Airlie Medical Practice, Ajax Way
Methil, Fife

Drainage, SUDS and Surface Water Management Plan

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Document Revision Control

Revisions	Date	Reason for Issue	By	Approved
00	20.10.2023	First Issue	RF	CC

Contents

1.0 Introduction

Harley Haddow (Glasgow) Ltd were appointed to act as civil engineers for the planning application of the proposed extension to Airlie Medical Practice, Ajax Way, Methil. This report will outhline the surface water management plan and drainage requirements of the development design proposals and the drainage strategies that are to be employed.

In review of the proposals we confirm that consideration has been given to British Water Code of Practice – Flows and Loads (4) as well as current SEPA guidance in relation to climate change.

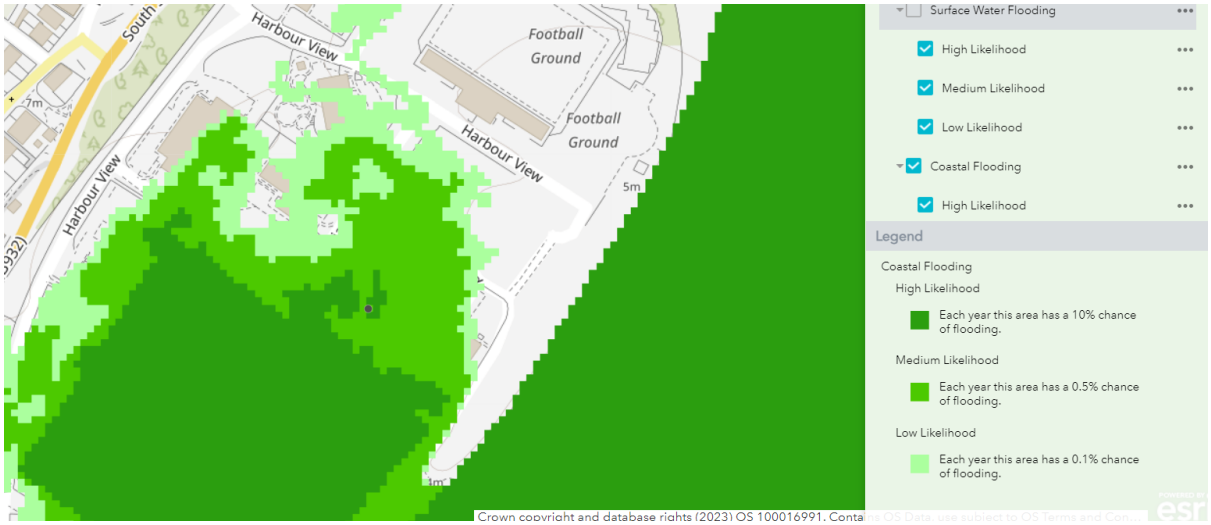
The calculations within this report will assess the existing surface water runoff against the proposed discharge rates and quantify the SUDS measures and attenuation requirements to meet the determined discharge rates.

The proposed location for the extension is located on brownfield land, with the existing building still acting as a fully functioning Medical Practice with a car parking area. The existing site is predominantly made up of hard standing areas. The Medical Practice is located off of Ajax Way and Harbor View – approximately 200 meters from the Methil Docks.

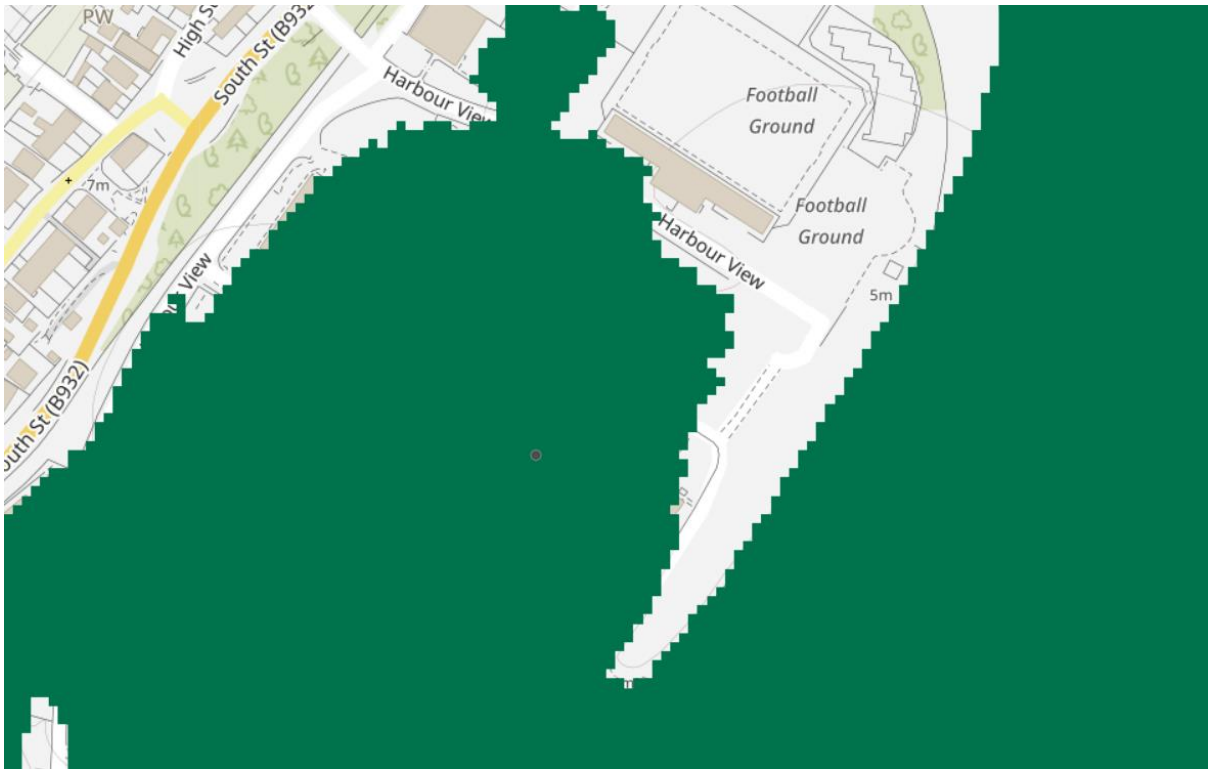
2.0 Preliminary Flood Risk Assessment

The Medical Practice is located on Ajax Way, Methil, Leven, KY8 3RS (NT379999)

Review of the SEPA interactive flood maps indicates that the development is not at risk of any fluvial (river) or pluvial (Surface Water) flooding, however, the majority of the proposed site has a medium likelihood of coastal flooding.



A quick review of the Future Flood Maps on the SEPA Flood Map Data shows that the area is likely to be subject to more extreme coastal flooding in the future.



There is no anticipated flood risk resulting from the existing Scottish Water network, however, confirmation of this is awaited from Scottish Water.

No other information has been found at this time to indicate that the development is at risk of flooding from any other sources.

Proposals for the new extension should remove low points where possible to reduce the risk of surface water ponding and ensure that adequate drainage is incorporated in the design at any low points that remain.

Surface Water drainage designs should ensure that restricted surface water discharge from the development should be attenuated so that there is no exceedance of the system in storms ip to the 1 in 200 year event including an allowance for the effects of climate change. Under current SEPA guidance the allowance for climate change should be up to 39%.

3.0 Drainage Strategy

3.1 Foul Drainage

Review of the existing Scottish Records note no existing networks within the site boundary, however, there is an existing foul network that runs to the south of the site adjacent site on Dock Road (information obtained from SW GIS Records).

The proposed site consists of an extension to an existing Medical practice with a peak foul discharge of 9.0 litres per second as noted within Appendix B.

The current use of the site is an existing Medical Practice with a pharmacy and car parking facility, the proposal is for the medical practice to remain and an extension to be added with an open courtyard in the middle of the building. The medical practice has been reviewed and can confirm the pre development peak foul flow due to existing sanitary ware has been calculated as 9.0 litres per second as noted withing Appendix B.

The foul drainage system for the proposed extension is to fall by gravity and tie into the existing network

All foul drainage runs are anticipated to be constructed of 150mm u-PVC pipework with pea gravel surround. All access/manhole construction is anticipated to be constructed of UPVC, polypropylene or precast concrete.

3.2 Surface Water Drainage

The site is currently a brownfield site with an existing medical practice and car parking facilities. The existing ground makeup consists of a mixture of loose gravel and silty clays. Currently, the existing surface water network passes through a number of porous bays to receive treatment before falling to the North Sea at the Scottish Water Outfall to the west of Ajax Way.

Surface water discharge from the proposed extension is proposed to exit the site and cross the public carriageway at Ajax Way. It is proposed the water will have received treatment within the extents of the site boundary and so will fall to the North Sea at the Scottish Water Outfall at the end of this run.

This discharge will be covered under SEPA General Binding Rule 10 and therefore no normal approval is required.

The proposed site will have a post development Surface Water will be 9l/s in line with the existing drainage network. It can be estimated that based on Flood Estimation Handbook Rainfall data an assumed storage requirement on site will be 62.5m^3 of attenuation storage is required (this is subject to change at detailed design stage).

4.0 SUDS Strategy

SuDS are a sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than “conventional” techniques. The requirement for SuDS to account for the quantity and quality of surface water is an intrinsic part of the planning process and all new developments.

The SuDS proposal for this site involves conveying the surface water run-off from roofs to the proposed outfall via down pipes and gravity surface water drainage. Surface water flows from hard standing areas will be conveyed via gullies and permeable paving. The treatment will be provided by a proposed at source permeable paving, filter areas to treat roof and carriageway runoff.

SuDS proposals for this development have been designed in accordance with the SuDS Manual C753, utilising the Simple Index approach. Pollution Hazard characteristic has been identified as Very Low for residential roofs and Low for low traffic car park using Table 26.2 within the SUDS Manual, with pollution indices as shown below.

Land Use	TTS (Total Suspended Solids)	Metals	Hydrocarbons
Non residential car parking with frequent change (GP Practice)	0.7	0.6	0.7

Suitable SuDS measures have therefore been chosen utilizing the mitigation indices noted within table 26.3. The SuDS measure proposed for the development is a mixture of permeable roofs, permeable paving, filter trenches and bioretention areas, with mitigation indices as shown below.

Type of SUDS Component	TTS (Total Suspended Solids)	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7
Filter Strips	0.4	0.4	0.4

Maintenance of SuDS systems should be carried out in accordance with manufacturer’s guidelines and the SuDS Manual C753. A proposed SuDS maintenance strategy has been proposed within Appendix D and should be implemented by the client through a suitable maintenance contact or factoring agreement.

5.0 Summary

This report and the drawings and calculations contained within the appendixes confirm the design strategy as noted below;

- There is no risk of fluvial or pluvial flooding, however, there is a moderate risk of coastal flooding

- Detailed levels and drainage designs should remove all low points subject to surface water ponding where possible and provide adequate surface drainage to remove any potential risk of surface water ponding.

- Control of surface water discharge rates to meet greenfield runoff rates of 9 litres per second to discharge into the North Sea.

- SUDS provision in the form of permeable paving within the parking area.

Appendix A
Drawings

Appendix B
Foul Calculations

Project				Job Ref
Airlie Medical Practice, Ajax Way, Fife				311052
Calculation: **Foul Water Flows**				Calc. Sheet no. rev. / /
Drawing Ref. 311052	Calc. By RF	Date 02.10.23	Check by CC	Date 02.10.23

Ref.	Calculations	Output
	This site is currently an existing Medical Practice with a pharmacy and existing car parking facilities. The existing building is set to have an extension added with an open courtyard in the middle of the new proposed building. • Pre-Development Discharge 350 x 73 / 24*60*60 Average Foul Flow = Peak flow = 1.5 x 0.296 Peak Foul Flow = • Post-Development Discharge in line with British Water Flow and Loads, category small hospital for 30 staff and 52 patients a day: 350 x 142 / 24*60*60 = 0.575 l/s Average Foul Flow = Peak flow = 1.5 x 0.575 = 0.863 Peak Foul Flow =	 0.296 l/sec 0.444 l/sec 0.575 l/sec 0.863 l/sec

Appendix C
Surface Water Calculations

Project				Job Ref
Airlie Medical Practice, Ajax Way, Methil, Fife				311052
Calculation: **Surface Water Flows**				Calc. Sheet no. rev. / /
Drawing Ref. 311052	Calc. By RF	Date 02.05.2023	Check by CC	Date 02.05.2023

Ref.	Calculations	Output
	The site is currently an existing Medical Practice with a pharmacy and existing car parking facilities. The existing building is set to have an extension added with an open courtyard in the middle of the new proposed building. • Pre-Development Surface Water Discharge Existing Surface Water Discharge taken from As-Built drawings provided by client. *Therefore,* Total Surface Water Flow =	9 l/sec
	• Post Development Surface Water Discharge Client wishes to maintain the existing Surface Water Discharge rate in line with the As-Built drawings. *Therefore,* Total Surface Water Flow =	9 l/sec
	Post Development Pre-Attenuated Surface Water Discharge Client wishes to maintain the existing Surface Water Discharge rate in line with the As-Built drawings. *Therefore,* Total Surface Water Discharge =	9 l/s

Appendix D
SUDS Maintenance Schedules

Permeable Paving

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after Autumn leaf fall, or reduced frequency as required, based on site specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas.	As required
	Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying.	As required – once per year on less frequently used pavements.
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material.	As required
	Rehabilitation of surface and upper substructure by remedial sweeping.	Every 10 to 15 years or as required (if infiltration performance id reduced due to significant clogging)
Monitoring	Initial Inspection	Monthly or Three Monthly after installation.
	Inspect for evidence of poor operation and/or weed growth if required, take remedial action	Three monthly, 48 h after large storms in first six months.
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually
	Monitor inspection chambers	Annually

Cellular Storage Structure

Maintenance Schedule	Required Action	Typical 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 may cause risks to performance)	Monthly
	Remove sediment from pre-treatment structures and/or internal forebays	Annually
Remedial Actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed.	Annually
	Survey inside of tanks for sediment build-up and remove if necessary	Every 5 years or as required

Filter Drain

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove Litter (including leaf litter) and debris from filter drain surfaces, access chambers and pre-treatment devices.	Monthly, or as required
	Inspect filter drain surface, inlet/outlet pipework and control system for blockages, 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
	Inspect infiltration surfaces for ponding, compaction, silt accumulation, records areas where water is ponding for > 48 hours	Monthly, or when required
Occasional Maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (eg NJUG,2007 or BS 3998:2010).	As required

Flow Control Chambers

Maintenance schedule	Required action	Frequency
Regular maintenance	Remove sediment and/or debris from vortex filter trap or catch pit.	Monthly for 3 months, then three-monthly
Remedial actions	Repair or replace damaged items	As required
Monitoring	Inspect flow control device for signs of damage or wear.	Annually

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