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SURFACE WATER MANAGEMENT PLAN (SWMP) & FLOOD RISK ASSESSMENT (FRA) STATEMENT

Halbeath Development – Core Road D&E

Project Reference. (8891) Halbeath
Document. V2
Date. 20/04/21
To. Fife Council (Flooding, Shoreline & Harbours)

Introduction

- 1.0 This Surface Water Management Plan (SWMP) and Flood Risk Assessment (FRA) statement has been prepared in support of the planning application for Core Road D&E at the Halbeath Development on behalf of Shepherd (Offshore) Scotland Ltd.
- 1.1 The planning application proposals include the construction of new sections of carriageway and associated footway/ cycleways and highway drainage.
- 1.2 This Statement and appended drawings seeks to address the requirements as set out within Fife Councils 'Design Criteria Guidance Note on Flooding and Surface Water Management Plan Requirements'

Surface Water Management Plan (SWMP)

- 2.0 Reference has been made to Appendix 8 of the Fife Council guidance noted within Section 1.2 and is appended to this report. It provides a checklist of information required to be provided as part of the planning application. These are summarised below with commentary of relevance to this application.
 - A drainage layout – provided in the appendices.
 - Confirmation of discharge rate – noted on drawings and calculations.
 - Calculation for any attenuation volume required – noted in the attached calculations.
 - Soakaway information (i.e. ground investigation, porosity test) – not relevant to this application, discharging to watercourse.
 - Pre-development and post-development flow path diagrams – refer to drawings.
 - Confirmation of SUDS treatment train – refer to drawings.
 - Assessment of maximum groundwater level at the location of any underground attenuation features, if applicable – not applicable to this application.
 - Written evidence of Scottish Water's approval of the surface water drainage connection into their network at the rate stated – not applicable, as this is a roads drainage strategy, and it is discharging to watercourse.

- Confirmation of who will adopt and maintain the surface water network, including SUDS – the proposal contains only highway drainage; therefore, the network shall be maintained by the local roads authority.
 - A maintenance schedule for all proposed SUDS, to include a detailed list of activities and timescales. – refer to drawings attached.
 - Completed SUDS certification – refer to appendices.
- 2.1 Drawing 8891/408 Rev A appended to this report provides details of the surface water drainage strategy including SUDS treatment train and applicable maintenance schedule.
- 2.2 SUDS components have been considered to provide appropriate treatment and mitigation against pollutants in line with the CIRIA SUDS Manual Report C753 pollution hazard and mitigation indices (Table 26.2 and 26.3 respectively).
- 2.3 The climate change allowance applied during design of the Core Road D&E has been taken as +40%. Details of the drainage network and SUDS attenuation volume calculations have been appended to this report.
- 2.4 The completed Fife Council guidance Appendices 1 and 2 are appended to this report (Sustainable Drainage Design Compliance Certificate and Independent Check Certificate).

Flood Risk Assessment (FRA)

- 3.0 Core Road D & E highway drainage discharge to the Calais Burn and the Pinkerton Burn. Core Road D&E are at the upstream end of both burns, therefore there is no risk of flooding from the burns. The development to the north of Core Roads D&E is positively drained through its own separate SUDS systems, no flooding is anticipated from the development to the north which is subject to its own drainage strategy. This application is for roads only, therefore the sensitivity to flooding is also minimal. No further assessment of Flood Risk is required.

3.1 A summary table is provided below of the Flood Risks considered for this development.

Source	Flood Risk	Comment
River (fluvial)	None shown	SEPA flood maps show no extent of river source flood risk within the site area.
Surface Water (pluvial)	Low	Small areas of surface water flood risk shown around existing drainage channel.
Coastal	None shown	SEPA flood maps show no extent of coastal flooding risk within the site area.
Groundwater	Low	Groundwater monitoring has been undertaken with the majority of water levels noted between 2.00m and 3.50m bgl. It is considered for the majority of the site that the cohesive superficial deposits hold a low degree permeability and will limit the upwards migration of groundwater.
Infrastructure Failure	Low	Overtopping of the east and west SUDS ponds is controlled by emergency spillways which direct exceedance flows to the existing watercourse and ditch downstream respectively. No culverts are known within the site boundary. If overtopping of the drainage pipe network occurs exceedance flows will be directed to the south to the existing watercourses along the proposed access roads and remain clear of house curtilages and building footprints.

3.2 The completed Fife Council guidance Appendices 3 and 4 are appended to this report (Flood Risk Assessment Compliance Certificate and Independent Check Certificate).

Appendices

The following items are appended to this report.

1. Drawing 8891/408 Rev A – Surface Water Management Plan and Flood Risk Assessment
2. Microdrainage network and SUDS attenuation volume calculations
3. Fife Council Guidance: Appendix 8 – Full Planning Application Checklist
4. Sustainable Drainage Design Compliance Certificate and Independent Check Certificate
5. Flood Risk Assessment Compliance Certificate and Independent Check Certificate

View 1 - Core Road D

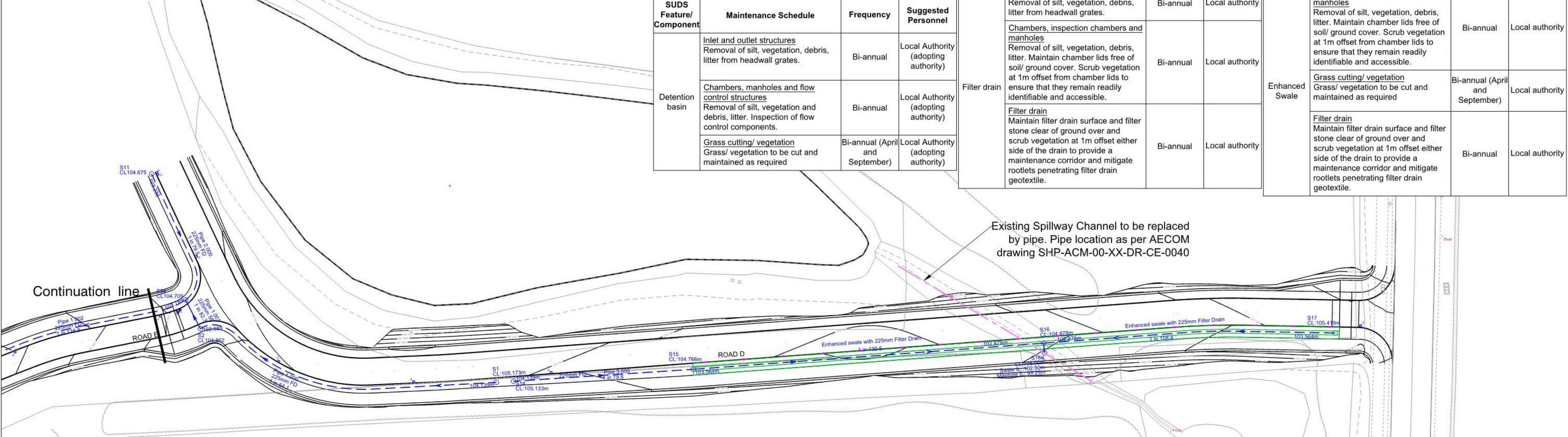


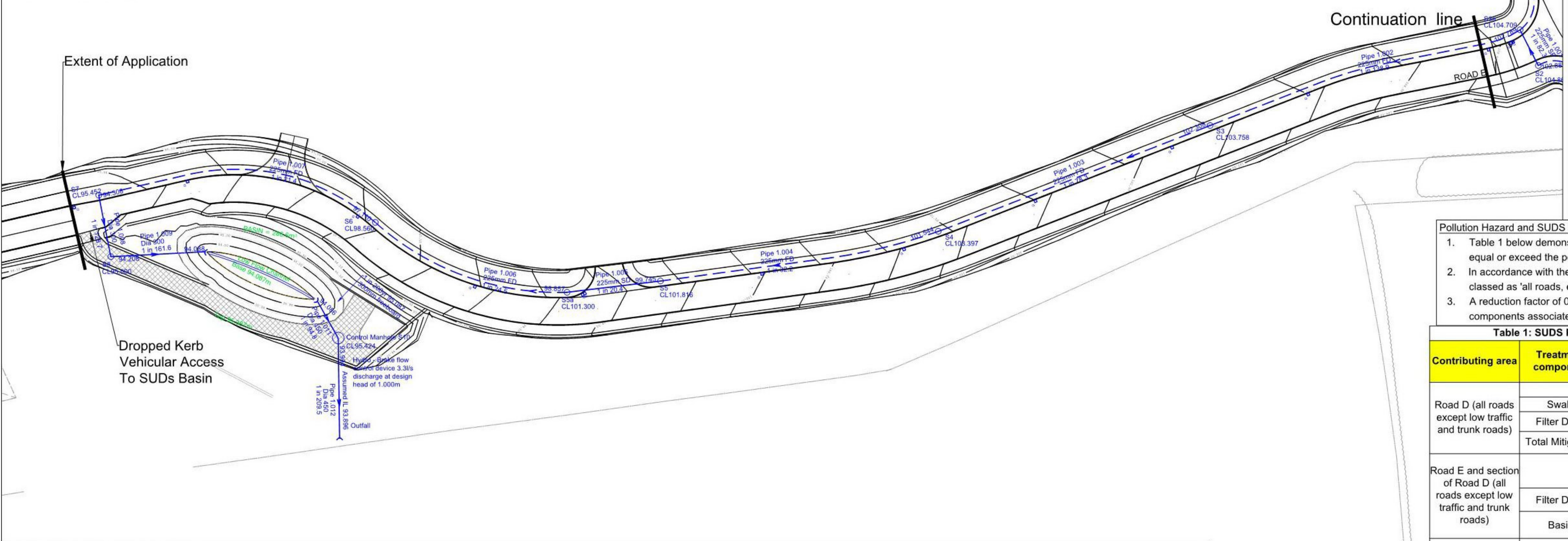
Table 2: SUDS Maintenance Plan

SUDS Feature/Component	Maintenance Schedule	Frequency	Suggested Personnel
Detention basin	Inlet and outlet structures Removal of silt, vegetation, debris, litter from headwall grates.	Bi-annual	Local Authority (adopting authority)
	Chambers, manholes and flow control structures Removal of silt, vegetation and debris, litter. Inspection of flow control components.	Bi-annual	Local Authority (adopting authority)
	Grass cutting/ vegetation Grass/ vegetation to be cut and maintained as required	Bi-annual (April and September)	Local Authority (adopting authority)
	Filter drain Maintain filter drain surface and filter stone clear of ground over and scrub vegetation at 1m offset either side of the drain to provide a maintenance corridor and mitigate rootlets penetrating filter drain geotextile.	Bi-annual	Local authority

Feature/Component	Maintenance Schedule	Frequency	Suggested Personnel
Filter drain	Inlet and outlet headwalls Removal of silt, vegetation, debris, litter from headwall grates.	Bi-annual	Local authority
	Chambers, inspection chambers and manholes Removal of silt, vegetation, debris, litter. Maintain chamber lids free of soil/ ground cover. Scrub vegetation at 1m offset from chamber lids to ensure that they remain readily identifiable and accessible.	Bi-annual	Local authority
	Grass cutting/ vegetation Grass/ vegetation to be cut and maintained as required	Bi-annual (April and September)	Local authority
	Filter drain Maintain filter drain surface and filter stone clear of ground over and scrub vegetation at 1m offset either side of the drain to provide a maintenance corridor and mitigate rootlets penetrating filter drain geotextile.	Bi-annual	Local authority

Feature/Component	Maintenance Schedule	Frequency	Suggested Personnel
Enhanced Swale	Chambers, inspection chambers and manholes Removal of silt, vegetation, debris, litter. Maintain chamber lids free of soil/ ground cover. Scrub vegetation at 1m offset from chamber lids to ensure that they remain readily identifiable and accessible.	Bi-annual	Local authority
	Grass cutting/ vegetation Grass/ vegetation to be cut and maintained as required	Bi-annual (April and September)	Local authority
	Filter drain Maintain filter drain surface and filter stone clear of ground over and scrub vegetation at 1m offset either side of the drain to provide a maintenance corridor and mitigate rootlets penetrating filter drain geotextile.	Bi-annual	Local authority
	Filter drain Maintain filter drain surface and filter stone clear of ground over and scrub vegetation at 1m offset either side of the drain to provide a maintenance corridor and mitigate rootlets penetrating filter drain geotextile.	Bi-annual	Local authority

View 2 - Core Road E



Pollution Hazard and SUDS Mitigation Indices Notes:

- Table 1 below demonstrates the Simple Index Approach (SIA). Total mitigation indices provided must equal or exceed the pollution hazard indices for different land use classifications.
- In accordance with the SUDS Manual (CIRIA C753) the pollution hazard is Medium as the roads are classed as 'all roads, except low traffic and trunk roads/motorways'.
- A reduction factor of 0.5 is used to account for the reduced performance of secondary or tertiary SUDS components associated with already reduced inflow concentrations.

Table 1: SUDS Pollution Hazard and Mitigation Indices (ref. CIRIA Table 26.2/26.3)

Contributing area	Treatment component	Hazard & mitigation index	Total suspended solids (TSS)	Metals	Hydro-carbons
Road D (all roads except low traffic and trunk roads)		Hazard	0.7	0.6	0.7
	Swale	Mitigation Index 1	0.5	0.6	0.6
	Filter Drain	Mitigation Index 2	0.2	0.2	0.2
	Total Mitigation Provided (see note 3 above)		0.7	0.8	0.8
Road E and section of Road D (all roads except low traffic and trunk roads)		Hazard	0.7	0.6	0.7
	Filter Drain	Mitigation Index 1	0.4	0.4	0.4
	Basin	Mitigation Index 2	0.25	0.25	0.3
	Total Mitigation Provided (see note 3 above)		0.65	0.65	0.7

Surface Water Management Plan Notes:

- Surface water drainage infrastructure proposed as part of the Core Road D & E works include highway drainage.
- The highway surface water drainage system will discharge to the Calais and Pinkerton Burns via a downstream site control SUDS detention basin and a highway swale.
- The surface water drainage system will be designed and constructed in accordance with Sewers for Scotland 4 (Scottish Water), the CIRIA SUDS Manual (C753) and Fife Council's guidance document Design Criteria Guidance Note on Flooding and Surface Water Management Plan Requirements. For the later, specifically the Appendix 8 full planning application checklist.
- Network model calculation have been run for storm events up to and including the 1 in 200 year (0.5% AEP) return period.
- As per Fife Council guidance a +40% increase in peak rainfall intensity has been applied.
- Surface water treatment has been considered in accordance with the SUDS Manual (CIRIA C753), Simple Index Approach (SIA) as detailed within Table 1.
- Surface water treatment has been provided as per the mitigation indices from Table 26.3 of the SUDS Manual.
- SUDS treatment is provided to road surface water runoff by gullies, filter drains, swales and a downstream detention basin.
- Attenuation and discharge rate control is provided within the downstream SUDS detention basin and at the swale.
- Highway drainage system will be offered for adoption by Local Authority (Fife Council).
- Underground attenuation structures will not form part of the highway surface water drainage system included as part of this application. The use of soakaways will not form a part of the highway surface water drainage system included as part of this application.
- This drawing should be read in conjunction and is appended to document: 8891- SWMP and FRA Statement.**

Date: 20.04.21	Revision: Updated to match re-alignment of Core Road E.	No. A	Initials: BA	North Point: ↑	Project: Halbeath
Date:	Revision:	No.	Initials:	Drawn: NK	Client: Shepherd Offshore (Scotland) Ltd
Date:	Revision:	No.	Initials:	Checked by:	Date: 08.12.20
Date:	Revision:	No.	Initials:	Scale: 1:500	Title: Core Road D & E Surface Water Management Plan
Date:	Revision:	No.	Initials:	Original Size: A1	Copyright Acknowledgment: Ordnance Survey © Crown Copyright 2012. All rights reserved. Licence No. AL100017966. Quality Assurance: UKAS 005 Quality Assurance ISO 9001:2008 SQS Certificate GB02/54539

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Drawing No: 8891/408 Revision: A

Drawing Name and Location

Appendix 8 - Full Planning Application Checklist

Point	Description	Provided Y,N,N/A
4.4.1	A drainage layout.	Yes
4.4.2	Confirmation of discharge rate.	Yes
4.4.3	Calculations for any attenuation volume required.	Yes
4.4.4	Soakaway information (i.e. ground investigation, porosity test).	N/A
4.4.5	Pre-development and post-development flow path diagrams.	Yes
4.4.6	Confirmation of the SuDS treatment train.	Yes
4.4.7	Assessment of maximum groundwater level at the location of any underground attenuation features is applicable.	N/A
4.4.8	Written evidence of Scottish Water's approval of the surface water drainage connection into their network at the rate stated.	N/A
4.4.9	Confirmation of who will adopt and maintain the surface water network, including any SuDS as per Appendix 5.	Yes
4.4.10	A maintenance schedule for all proposed SuDS, to include a detailed list of activities and timescales.	Yes
4.4.11	Completed SUDS certification as per Appendix 1, 2. <i>(For single dwelling only Appendix 1 is required)</i>	Yes

Appendix 1 - Sustainable Drainage Design Compliance Certificate

I certify that all the reasonable skill, care and attention to be expected of a qualified and competent professional in this field has been exercised in designing the sustainable drainage system for the below names development in accordance with CIRIA C753: The SuDS Manual 2015, the current edition of Sewers for Scotland and Fife Council's – Design Criteria Guidance Note on Flooding and Surface Water Management Plan Requirements.

ePlanning Reference No.....

Planning Application No.(completed by Fife Council Planning Service).....

Roads Construction Consent No.(completed by Fife Council Planning Service)

Name of Development - **Core Roads D and E at Halbeath - Dunfermline, Fife**

Name of Developer - **Shepherd Offshore (Scotland) Ltd**

Name and Address of Designers Organisation - **Ironside Farrar Ltd, 111 McDonald Road,
Edinburgh, EH7 4NW**

Name of Designer - **Niamh Kennedy**

Position Held - **Associate**

Engineering Qualifications⁽¹⁾ - **BE CEng MICE**

Signed -



Date - **20.04.21**

Drawing No's Relative to this certificate - **8891_408 Rev A**

(1) **Minimum Qualification - Incorporated Engineer or equivalent from an appropriate Engineering Institution.**

Appendix 2 - Sustainable Drainage Design – Independent Check Certificate

I certify that all the reasonable skill, care and attention to be expected of a qualified and competent professional in this field has been exercised in the below named development with a view to securing that:

1. It has been designed in accordance with CIRIA C753: The SuDS Manual 2015, Current Edition of Sewers for Scotland, Fife Council – Design Criteria Guidance Note on Flooding and Surface Water Management Plan Requirements;
2. It shall be accurately translated into construction drawings and schedules.
3. I hereby confirm that I hold professional indemnity insurance for £5 million pounds.

ePlanning Reference No.

Planning Application No.(completed by Fife Council Planning Service)

Roads Construction Consent No.(completed by Fife Council Planning Service)

Name of Development - **Core Roads D and E at Halbeath - Dunfermline, Fife**

Name of Developer - **Shepherd Offshore (Scotland) Ltd**

Name and Address of Designers Organisation - **Ironside Farrar Ltd, 111 McDonald Road,
Edinburgh, EH7 4NW**

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Name of Checker - **Hugh M Ross**

Position Held - **Director**

Engineering Qualification⁽¹⁾ - **BSc(Hons) CEng MICE C.WEM MCIWEM**

Signed - 

Date - **20.04.21**

(1) Minimum Qualification - Incorporated Engineer or equivalent from an appropriate Engineering Institution.

Appendix 3 - Flood Risk Assessment Compliance Certificate

I certify that all the reasonable skill, care and attention to be expected of a qualified and competent professional in this field has been exercised in carrying out the Flood Risk Assessments and preparing the Flood Risk Assessment Report for the below named development in accordance with the Reporting Requirements for Flood Risk Assessments issued by SEPA.

ePlanning Reference No.....

Planning Application No.(completed by Fife Council Planning Service).....

Roads Construction Consent No.(completed by Fife Council Planning Service).....

Name of Development - **Core Roads D and E at Halbeath - Dunfermline, Fife**

Name of Developer - **Shepherd Offshore (Scotland) Ltd**

Name and Address of Designers Organisation - **Ironside Farrar Ltd, 111 McDonald Road,
Edinburgh, EH7 4NW**

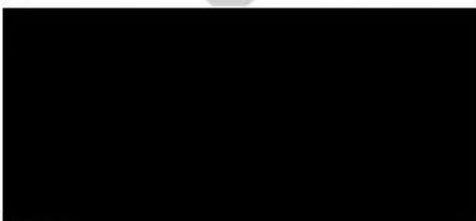
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Name of Designer - **Niamh Kennedy**

Position Held - **Associate**

Engineering Qualifications⁽¹⁾ - **BE CEng MICE**

Signed -



Date - **20.04.21**

(1) Minimum Qualification - Incorporated Engineer or equivalent from an appropriate Engineering Institution.

Appendix 4 - Flood Risk Assessment – Independent Check Certificate

I certify that all the reasonable skill, care and attention to be expected of a qualified and competent professional in this field has been exercised in checking the Flood Risk Assessments for the below named development with a view to ensuring that it has been accurately translated into the flood risk assessment report.

ePlanning Reference No.....
Planning Application No.(completed by Fife Council Planning Service)
Roads Construction Consent No.(completed by Fife Council Planning Service)
Name of Development - **Core Roads D and E at Halbeath - Dunfermline, Fife**
Name of Developer - **Shepherd Offshore (Scotland) Ltd**

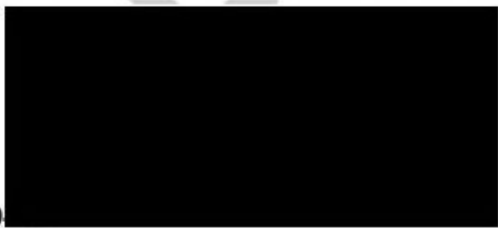
Name and Address of Designers Organisation - **Ironside Farrar Ltd, 111 McDonald Road,
Edinburgh, EH7 4NW**

Name of Checker - **Hugh M Ross**

Position Held - **Director**

Engineering Qualifications ⁽¹⁾ - **BSc(Hons) CEng MICE C.WEM MCIWEM**

Signed -



Date - **20.0**

(1) Minimum Qualification - Incorporated Engineer or equivalent from an appropriate Engineering Institution