spring, before nesting season and autumn)
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage	Monthly
	Inspect water body for signs of poor water quality	Monthly (May – October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
	Check any mechanical devices, e.g. penstocks	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1m above pond base; include max 25% of pond surface)	Annually
	Remove 25% of bank vegetation from water's edge to a minimum of 1m above water level	Annually
	Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract)	Annually
	Remove sediment from any forebay	Every 1-5 years, or as required
Occasional Maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, e.g. every 25–50 years
Remedial actions	Repair erosion or other damage	As required
	Replant, where necessary	As required

Maintenance Schedule	Required Action	Recommended Frequency
	Aerate pond when signs of eutrophication are detected	As required
	Realign rip-rap or repair other damages	As required
	Repair/rehabilitate inlets. Outlets and overflows	As required

6. Foul Water Drainage

During the construction phase, a temporary 'porta-loo' facility will be onsite, with waste being stored, managed and carried offsite by the Principal Contractor and a licensed waste management courier.

As noted in Section 2.1, the Proposed Development includes the provision of toilet and mess facilities within the proposed GIS building. The substation will be unmanned, with visits to the site only required for routine maintenance, inspection and any necessary repair works.

The foul water will be discharged to a septic tank located within the extent of the Proposed Development in an area adjacent to the south of the GIS building. The septic tank shall be located outside of the High Voltage zone for ease of maintenance requirements and safety reasons.

Due to level constraints regarding the maximum flood level, the minimum required gradient of 1:80 for a 100mm foul drain with a peak flow of >1 l/s, as outlined in BS EN 16933-2, has not been achieved (gradient of 1:100 for pipe 1.000, as shown in drawing B2413736-JAC-HDG-PD-DE-CI-002). Therefore, it is recommended that this pipe would be regularly maintained.

The outlet invert level (38.92mAOD) of the septic tank has been designed to be above the maximum flood level (38.9mAOD) to prevent mobilisation of the sludge in the tank. To facilitate this an extension to the platform level encompassing the septic tank, FMH2 and FMH3 (refer to drawing B2413736-JAC-HDG-PD-DE-CI-002) would be required. Furthermore, the foul water network is currently located outside the flood compensation area.

Following treatment, the effluent will be conveyed to an adjacent field soakaway located to the southeast of the Proposed Development. An indicative foul water layout and associated septic tank detail and installation documentation are provided within Appendix D. The details of the septic tank arrangement should be agreed with SEPA and authorised in accordance with the Water Environment (Controlled Activities) (Scotland) Regulations as part of the detailed design.

The foul water drainage design has and shall be designed, sized, and located in accordance with BS 6297:1983, the British Water Code of Practice Flow and Loads 4, the Building standards technical handbook June 2023: non-domestic and Sewers for Scotland guidance. The septic tank will be managed, inspected and drained by a licensed courier who will then dispose of the waste offsite.

7. Construction Stage Water Management

During construction, surface water runoff will require to be managed during all phases to avoid silt-laden or contaminated water run-off.

Construction stage water management proposals will be developed separately by the Principal Contractor for the Proposed Development in a Pollution Prevention Plan (PPP). The PPP will require to be agreed and approved by SEPA for a Construction Site License to be issued in accordance with the Water Environment (Controlled Activities) (Scotland) Regulations 2011.