ScottishPower Energy Retail Limited and Storegga Hydrogen Limited

Cromarty Hydrogen Project: Drainage Impact Assessment

Technical Appendix 4.2

663356-P4.2(00)

OCTOBER 2023

RSK GENERAL NOTES

Project No.: 663356-P4.2 (00)

Title: Cromarty Hydrogen Project: Drainage Impact & Watercourse Crossing Assessment

Client: ScottishPower Energy Retail Limited and Storegga Hydrogen Limited

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Date:	13/10/2023	Date:	26/10/2023

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Date:	30/10/2023

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TABLES

1 INTRODUCTION

1.1 This report provides a Drainage Impact Assessment for the Cromarty Hydrogen Project (hereafter referred to as the Proposed Development) and associated development infrastructure.

1.2 The report forms a Technical Appendix to the Environmental Appraisal Report (EAR) for the Proposed Development and should be read in conjunction with this document. It has been produced to assess how the Proposed Development may affect the existing drainage system within the application site and to address the requirement for new drainage infrastructure for the Proposed Development.

1.3 Within this Technical Appendix the following definitions will be used:

- 'site access' covers the existing access track from the junction with the B9176 Struie Road up to the main site area;
- 'the application site' refers to everything within the application red line boundary;
- 'main site area' refers to the area where the hydrogen production facility will be sited; and
- 'cable route corridor' refers to the area comprising the existing access track plus a 10-15 m buffer running between the main site area and the existing Beinn Tharsuinn Wind Farm.

Drainage impact assessment

1.4 This document will assess how the Proposed Development may affect the existing drainage system within the application site, from both a water quality and water quantity perspective. This assessment will identify any drainage issues, as well as appropriate mitigation measures to address these issues. This will ensure that drainage infrastructure is suitable for the Proposed Development and keep changes to the natural drainage to a practical minimum.

Regulatory background

1.5 Under the terms of the *Water Environment (Controlled Activities) (Scotland) Regulations 2011* (CAR), it is an offence to undertake the following activities without an appropriate authorisation in place:

- discharge to any wetland, surface water or groundwater;
- disposal of wastewater or effluent to land;
- abstraction from any wetland, surface water or groundwater;
- impoundment (dam or weir) of any river, loch, wetland or transitional water; and
- engineering works in any inland water or wetland.

1.6 With respect to drainage infrastructure, any formal discharge to water or to land may require authorisation. The developer has a duty to manage water within the application site and discharge outwith the application site in a compliant manner. The drainage

strategy provided here will establish the design requirements in order to manage post-construction water flows within and deriving from the Proposed Development. Relevant SUDS guidance, policies and pre-application advice was followed, including:

- Policy 66 – Surface Water Drainage With regard to surface water drainage,
- Planning Advice Note 69: Planning and Building Standards Advice on Flooding paragraphs 23 and 24.

1.7 This report is produced in compliance with the requirements of the Highland Council (THC) and the Scottish Environment Protection Agency (SEPA), and is in line with current best practice.

Development proposals

1.8 The Proposed Development infrastructure would include:

- a temporary construction compound;
- a hydrogen production facility;
- a substation;
- drainage features around permanent infrastructure; and
- temporary welfare facilities.

1.9 Full details of the Proposed Development design are provided in **Chapter 1** of the EAR.

1.10 Construction of the Proposed Development would also include resurfacing of the site access and laying cables along the cable route corridor. These activities would occur on existing tracks which already have drainage infrastructure. As there are no plans to change the existing drainage along these tracks resurfacing and laying of cables are not considered further in this report.

2 DRAINAGE CHARACTERISTICS

2.1 For the purposes of this document the 'study area' (**Figure 4.1**) is considered to be the application site plus a buffer zone of 2 km. Areas downstream, to a distance of 5 km from the application site, are also considered as effects can be transmitted downstream for greater distances than 2 km.

2.2 This section of the document outlines the existing drainage characteristics of the application site and the wider study area in order to determine a baseline against which to assess changes to the drainage regime. Natural drainage characteristics are determined by topography, existing drainage features and natural catchment areas, rainfall characteristics, current land use and any existing drainage infrastructure within the study area.

Site topography

2.3 The application site is located at an altitude of 210 to 505 m AOD. The highest location is at the westernmost end of the cable route corridor, where it meets the boundary of the existing Beinn Tharsuinn Wind Farm. The lowest location is at the eastern end of the access route where it leaves the B9176.

2.4 The main site area lies between 325 and 355 m AOD, sloping generally down to the south-east.

2.5 The Proposed Development is bounded to the north by the Cnoc Muigh-bhlàraidh (546 m AOD), the main site area is located on its lower slopes. To the west lie Beinn nan Oighrean (538 m AOD) and Beinn Tharsuinn (546 m AOD). The cable route corridor is bounded to the south by Meall a' Bhreacain (527 m AOD). The Allt na Meine runs adjacent to the north of the application site, intersecting it once as it travels under the site access, and the Allt Dearg runs adjacent to the south of the application site. The easternmost part of the application site is bounded by the B9176, providing site access.

2.6 The land within the application site covers approximately 12 ha. Proposed infrastructure has a total land take of 2.22 ha, of which 0.26 ha would be temporary working areas during the construction phase and 1.96 ha would be long-term. The long-term land take includes all impermeable or reduced permeability surfaces and includes the substation and the hydrogen production facility (including areas of new track).

Existing drainage and natural catchments

2.7 The application site is located across three main catchment areas: Allt Muigh-bhlàraidh, Allt Dearg and Easter Fearn Burn. The catchment areas are shown on **Figure 4.7** in **Chapter 4**.

Allt Muigh-bhlàraidh catchment

2.8 The Allt Muigh-bhlàraidh catchment has a total area of 28.73 km^2 and drains 37.97% of the application site.

2.9 The Craigroy Burn provides the main drainage for this catchment. An unnamed tributary to the Allt na Meine provides the main drainage within the application site, crossing below the site access. The Allt na Meine joins the Craigroy Burn at approximately NGR 268421 883807.

2.10 An artificial connection between the Allt Muigh-bhlàraidh and Allt Dearg catchments is present just upstream of Drochaid an Uillt Ruaidh. This connects the Allt Dearg to the upper part of the Fèith Ruadh, a tributary to the Allt na Meine.

Allt Dearg catchment

2.11 The Allt Dearg catchment has a total area of 8.58 km^2 and drains 49.87% of the application site.

2.12 The Allt Dearg provides the main drainage for the catchment. Several unnamed tributaries to the Allt Dearg have their source to the south of the cable route corridor. These flow south-east, joining the Allt Dearg just south of the main site area.

Easter Fearn Burn catchment

2.13 The Easter Fearn Burn catchment has a total area of 17.30 km^2 and drains 12.16% of the application site.

2.14 The Easter Fearn Burn provides the main drainage for this catchment. Several tributaries to the Easter Fearn Burn have their source close to the north-eastern edge of the existing Beinn Tharsuinn Wind Farm. From here they flow north-east beneath the cable route corridor, forming the Allt Fearna (major tributary to the Easter Fearn Burn) at NGR 262700 882279.

2.15 Further details are provided in **Table 4.2.1**. The key watercourses and catchments are shown on **Figure 4.7** in **Chapter 4**.

Table 4.2.1: Overview of watercourse catchment areas and infrastructure

Catchment	Total area (km^2)	% of application site within catchment	% of catchment within application site	Comments
Allt Muigh-bhlàraidh	28.73	50.00	0.21	This catchment contains the temporary construction compounds and the majority of the buildings comprising the hydrogen production facility.
Allt Dearg	8.58	41.67	0.58	This catchment contains the majority of the cables, the substation and the southernmost portion of the hydrogen production facility including new tracks.
Easter Fearn Burn	17.30	8.33	0.06	This catchment contains the western most portion of the cables.

Rainfall characteristics

2.16 A review of the watercourse catchment and rainfall characteristics was undertaken using data from the Flood Estimation Handbook (FEH) web service (CEH, 2023). Catchment statistics have been provided for the three main catchments within the study area.

2.17 Standard average annual rainfall (SAAR) for the main study area catchments are as follows:

- Allt Muigh-bhlàraidh: 902 mm
- Allt Dearg: 1011 mm
- Easter Fearn Burn: 1144 mm

2.18 Standard percentage runoff (SPRHOST) for the main study area catchments are as follows:

- Allt Muigh-bhlàraidh: 0.47
- Allt Dearg: 0.57
- Easter Fearn Burn: 0.53

2.19 The calculations in **Section 3** below make use of the figures for the Allt Muigh-bhlàraidh catchment, as this covers the majority of the application site and would have the majority of construction works within it. Therefore, this is considered to be the most representative catchment for the application site.

Catchment land use

2.20 The study area consists primarily of upland moorland and peatland with some areas of commercial forestry and agriculture. Within the application site individual catchments consist primarily of moorland and peatland. Main watercourses within the catchments appear to be in near-natural condition, but local drainage has been modified with ditches to improve drainage.

Existing drainage infrastructure

Wastewater

2.21 There is no existing foul drainage within the application site.

Surface water

2.22 Some artificial drainage ditches are present both within the application site and the wider study area. Within the application site drainage ditches are mostly found located along the site access and cable route corridor. Additionally, there is an extensive ditch network to the north of the site access and a large drainage ditch north of the cable route corridor at NGR 263844 881553. Some culverts are present at watercourse crossings along the existing access tracks. The drainage infrastructure is largely in good condition.

Private water supplies

2.23 No private water supplies (PWS) are known to be present within the application site. Within 2 km of the application site two PWS have been identified, these are shown on **Figure 4.8** of **Chapter 4**. One is located approximately 0.5 km north of the site access, adjacent to the B9176 at NGR 266057 882308. The other is located approximately 0.47 km south-east of the site access at Aultnamain (NGR 266622 881354). Both PWS are located downstream of the Proposed Development.

3 OUTLINE DRAINAGE STRATEGY

Introduction

3.1 This section provides an outline drainage strategy for the Proposed Development. The objective is to maintain site runoff within the natural catchment areas, and to maintain drainage to the study area watercourses following treatment and attenuation in order to mimic natural flow as closely as possible.

Wastewater drainage

3.2 A new wastewater connection would be provided for the proposed development. Details for this would be provided within the planning application for the water abstraction and pipework and are therefore not included here.

3.3 Should a temporary facility be required during construction, the welfare facilities would include a suitably sized holding tank which would be emptied by tanker and removed from the application site for disposal at a suitably licensed facility.

Surface water drainage

3.4 The surface water drainage network for the Proposed Development would be designed taking into account THC Supplementary Guidance Flood Risk & Drainage Impact (THC, 2013), SEPA's Water Assessment and Drainage Assessment Guide (SUDSWP, 2016) and CIRIA Publication C753 – the SuDS Manual (CIRIA, 2015).

3.5 The following sections describe the requirements that lead to determination of the proposed outline drainage strategy and which inform sustainable drainage systems (SuDS) provision recommendations.

Allowable discharge

3.6 Surface water flows from the application site would be directed, following appropriate treatment and attenuation, to study area watercourses in order to maintain pre-development water quality characteristics and flow rate.

3.7 In line with current best practice guidelines for development, it is anticipated that the allowable discharge from the application site would match that of the existing 1-in-2 year Greenfield runoff rate. This is discussed in the following sections.

Post-development discharge criteria

3.8 Post-development surface water flows would be restricted to the discharge levels set out in SEPA's Water Assessment and Drainage Assessment Guide (SUDSWP, 2016) and be in line with best practice. The Proposed Development design recognises SEPA's requirements, within which three key design principles are noted:

- the post-development runoff rate and volume should not exceed the Greenfield runoff rate for previously undeveloped sites. However, if infiltration to ground is not feasible, the additional runoff generated should be discharged from the site at flow rates below 2 l/s/ha;

- formal on-site storage should be provided up to the 1-in-30 year return period rainfall event (3.33 % annual exceedance probability) and attenuation measures should be designed such that SuDS features would not surcharge during a 1-in-30 year return period rainfall event; and
- the 1-in-200 year flood event (0.5 % annual exceedance probability) should be contained on-site, unless it can be demonstrated that the 1-in-200 year event could be managed appropriately without causing a flood risk elsewhere.

Greenfield runoff assessment

3.9 A review of the catchment statistics relating to the application site was undertaken using the FEH Web Service (CEH, 2023). Catchment statistics for the Allt Muigh-bhlàraidh catchment are considered to be representative as the majority of the application site and the Proposed Development infrastructure lie within this catchment. The following catchment statistics have been used in calculations:

- standard average annual rainfall (SAAR) of 902 mm for the application site; and
- standard percentage runoff (SPR) of 47%.

3.10 This information has been used to determine the Greenfield Runoff Rate that corresponds to the application site's existing characteristics. This has been calculated using the online Greenfield Runoff Estimation for Sites tool (HR Wallingford, 2023), which gives the IH124 model[1] results for the application site.

3.11 The land within the application site covers approximately 12 ha. Proposed infrastructure has a total land take of 2.22 ha, including temporary infrastructure required only during the construction phase. In order to allow additional land take for drainage components such as ditches and settlement ponds, a total land take of 4.44 ha has been used in calculations, equivalent to twice the total land take specified above.

3.12 The 1-in-2 year Greenfield Runoff Rate has been calculated to be **28.84 l/s** based on a total drained area of **4.44 ha**.

3.13 The output from the Greenfield Runoff Estimation for Sites tool is provided in **Annex A**.

Attenuation

3.14 SEPA's current guidance document requires that formal on-site storage is provided up to the 1-in-30 year return period event and attenuation measures should be designed such that SuDS features will not surcharge during a storm of this magnitude.

3.15 The outline drainage strategy for the application site aims to promote attenuation within the SuDS proposals to mitigate any additional surface water runoff generated as a result of the Proposed Development. Attenuation volumes would be reviewed at the detailed design stage in order to ensure compliance with the 1-in-30 year and 1-in-200 year requirements as specified within SEPA's guidance.

[1] The IH124 model provides a method for estimation of flow characteristics and flooding for small, ungauged catchments, derived by the Institute of Hydrology (now Centre for Ecology and Hydrology). Details can be found in Marshall & Bayliss (1994).

3.16 Approximate attenuation and storage volumes have been calculated as follows, using guidance provided in the SuDS Manual (CIRIA, 2015):

- for a 1-in-30 year return period event plus climate change allowance, storage of approximately **359 m^3** is required; and
- for a 1-in-200 year return period event plus climate change allowance, storage of approximately **533 m^3** is required .

4 SUSTAINABLE DRAINAGE SYSTEMS

4.1 The outline drainage strategy seeks to implement a design that would match the pre-development characteristics of the application site. Site drainage is intended therefore to provide an appropriate degree of treatment and attenuation such that runoff discharge is no greater than pre-development Greenfield Runoff for the area and that runoff quality would not risk any reduction in the water quality of the receiving waterbody.

Quality of receiving waterbodies

4.2 SEPA's Water Classification (SEPA, 2023a) and Water Environment Hubs (SEPA, 2023b) have been consulted to determine the existing baseline water quality for the main watercourses and waterbodies within the study area. Based on the above tools, no assessed surface waterbodies are present within the application site. However, there are three receiving waterbodies within the wider study area.

Receiving waterbodies

4.3 The existing baseline water quality for the main watercourses and waterbodies within the application site are summarised in **Table 4.2.2**.

Table 4.2.2: Receiving waterbody quality status - summary

Waterbody name and ID	Status		Pressures
Craigroy Burn – Balblair Distillery to source (ID: 20090)	Condition in 2014	Overall: Good Water flows & levels: High Physical condition: Good Water quality: High	None identified.
	Classification in 2020	Overall: Good Biology (fish): Good Hydromorphology: High	
Easter Fearn Burn (ID: 20088)	Condition in 2014	Overall: Moderate Water flows & levels: High Physical condition: High Water quality: Moderate	The water quality is Moderate due to nutrient levels. However, these are not negatively affecting the water body's aquatic plant and animal communities.
	Classification in 2020	Overall: Moderate Biology (fish): Good Hydromorphology: Moderate	
Balnagown River (ID: 20141)	Condition in 2014	Overall: Moderate Water flows & levels: Moderate Physical condition: High Water quality: High	A legacy structure creates a barrier to fish migration. Water flows and levels are impacted due to water abstraction for business use.
	Classification in 2020	Overall: Moderate Biology (fish): High Hydromorphology: Moderate	

Levels of treatment

4.4 Surface water treatment systems should be based on catchment characteristics and the sensitivity of the receiving watercourse (CIRIA, 2015). Treatment would be required during the entire lifetime of a development, from construction through to decommissioning. Much of the construction phase surface water treatment could provide suitable water treatment for the operational phase.

4.5 SEPA (2010) states that;

> *'Each individual type of SuDS feature, such as a filter drain, detention basin, permeable paving or swale, provides one level of treatment.'*

4.6 It is assumed that all site operations would require at least two levels of treatment prior to discharge due to the sensitivity of receiving waterbodies. Any area within the application site used for plant maintenance and refuelling would require three levels of treatment.

4.7 During operation, one level of treatment, such as swales or filter drains should be sufficient for most of the Proposed Development apart from any areas where potentially polluting materials such as fuels, oils, and lubricants are used or stored. These areas would require at least two levels of treatment as a result of their higher pollution risk.

SuDS components

4.8 The following SuDS features have been considered for inclusion within certain sections of the Proposed Development's drainage infrastructure in order to control, manage and treat surface water runoff during construction, operation and decommissioning of the Proposed Development.

Swales and filter strips

4.9 Swales are shallow, broad and linear vegetated drainage features that can be designed to store and/or convey surface runoff as well as providing water treatment. Where soil and groundwater conditions allow, swales can also promote infiltration. Vegetation within swales varies but typically comprises grass or dense vegetation that can act to slow down flow rates and trap particulate pollutants in the water.

4.10 Filter strips are gently sloping vegetated strips of land that provide off-the-edge diffuse drainage. They provide some flow attenuation and treatment, but little or no water storage

Filter drains

4.11 Filter drains are also linear features, but rather than incorporating vegetation they include coarse graded rock which provides good drain stability whilst also providing water storage and conveyance. Filter drains have a narrower footprint than swales and can be used in areas where space constraints prevent wider swales from being used. Filter drains provide some limited water treatment.

Check dams

4.12 For either swales or filter drains that cross slopes, check dams provide a valuable means of attenuating water flow. These are typically placed across the swale or drain at intervals

of 10-20 m. The design is such that the toe of the upstream dam is level with the crest of the next downstream dam. A small opening or pipe is placed at or near the base of each dam to allow limited flow to pass through rather than over the dam, in order to maintain low flow conveyance.

4.13 Check dams should be built into the sides of the swale or filter drain, to ensure that water flow cannot bypass the dam.

4.14 When made of soil (as opposed to rock), check dams are often called bunds or berms.

Silt fences and straw bales

4.15 Silt fences, constructed from a closely woven synthetic geotextile material, and straw bales both provide temporary flow attenuation and excellent particulate filtration treatment for surface water runoff. These are particularly valuable for sediment management in runoff during construction works, as silt fences and pegged straw bales can be positioned along the main runoff routes to capture, slow and treat runoff. They can also provide temporary check dams if required in short-term drainage infrastructure.

4.16 Straw bales should not be used as the only form of water treatment, but can be useful as part of a hierarchy of treatment systems.

Settlement ponds

4.17 Settlement ponds provide storage for site runoff and are a highly effective method of treatment and attenuation of surface water. They are particularly useful for developments where bulk earthworks form a significant part of the works.

Sumps

4.18 Sumps are essentially small settlement ponds, located in areas where there are space restrictions preventing use of a larger pond, or where large volumes of water or sediment are not anticipated. Water can either discharge naturally from a sump or can be pumped out to an alternative location for discharge or further treatment.

Outline drainage strategy

4.19 The surface of new access tracks would have a cross-fall in order to encourage runoff to drain into trackside ditches on the downhill side of the track where necessary, and lateral and cross-drains would also be installed where required. Drainage outlets would be carefully located with erosion protection if required.

4.20 Swales, filter drains, filter strips and silt fencing would provide the first level of treatment for construction of new tracks, the construction compound, substation and hydrogen production facility. Check dams and berms would be used across the flow path of swales and filter drains to promote settling and infiltration. Any silt fencing would be removed at the end of the construction phase, once vegetation on the filter strips and swales has become established.

4.21 Sumps or small settlement ponds would be used at the construction compound, the substation and the hydrogen production facility as a second level of treatment for storage, attenuation and treatment of surface water. The sumps/ponds would be established

during construction to provide water management for the construction phase works. The sumps/ponds may be retained if water storage is required at these locations during the operational phase. Pond or sump sizing and location would be determined during detailed design, to take account of space restrictions.

4.22 Temporary cut-off drains and bunds would be required around the excavation area to capture clean runoff and divert it around areas of stripped ground. These may be converted into swales at the end of the construction phase if long-term drainage is required.

Authorisation

4.23 Where proposals have potential to affect the water environment, the design of any works required to mitigate these effects must take into account the Proposed Development's characteristics and existing drainage conditions. Treatment and discharge of surface water to the water environment is regulated under CAR and forms an additional requirement to planning consent. Any formal authorisations under CAR that are needed for the drainage strategy would be put in place prior to work beginning on-site. A Construction Runoff Permit may be required for the Proposed Development.

5 CONCLUSIONS

5.1 This report has assessed the relevant aspects of drainage associated with the Proposed Development. It has set out an outline drainage strategy on which to base detailed design plans, recognising the requirements of THC and SEPA, and taking current best practice guidance into account.

5.2 The application site currently drains naturally via overland flow, drainage ditches and natural channels to the existing watercourses in the wider study area. The outline drainage strategy promotes maintenance of natural runoff characteristics where possible, and drainage infrastructure to mimic these characteristics where required. Runoff attenuation and treatment proposals are to be designed to prevent any detrimental effects to the water quality or quantity of existing waterbodies. The outline drainage strategy would make use of SuDS features within the engineering design to mimic the existing runoff characteristics.

5.3 Proposed SuDS to be incorporated in the detailed drainage strategy may include use of swales and filter strips, filter drains, check dams, silt fences and straw bales, settlements ponds and sumps at different stages of the Proposed Development.

5.4 All necessary authorisations under CAR would be put in place prior to any site works taking place.

6 REFERENCES

- CEH (2023). Flood Estimation Handbook Web Service. Centre for Ecology and Hydrology. Available at: https://fehweb.ceh.ac.uk/, (subscription service), accessed June 2023.
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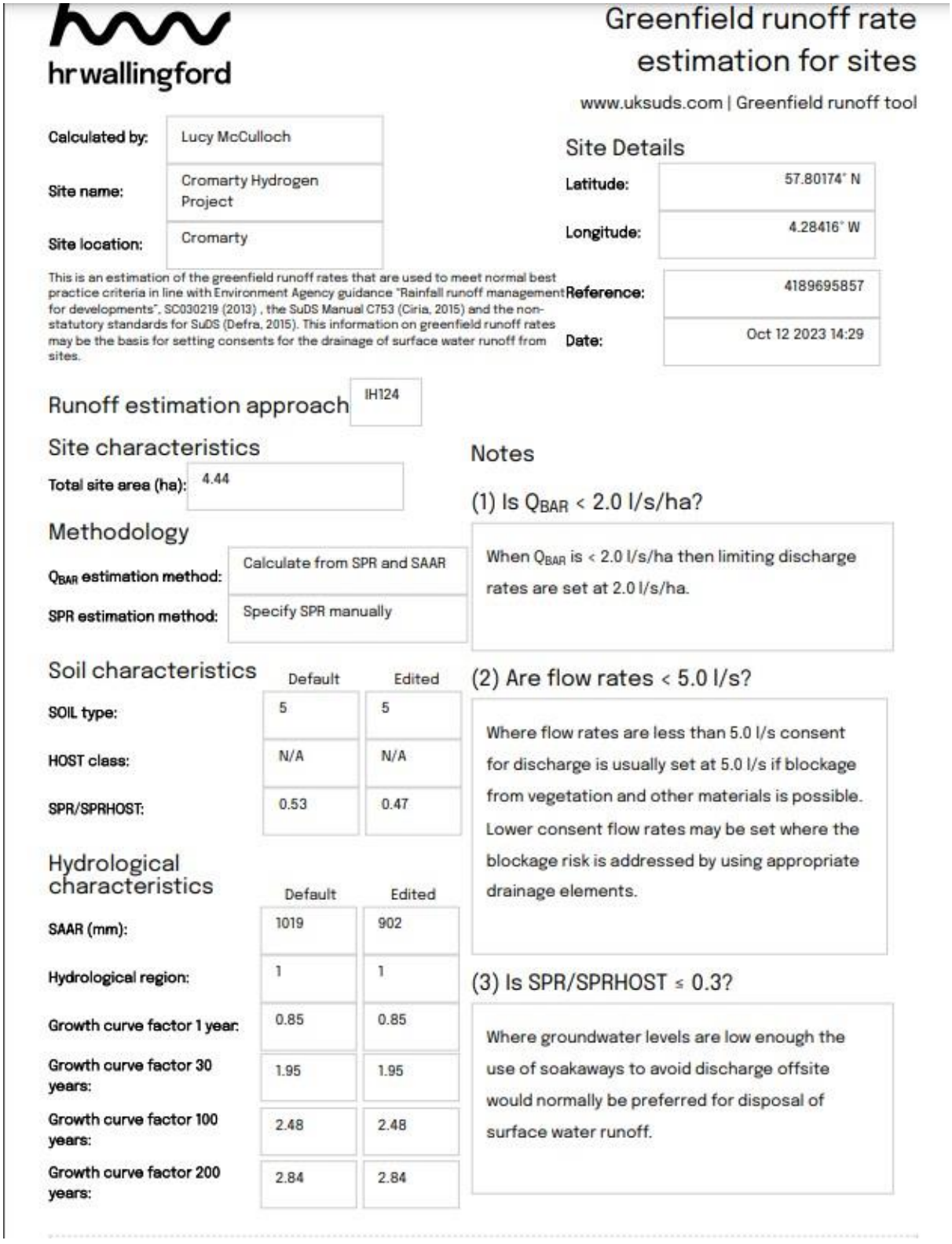
7 ANNEX A



hrwallingford

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Lucy McCulloch
Site name:	Cromarty Hydrogen Project
Site location:	Cromarty

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	57.80174° N
Longitude:	4.28416° W
Reference:	4189695857
Date:	Oct 12 2023 14:29

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 4.44

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Specify SPR manually

Soil characteristics

	Default	Edited
SOIL type:	5	5
HOST class:	N/A	N/A
SPR/SPRHOST:	0.53	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	1019	902
Hydrological region:	1	1
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	1.95	1.95
Growth curve factor 100 years:	2.48	2.48
Growth curve factor 200 years:	2.84	2.84

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	43.17	28.84
1 in 1 year (l/s):	36.69	24.51
1 in 30 years (l/s):	84.18	56.23
1 in 100 year (l/s):	107.06	71.52
1 in 200 years (l/s):	122.6	81.9

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.