



Drainage Impact Assessment

Large Residential Development at Kilowen, Kenmare, Co.Kerry.

On behalf of KPH Construction

September 2026

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Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Status
25631	25631-ZZ-ZZZ-RP-MWP-CE-6005	0	15/09/2026	AH	DD	IB	PLANNING

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1. Introduction

MWP were commissioned by KPH Construction Ltd. In connection with a planning application for a Residential Development at Kilowen, Kenmare, Co. Kerry.

MWP were appointed to prepare a Drainage Impact Assessment with respect to this development.

2. Scope of Assessment

This report deals with the following aspects associated with the development:

- Water Services
- Sustainable Urban Drainage System (SuDS)
- Flood Risk Assessment
- SuDS Maintenance

3. Existing Site

3.1 Location and Proposed Development

The proposed LRD site is located within the townland of Killowen, Kenmare, Co. Kerry, approximately 500m northeast of the Kenmare town centre and is within the Kenmare development boundary in the Kenmare refer to Figure 3-1 for a site location map.

The eastern boundary of the site is defined by the local road, known as 'Pat Scarteen Road', which connects to the main Kenmare to Kilgarvan regional road (R569) to the southeast. To the north, the site adjoins the Aldi commercial premises, while Scarteen Park residential development lies to the northwest. The western and southwestern boundaries are bordered by woodland area.



KPH Construction Ltd intend to apply for planning permission for a Large-Scale Residential Development (LRD) at Kilowen (townland), Kenmare, Co. Kerry.

The proposed development will be on an area of approximately 2.63ha and consists of a LRD comprising 100 No. residential units, car parking, shared open spaces, landscaping, and all associated and ancillary site works to facilitate the proposed development.

The proposed development includes the following:

- The demolition of 2 no. existing single-storey sheds
- The construction of 100 No. residential houses comprising of:
 - 40 No. 3-Bed two storey house
 - 30 No. 1-Bed apartments
 - 30 No. 2-Bed apartments

with ancillary landscaping and associated site development works.

- The development makes provision for 40 no. two-storey houses, comprising 36 no. semi-detached 3 bed units and 4 no. 3 bed mid-terraced units and 60 no. own-door maisonette/apartment units over 2 no. storeys (30 no. 1 bed units, 30 no. 2 bed units).
- Vehicular access to the development will be via an upgraded and relocated entrance off the Pat Scarteen Road, with proposed upgrades including amendments to the existing shared pedestrian/cycle path and modifications to the signing and lining on the public road. The proposed development also provides for separate pedestrian/cycle entrances off Clash Road and includes dedicated pedestrian and cycling paths traversing the site.

4. Water Services

4.1 Water Supply Proposals

A Pre-connection enquiry was submitted to Irish Water for 100 residential units on the site. They have advised that the connection is feasible subject to upgrades in their confirmation of feasibility letter.

It is proposed that a 110mm watermain will serve the development.

4.2 Foul Water

The proposed development will be served by a gravity system which drains to a pumping station. The pumping station will pump effluent via a rising main down to Pat Scarteen Road until the discharge manhole where it flows by gravity into the existing foul sewer network.

The pumping station location has been selected to minimize the length of rising main required and depth of excavation while minimizing impact on neighboring properties. Accordingly, it will not impact on the amenity of any adjoining property. It is proposed to be accessed via the internal roadway. Access is required to allow for a tanker to access the pumping station in the unlikely event of the pump failing. Maintenance frequency is envisaged to be low in the region of a visit once per month by a person in a small commercial van.

Foul waste entering the pumping station will be pumped by a 150mm diameter rising main along the site to the entrance onto Pat Scarteen Road. It will be pumped along Pat Scarteen Road prior to discharging into a rising main discharge manhole. This foul waste will then flow by gravity into the existing gravity system near Railway Road.

4.3 Storm Water

It is proposed to install a new storm water sewer system within the estate and a controlled overland outlet on lands to the west of the landholding. The discharge rates will mimic greenfield run off flows for the site. The design has been completed taking cognizance of the Greater Dublin Strategic Drainage Strategy and the Kerry County Development Plan.

An underground storm water system is proposed with the site divided into sub-catchments. The sub-catchments are designed so to attenuate the flows generated during storm events as early as practicable in the system.

There is no surcharging in the 5-year event and no flooding in the 100-year storm events. The design is based on the outfall being designed as a surcharge outfall. It will become a surcharge outfall during flood events.

The storm drainage proposals incorporate the following elements:

- Pipes are designed to reach self-cleansing velocity in the one in 2-year event.
- Sewers not surcharging in the 2-year event
- Sewers not flooding in the 100-year event with 20% Climate Change.
- Class 1 Bypass Petrol Interceptors
- Sub-surface attenuation systems designed for storage of a 1 in 100-year storm plus 20% Climate Change
- The site is designed to attenuate the greenfield runoff rate for the 1-year, 30-year and 100-year return periods respectively. This is in compliance with Appendix E of the Greater Dublin Strategic Drainage Strategy. The aim of this is to mimic the existing hydrological regime existing on the site so to minimize the impact of the development. An emergency overflow will be provided also in the event of blockage occurring at the hydrobrake.
- The proposed storm water system will discharge to an existing watercourse IE_SW_21F010510 via a headwall at greenfield runoff rates.

The storm sewer system was designed using an iterative approach and the use of Microdrainage software to obtain a design that met these parameters and inputs. Several configurations were developed and the proposed is the option most suited to the site taking cognizance of the constraints including area and site gradients. The attenuation system has been conservatively designed assuming no infiltration so that the maximum volume and footprint area required is catered for within the proposed site layout.

The attenuation system is proposed to be constructed using a crate system by Wavin. This system was chosen to achieve the requirements of the design to cater for the volume of attenuation, minimize footprint on site and the envisaged loading requirements.

The following SUDS measures will be employed where reasonably practicable in the design:

- Attenuating of flows to the greenfield runoff for the 1-year, 30-year and 100-year return periods respectively, so to mimic the existing hydrological regime existing on the site so to minimize the impact of the development.
- Treatment of storm water through bypass separators prior to discharge into the watercourse.
- Manholes immediately upstream and downstream of the attenuation structures will have catch pits so to prevent silt passing downstream of the flow control and silt build-up within the attenuation structure. It will assist with ease of maintenance for the sewer system.
- Bioretention rain gardens and filter drains will also be incorporated in the design.

5. SUDS Measures

The aim of these measures is to design the site drainage in a manner that mimics the natural drainage process for the site pre-development and reduce the impact of the development on the environment. The SUDS measures selection process for this site were guided by the four pillars of SuDS which are Water Quantity, Water Quality, Biodiversity and Amenity. These prioritise the use of nature-based solutions with infiltration measures to promote groundwater discharge. This selection process took into account their practicability for use on the site and the constraints such as the topography and development layout so to create a SUDS Management Train.

The SUDS Management Train proposed for this site is evaluated from the point where rain falls, through the conveyance network through to how it is discharged within the site.

The SUDS measures outlined below have been reviewed while conducting drainage design.

5.1.1 Bioretention Raingarden/ Tree pits

Bioretention Raingarden/Tree pits have the ability to contribute to the storm water management strategy while also adding to the aesthetic value of the overall development. These can increase infiltration of the soil while also removing storm water through transpiration and interception. Rainfall from nearby pavements discharges into these bioretention rain gardens/tree pits. Water infiltrates through the surface layer and filters through the soil which serves to reduce pollution. Where possible, water infiltrates directly into the ground. Any excess water will flow into the surface overflow and directed along a perforated land drain with a flow control fitted at outlets to maximize infiltration potential.

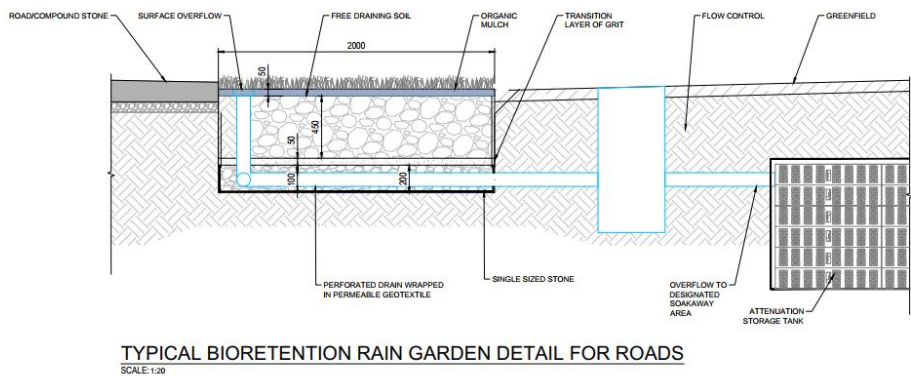


Figure 5-1: Typical Bioretention Rain Garden Detail for Roads

5.1.2 Attenuation Storage Tanks

The site will contain separate tanks of varying volume which are hydraulically connected, allowing an extra safety measure in the event one isn't performing to its design capacity. Cellular attenuation storage tanks have been chosen to maximise the allowable volume of water which can be stored on site, while also allowing infiltration to occur.

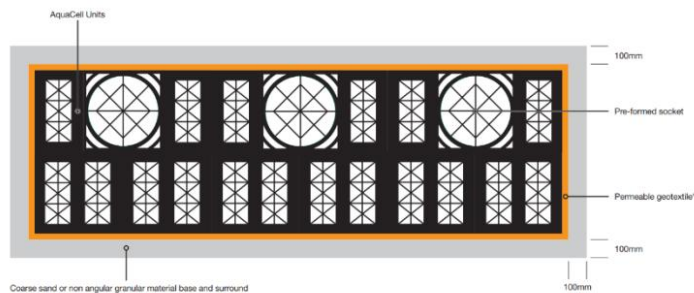


Figure 5-2: Attenuation Storage Tanks

Manholes immediately upstream and downstream of the tanks will have catch pits in order to prevent silt building up within the tanks.

Attenuation tank systems require a minimum of 0.3m cover under landscaped areas. Sizing of tanks are based on the 1 in 100 year storm event + 20% climate change factor.

5.1.3 Filter Drain

Filter drains are shallow trenches filled with stone/gravel that create temporary subsurface storage for the attenuation, conveyance and filtration of surface water runoff. The stone may be contained in a simple trench lined with a geotextile, geomembrane or other impermeable liner, or within a more structural facility such as a concrete trough. Filter drains may be lined if required or may allow infiltration depending on the suitability of the underlying soils and the protection they afford to the groundwater.

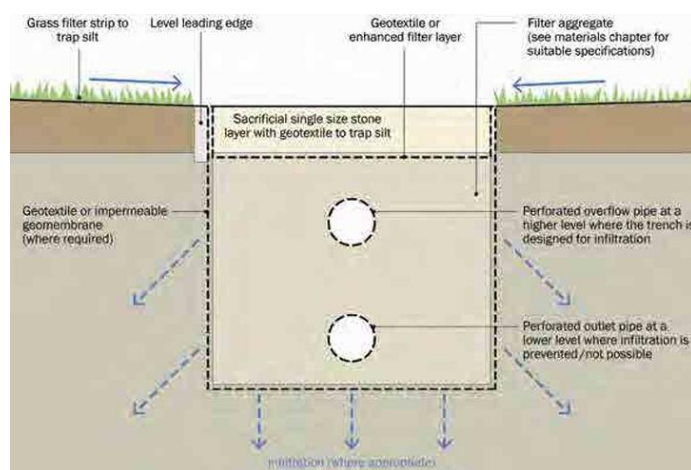


Figure 5-3: Filter Drain Schematic

5.1.4 Head Wall

As outlined above, surface water runoff from the development will be managed through a combination of conventional drainage infrastructure and Sustainable Drainage Systems (SuDS), including bioretention rain gardens, filter drains, attenuation storage tanks and a petrol interceptor. Surface water will be attenuated and discharged at the calculated greenfield runoff rate via a Hydro-Brake flow control device.

To facilitate this discharge, it is proposed to construct a precast concrete headwall outfall structure within the bank of the Lissiniska_21 waterbody. The discharge will be controlled to greenfield runoff rates and will convey treated and attenuated surface water from the development drainage system to the receiving watercourse. The drainage strategy has been designed to mimic the existing hydrological regime of the site and minimise impacts on the receiving environment. **This provision is being made at the request of the Council Engineer.**

The precast concrete headwall outfall is proposed at the downstream extent of the site drainage network to facilitate the controlled discharge of attenuated surface water runoff to the adjacent river/watercourse.

The structure will provide a durable interface between the drainage pipework and the receiving watercourse, while protecting the riverbank from erosion and scour.

The headwall will be installed flush with the existing bank profile and will incorporate an outfall pipe, wingwalls and erosion protection measures. The discharge rate from the drainage system will be restricted through flow

control measures to ensure runoff does not exceed the agreed greenfield runoff rate in order to mitigate flood risk downstream.

6. Flood Risk Assessment

Malachy Walsh and Partners (MWP) Consulting Engineers have been commissioned by KPH Construction to carry out a Flood Risk Assessment for a proposed residential development at Killowen, Kenmare, Co Kerry. The FRA is summarised as follows

1. The proposed development will be on an area of approximately 2.62ha and consists of a LRD comprising 100 no. residential units, car parking, shared open spaces, landscaping, and all associated and ancillary site works to facilitate the proposed development.
2. The Stage 1 and 2 flood risk assessments indicated that there is potential for fluvial flooding at this site. The potential source of flooding was identified as the Kealnagower watercourse located north of the site.
3. A Stage 3 Detailed Flood Risk Assessment (FRA) was carried out to assess flood risk issues in sufficient detail to provide a quantitative appraisal of potential flood risk to the site.
4. A detailed hydraulic model was created to predict the flood zones and flood levels at the site. This demonstrated that the proposed residential development of the site is located in Flood Zone B & Flood Zone C and therefore has a moderate/low probability of flooding.
5. A Justification Test is required for the proposed residential development as it encroaches into Flood Zone B. A Justification Test was carried out which demonstrates that the proposed development is compliant with PSFRM Guidelines and the Objectives of Kerry County Development Plan 2022 - 2028.
6. To ensure that there is no unacceptable flood risk, the following mitigation measures are recommended:
 - a. The finished floor level (FFL) of all buildings should be set above the 1% AEP flood level for the MRFS plus 500mm freeboard. This recommendation is in line with the requirements of Criterion 3 of the Greater Dublin Strategic Drainage Study (GDSDS), 2005. On this basis, the design flood level ranges from 6.75mOD to 8.25mOD. The proposed minimum F.F.L of the residential units ranges from 7.60mOD to 10.20mOD and any proposed F.F.L is a minimum of 500mm above the adjacent design flood level.
 - b. The land within the site will be raised above the design flood level.
 - c. Surface water drainage from the proposed development site will manage the associated pluvial flood risk using a suitably design surface water management strategy that incorporates Sustainable Urban Drainage System (SUDs).
7. It was also concluded that, once these mitigation measures are implemented, the proposed development would not have an adverse impact on flooding on third party lands upstream or downstream of the proposed development site.
8. It was demonstrated that the risk to occupants of the site would be low.
9. Residual risks associated with the development were also assessed and are considered to be acceptable.

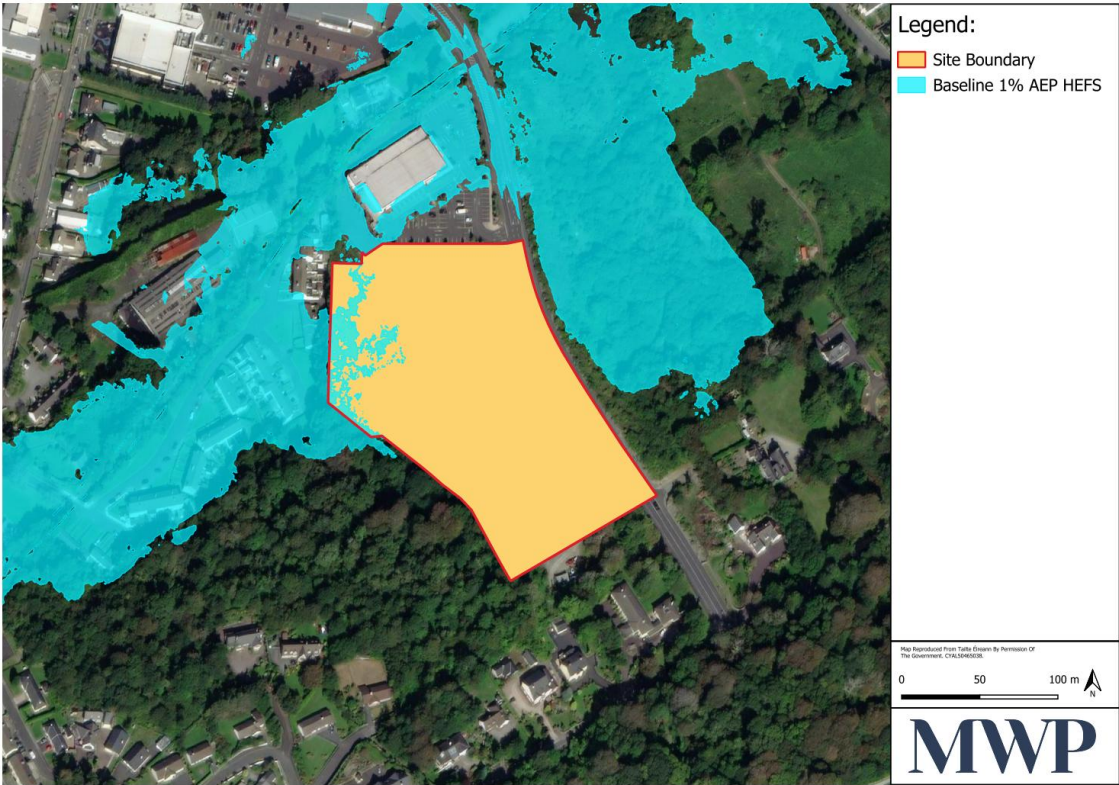


Figure 6-1: Baseline Flood Extent - 1% AEP HEFS

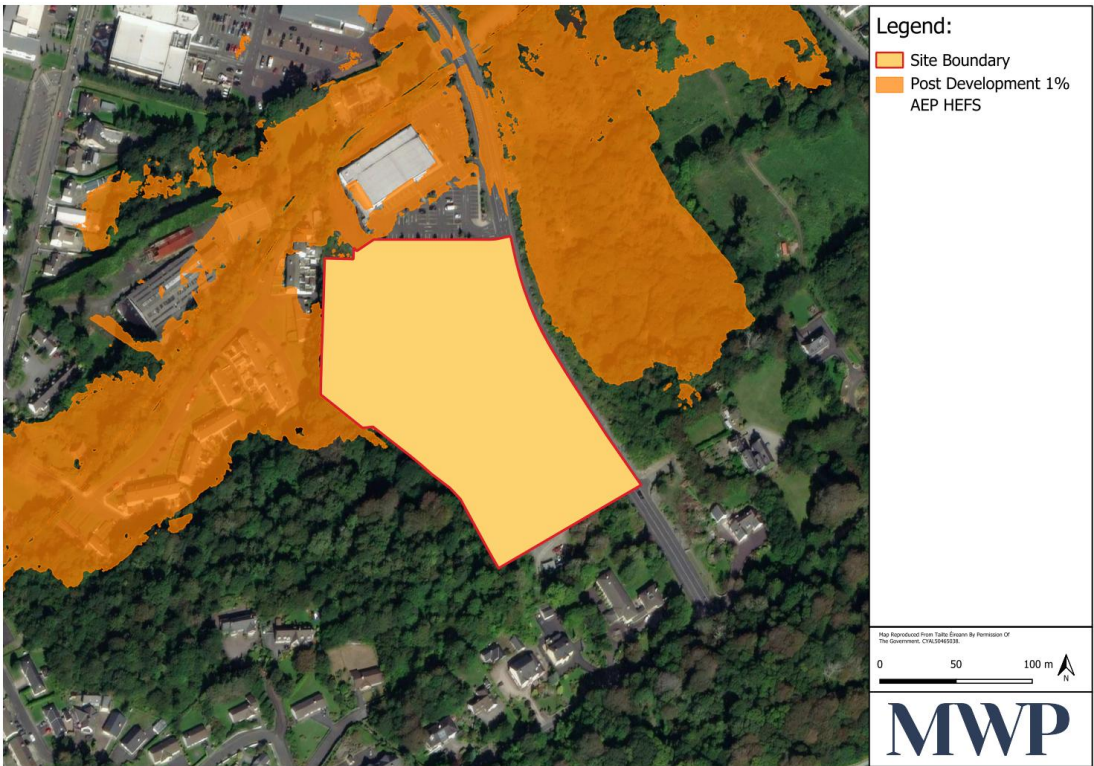


Figure 6-2: Baseline Flood Extent - 1% AEP MRFS

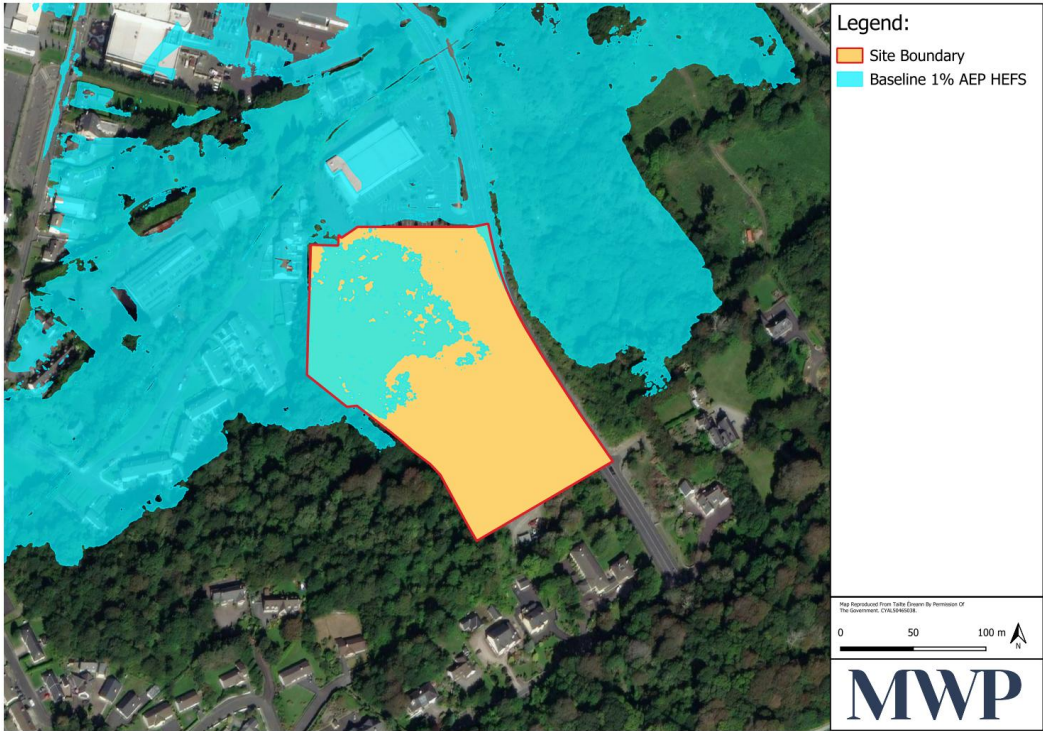


Figure 6-3: Baseline Flood Depths (m) – 0.1% AEP Current Scenario

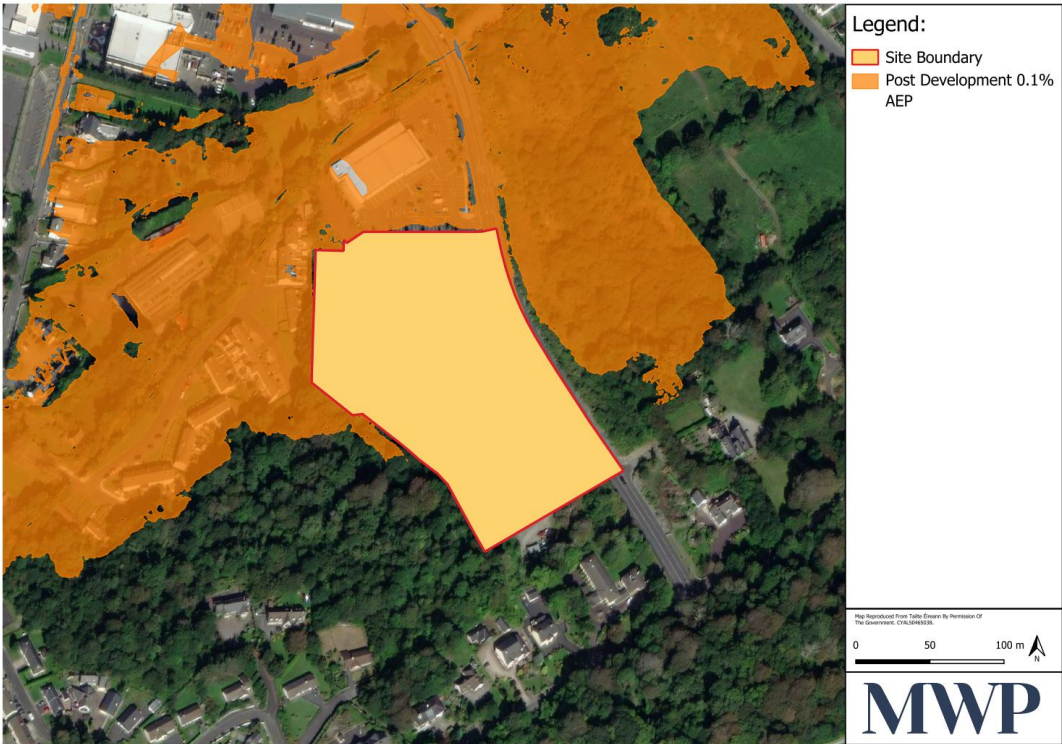


Figure 6-4: Baseline Flood Depths (m) – 0.1% AEP Current Scenario

7. Suds Maintenance

All elements of the drainage system should be inspected following a major storm event. Maintenance should be carried out in tandem with the specification outlined by the manufacturer and be conducted to whichever is the most onerous. When carrying out maintenance, it is essential that a record of inspection and maintenance on all elements is kept and updated when required.

7.1 Storm Drains

It is recommended all storm drains are cleaned every 6 months. Further recommendations are shown below:

Table 7-1: Storm Maintenance Schedule

Maintenance Schedule	Required Action	Typical Frequency
Routine Maintenance	Inspection	Monthly
	Litter/debris removal	Monthly or as required
Occasional Maintenance	Sediment removal – silt build-up should be removed	Every 6 months
Remedial Maintenance	Repair (as a result of damage or vandalism)	As required

7.2 Kingspan Klargester Bypass Separators

Kingspan Klargester recommends checking the oil levels after the first 3 months. This will give an indication on when the separators should be maintained.

7.3 Operation & Maintenance requirements for attenuation storage tanks as per CIRIA C753 – SuDS Manual 2015 & Wavin Aquacell O&M Manual

Table 7-2: Attenuation Tank Schedule

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify areas that are not operating correctly. Take action where required	Monthly for 3 months. Yearly thereafter.
	Remove debris from catchment surface. (where it may cause risk to performance.)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures, isolation rows, and/ or internal forebays	Annually, or as required
Remedial Maintenance	Repair/rehabilitate inlets, outlet, overflows and vents	As required.
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in	Annually & following large storms

	good condition and operating as designed	
	Survey inside of system for sediment build-up and remove if necessary	Every 6 months or as required.

7.4 Operation & Maintenance requirements for silt traps as per CIRIA C753 – SuDS Manual 2015

Table 7-3: Silt Trap Schedule

Maintenance Schedule	Required Action	Typical Frequency
Routine Maintenance	Inspection	Monthly
	Litter/debris removal	Monthly or as required
Occasional Maintenance	Sediment removal – silt stores should be emptied	Every 6 months
Remedial Maintenance	Repair (as a result of damage or vandalism)	As required

7.5 Operation & Maintenance requirements for hydro brakes as per CIRIA C753 – SuDS Manual 2015

Maintenance should be carrying out in tandem with the specification outlined by the manufacturer. As a general guide, the following requirements should be met:

Table 7-4: Hydro Brake Schedule

Maintenance Schedule	Required Action	Typical Frequency
Routine Maintenance	Inspection	Monthly
	Litter/debris removal	Monthly or as required
Occasional Maintenance	Sediment removal – silt stores should be emptied	Every 6 months
Remedial Maintenance	Repair (as a result of damage or vandalism)	As required

7.6 Proposed Maintenance and Inspection Schedule Record Sheet

Table 7-5: Proposed Maintenance and Inspection Schedule Record Sheet

Date	Item Inspected/ Maintained	Inspection/ Maintenance Type	Comment on condition of Item prior to the Works and detail of what works were performed	Inspected/Maintained by: