

Port Dundas BESS Flood Risk Assessment



December 2024



CONTROL SHEET

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Issue	Status	Author	Reviewer	Approver	Issue Date
1	Issued	Jonas Lejarre	Dr I Struthers	Dr I Struthers	6 Dec 2024
2					

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1 INTRODUCTION

1.1 Terms of Reference

EnviroCentre was commissioned by Graham + Sibbald to undertake a Flood Risk Assessment to support the development of a Battery Energy Storage System at Mary Street, within the Port Dundas area of Glasgow.

1.2 Scope of Report

The scope of works is as follows:

- 1. Review publicly available LiDAR Digital Terrain Model (DTM) data, as well as SEPA flood maps and information provided by the client;
- 2. Undertake a desktop-based flood risk scoping assessment based on available information, to qualitatively assess flood risk from all other sources, and;
- 3. Produce a flood risk statement (this report) compliant with Glasgow City Council requirements.

1.3 Report Usage

The information and recommendations contained within this report have been prepared in the specific context stated above and should not be utilised in any other context without prior written permission from EnviroCentre Limited.

If this report is to be submitted for regulatory approval more than 12 months following the report date, it is recommended that it is referred to EnviroCentre Limited for review to ensure that any relevant changes in data, best practice, guidance or legislation in the intervening period are integrated into an updated version of the report.

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1.4 Terminology & Glossary

The following acronyms are used within this report:

GCC Glasgow City Council

Graham + Sibbald December 2024

LiDAR DTM A digital terrain model (DTM) of gridded ground elevations, obtained by

remotely sensed measurements of distance (usually by aircraft) using

laser light (LiDAR)

NGR National Grid Reference; a geographic grid reference system used in the

UK, also referred to as British National Grid

mAOD Elevation, in metres above Ordnance Datum (where the Ordnance

Datum is the mean sea level at Newlyn in Cornwall)

NPF4 National Planning Framework 4 (Scottish Government, 2023)

SEPA Scottish Environment Protection Agency

1.5 Regulatory Framework

1.5.1 National Planning Framework 4 (NPF4)

NPF4 was adopted by Scottish Ministers on 13 February 2023, replacing Scottish Planning Policy (2014). In relation to flood risk and water management, the intent of NPF4 is:

"To strengthen resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding."

Where development cannot avoid areas of flood risk, proposals will only be supported if they are for:

- i. essential infrastructure where the location is required for operational reasons;
- ii. water compatible uses;
- iii. redevelopment of an existing building or site for an equal or less vulnerable use; or.
- iv. redevelopment of previously used sites in built up areas where the Local Development Plan (LDP) has identified a need to bring these into positive use and where proposals demonstrate that long-term safety and resilience can be secured in accordance with relevant SEPA advice.

In relation to surface water flood risk, development proposals will:

- i. not increase the risk of surface water flooding to others, or itself be at risk.
- ii. manage all rain and surface water through sustainable drainage systems (SuDS), which should form part of and integrate with proposed and existing blue-green infrastructure. All proposals should presume no surface water connection to the combined sewer;
- iii. seek to minimise the area of impermeable surface.

For planning purposes, "at risk of flooding" and "in a flood risk area" means land or built form with an annual probability of being flooded of greater than 0.5% which must include an appropriate allowance for future climate change.

1.5.2 SEPA Guidance

SEPA has issued guidance in relation to preparing FRAs ("Technical Flood Risk Guidance for Stakeholders", v13, (SEPA, 2022). Technical requirements for FRAs depend on the complexity of the site with more complex or high-risk sites requiring detailed assessments. SEPA has also published a

report checklist which must be submitted with an FRA as part of a planning application. In summary, FRAs must include the following:

- Background site data, including suitable plans and/or photographs;
- Historic flood information;
- · Description of methodologies used;
- Identification of relevant flood sources;
- In case of river flooding: assessment of river flows, flood levels, depths, extents, displaced flood storage volumes, etc;
- Assessment of culverts, sewers or other structures affecting flood risk;
- Consideration of climate change impacts;
- Details of required flood mitigation measures; and
- Conclusions on flood risk related to relevant national and local policies.

In addition to reporting requirements, the document also provides technical guidance on Flood Estimation Handbook (FEH) (CEH, 2008) methodologies and on land raising and compensatory storage.

2 SITE DETAILS

2.1 Site Location & Description

The proposed site is a former industrial site within the Port Dundas area in the north of Glasgow, at approximate grid reference NGR 259020, 666714, as shown in Figure 2.1. The site is bounded to the south by Harvey Street, to the west by a conference centre and Mary Street, to the east by an underconstruction residential development (Dundashill) and to the north by the Port Dundas electricity substation.

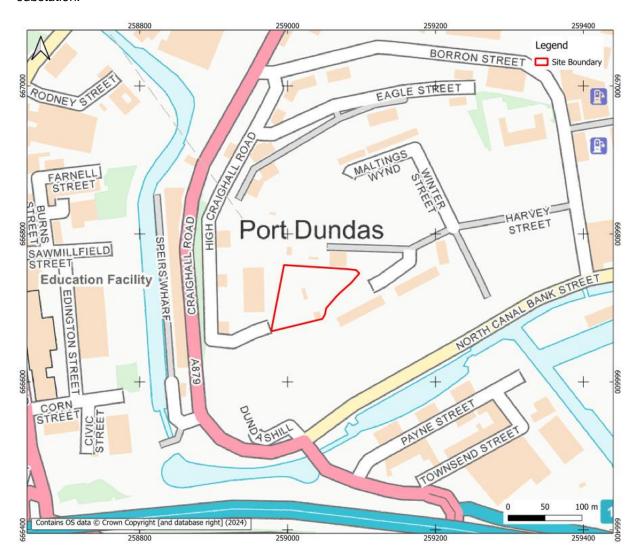


Figure 2.1: Site location

2.2 Proposed Development

The proposed development is a Battery Energy Storage System (BESS), with and associated infrastructure including access road. The preliminary proposed site layout is provided in Appendix A. The proposed development will retain the existing hardstanding and no new hardstanding is proposed.

2.3 Existing Topography

LiDAR for Scotland Phase 5 (2020-21) DTM data (with 0.5 m horizontal resolution) was used to assess the topography of the site. The wider context topography in Figure 2.2 shows that the site is located on higher lying ground compared to the surrounding area, with the crest of the hill located to the north of the site. Locally (Figure 2.3), the site general falls from north to south, with ground levels ranging from a maximum of 75.1 metres above Ordnance Datum (mAOD) to 67.2 mAOD.

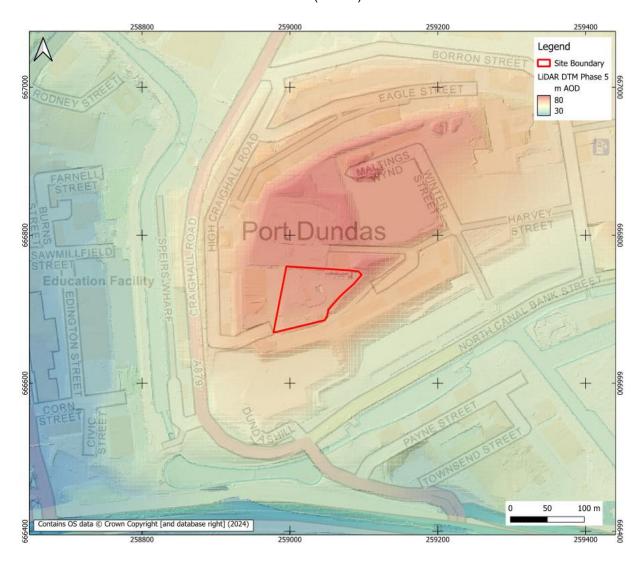


Figure 2.2: Regional topography (from LiDAR for Scotland Phase 5 DTM)

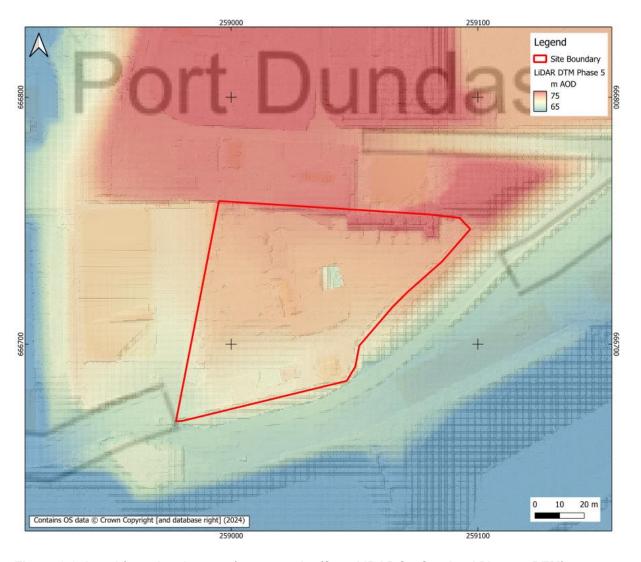


Figure 2.3: Local (pre-development) topography (from LiDAR for Scotland Phase 5 DTM)

2.4 Flooding History

Consultation has been undertaken with Glasgow City Council and SEPA to determine if there are any historical records of flooding in the vicinity of the site. The responses from both indicates no known historic flood risk to the site (see Appendix B).

2.5 Overland Flow Paths

Overland flow path analysis has been undertaken in GIS using the LiDAR data discussed in Section 2.3. Outcomes are illustrated in Figure 2.4, indicating that based on present day topography the site generally drains towards its southern boundary with minimal inflow from outwith the site. Overland flows from the north are diverted by the access to the sub-station, except a small finger shown to the northwest corner which flows south-west from the site onto Mary Street to the west of the site.

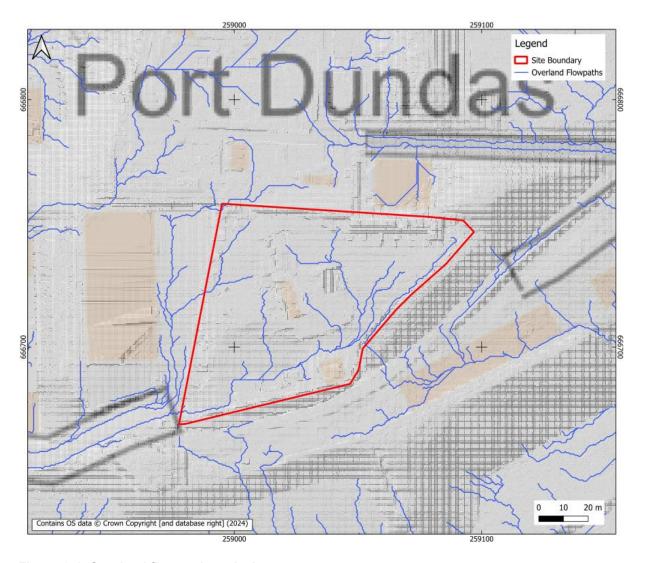


Figure 2.4: Overland flow path analysis

3 FLOOD RISK SCREENING

SEPA's technical guidance (SEPA, 2022) advises that a site-specific FRA should be undertaken where any available information indicates there may be a risk of flooding (from any source) to the site, and/or where the development of the site may increase flood risk elsewhere. Where a site-specific FRA may be required, screening will determine the scope of the assessment and may also be used to inform an appropriate and proportionate approach for the assessment.

3.1 Flood Protection Schemes

There are no known formal or informal flood protection schemes with the potential to impact flood risk to the proposed development site.

3.2 Screening By Source

3.2.1 Fluvial Flood Risk

The nearest surface waterbody to the site is the Forth and Clyde Canal Glasgow Branch, which flows westwards approximately 165 m to the west and a 150m to the south of the site boundary. However, the Forth and Clyde Canal Glasgow Branch sits at approximately 48 mAOD whereas the site lowest level is 67.2 mAOD. Furthermore, water levels in the canal are regulated and are minimally impacted by rainfall-runoff processes. There are no other waterbodies in the vicinity of the site.

Fluvial flood risk to the site can therefore be scoped out.

3.2.2 Coastal Flood Risk

The site lies at levels of at least 67.2 m AOD; coastal flood risk to the site can therefore be scoped out.

3.2.3 Surface Water Flood Risk

SEPA flood mapping does not indicate any surface water flood risk impacting the site or surrounding area. Analysis of LiDAR further indicates that there are in general no deep or extensive local topographic depressions within the site, with undulation in ground levels typically less than 0.1 m, with overland flow analysis (Section 2.5) indicating no significant flow accumulation pathways within the site and negligible external topographic catchment "upstream" of the site. The exception is a rectangular shaped depression towards the centre of the site, which is likely associated with the current (concrete plant) site usage; it is anticipated that this local depression will be in-filled as part of development groundworks.

On this basis, surface water flood risk to the site can be scoped out, on the standard condition that appropriate SuDS-compliant site drainage is provisioned.

3.2.4 Asset Failure Flood Risk

As stated in Section 3.1, there are no known formal flood risk management assets in the vicinity of the site capable of directly impacting flood risk at the site.

SEPA's Reservoir Inundation Map¹ indicates that the site is not within the predicted flood extent associated with reservoir failure.

3.2.5 Groundwater Flood Risk

Groundwater flooding, as a primary source, is uncommon in Scotland, due to the nature of the underlying geology. Groundwater levels tend to correspond with water levels in adjacent watercourses and seas and will not pose an independent flood risk to the development site. The location of the site, on elevated ground, further reduces any risk of groundwater flooding to the site.

On this basis, groundwater flood risk to the site is scoped out.

3.2.6 Screening Summary

Table 3.1 presents the flood risk screening outcomes for the development site. The results indicate that the flood risk from all sources in acceptably low.

Table 3.1: Summary of flood risk scoping

Flooding Source	Preliminary Risk Classification	Comments/Explanation	Screening Outcome
Fluvial (River)	Little or no risk	SEPA Flood Maps do not indicate flood risk to the site. The site is higher-lying than nearby watercourses.	Acceptable risk
Coastal	Little or no risk	Site elevations exceed 67.2 mAOD at its lowest point.	Acceptable risk
Surface Water (Pluvial & Drainage)	Little or no risk	SEPA surface water flood maps do not indicate any risk to the site. GIS analysis of LiDAR DTM data indicates no deep or extensive local topographic depressions within or immediately adjacent to the site and no significant flow accumulation paths or external upstream topographic catchment associated with the site.	Acceptable risk
Infrastructure/Asset Failure	Little or no risk	No formal flood protection assets in vicinity; no reservoir failure flood risk.	Acceptable risk
Groundwater	Little or no risk	Low risk due to site location and elevation.	Acceptable risk

¹ http://map.sepa.org.uk/reservoirsfloodmap/Map.htm

4 FLOOD RISK IMPACT AND MANAGEMENT

4.1 Flood Risk Context

Proposed developments should not be located in areas at medium to high risk from fluvial or coastal flooding. The proposed development is not located within or near areas predicted to flood for 1 in 200 year plus climate change conditions, and therefore is appropriately located with respect to Policy 22 of NPF4.

4.2 Flood Risk Impact

The site is self-contained in terms of surface water runoff/flooding. As per standard SuDS requirements, site runoff will be attenuated to ensure post-development runoff from the site does not exceed greenfield rates, such that the development will not cause any flood risk detriment elsewhere.

4.3 Access and Egress

Primary access to the site is from Mary Street to the west of the site. This location is not at flood risk, such that flood-free access and egress for the site can be achieved.

4.4 Freeboard

The site is not located in proximity to any source of flood risk as such there is no requirements to have freeboard provision.

5 CONCLUSIONS AND RECOMMENDATIONS

Flood risk screening was undertaken to identify potential sources of flood risk. It is concluded from this screening that the site is at an acceptably low risk of flooding from all sources.

Based upon this assessment and available design information, the proposed development is assessed to be compliant with NPF4 in terms of flood risk.

REFERENCES

Scottish Government (2014). Scottish Planning Policy. Edinburgh: Scottish Government.

Scottish Government (2023). National Planning Framework 4. Edinburgh: Scottish Government.

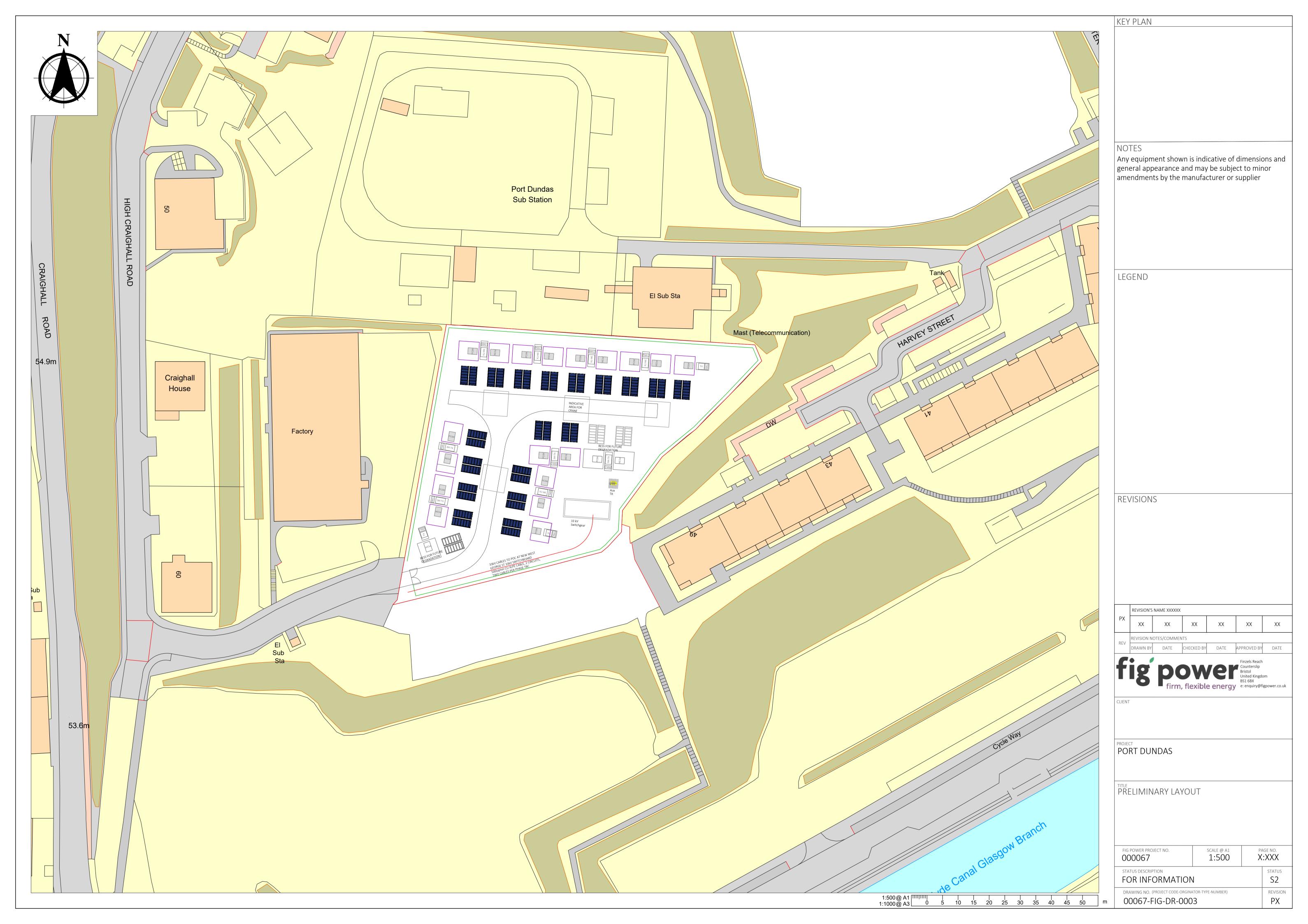
SEPA (2021). SEPA Flood Maps Basic Map Viewer. Retrieved from https://map.sepa.org.uk/floodmaps

SEPA (2022). Technical Flood Risk Guidance for Stakeholders- SEPA Requirements for Undertaking a Flood Risk Assessment; Version 13. SEPA. Retrieved from

https://www.sepa.org.uk/media/594270/technical-flood-risk-guidance-for-stakeholders.pdf

APPENDICES

A SITE PLAN



B FLOOD RISK CONSULTATION

Jonas LeJarre

From: Flood Risk Management <FloodRiskManagement@glasgow.gov.uk>

Sent: 11 November 2024 14:20

To: Jonas LeJarre

Subject: RE: Flood risk - Site to the East of Mary Street (OFFICIAL)

Follow Up Flag: Follow up Flag Status: Flagged

OFFICIAL

Good Afternoon Jonas,

Thank you for your enquiry.

An information request would normally require a fee - £88 for the initial search, then a further £88 should you require any copies of information held. However, without charging you a fee I can inform you that I have checked our GIS database and we have no record of historic flooding and no record of any culverted watercourses in the vicinity of the site.

Obviously the FRA should assess surface water flood risk and flow paths post development; as well as the any risk from the near by Forth & Clyde Canal.

I trust this is of assistance.

Kind regards

Ciaran

Ciaran Ferry

Flood Risk Officer Property and Consultancy Services Neighbourhoods, Regeneration and Sustainability 231 George Street Glasgow G1 1RX

From: Jonas LeJarre < jlejarre@envirocentre.co.uk>

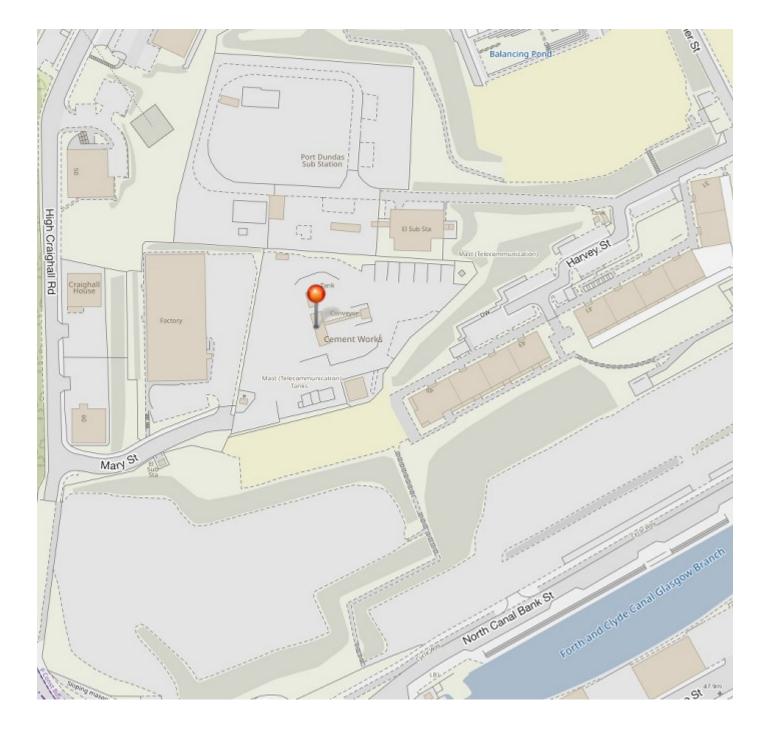
Sent: 06 November 2024 09:12

To: Planning Enquiry <planningenquiry@glasgow.gov.uk>

Subject: Flood risk - Site to the East of Mary Street

Good morning,

EnviroCentre have been appointed to assess flood risk at a site to the east of Mary Street in Glasgow city. The site currently used as a cement plant and proposed to be redeveloped as a Battery Energy Storage System.



Our preliminary assessment, based on SEPA's flood maps and a review of topographic data, suggests no specific flood risk concerns for the site.

Direct dial: 07 483 043 994

2

Nonetheless, we would be grateful if you could provide any records of historical flooding Glasgow City Council holds in the vicinity of this site, and any flood-related concerns Glasgow City Council may have that should be accounted for in our assessment.

Thank you,

Best regards,

Jonas Lejarre BEng MSc GMICE

Senior Consultant Email: <u>jlejarre@envirocentre.co.uk</u>







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RESPONSE TO F0198183

Request Timeline

Date	Status
06/11/2024	EIR Request received [statutory deadline 05/12/2024]
21/11/2024	EIR Response issued

Requested Information

[...]site to the east of Mary Street in Glasgow city [...]we would be grateful if you could provide any records of historical flooding SEPA holds in the vicinity of this site, and any flood-related concerns SEPA may have that should be accounted for in our assessment [...]

Response

SEPA has handled your request under the Environmental Information (Scotland) Regulations 2004 (EIRs).

We advise the current SEPA Observed Flood Event (OFE) Database holds no records of flooding for the site to the east of Mary Street Glasgow. We have applied Regulation 10(4)(a) of the EIRs – Information not held.

Please be aware that the Observed Flood Event database is a collection of flood event records known to SEPA at this time and does not constitute a complete record of all flooding that may have occurred in the area.

This information was correct at the time of this request to the best of SEPA's knowledge. If we do not hold any records of flooding for an area, this does not mean it has never flooded, simply that we do not have a record of it. In some cases, SEPA may hold information on why flooding occurred such as a blocked culvert or river flood. However, it should be noted that structural works could have been undertaken since this time that have changed the risk of future flooding in this area.

Advice and Assistance

Please see table below for land use planning applications that SEPA has been consulted on within a 2 km radius of site to the east of Mary Street Glasgow.

Land Use	Site	Planning	Date of	Type of
Planning	location:	Application	consultation	development
consultation (Easting,	reference:		
SEPA ref)	Northing			
20002084	257314,	Pre-planning	2024	Residential
	666799			development
9520	259098,	23/01047/FUL	2023	Student
	665117			accommodation
				and commercial
				units
9720	259832,	23/01200/FUL	2023	Residential flats
	664832			and commercial
				units

Further information on planning applications and details of any flood risk assessments can be found on the Glasgow City Council Planning Portal:

publicaccess.glasgow.gov.uk/onlineapplications/search.do?action=simple&searchType=Application

PUBLIC

We recommend that you contact Glasgow City Council to request access to the River

Kelvin Flood Study, and the Tidal Clyde Model:

Glasgow City Council

City Chambers

Glasgow

G2 1DU

Link to request page: www.glasgow.gov.uk/forms/foi/FOIRequest.aspx

Freedom of information request form:

www.glasgow.gov.uk/index.aspx?articleid=17479

Email: foi@glasgow.gov.uk

Further information regarding the regulations and any exceptions applied to this

information can be found below.

Application of Regulations and Exceptions

Section 39(2)

The information you are requesting is environmental information. We have applied

Section 39(2) of the Freedom of Information (Scotland) Act 2002 (FOISA). We are

therefore handling your request under the Environmental Information (Scotland)

Regulations 2004 (EIRs).

Regulation 9 - Advice and assistance

As we have issued additional information, advice, or assistance we have applied

Regulation 9(1) of the EIRs, the text of which is reproduced below.

Page 3 of 5

9(1) A Scottish public authority shall provide advice and assistance, so far as it would be reasonable to expect the authority to do so, to applicants and prospective applicants.

Regulation 10(4)(a) - Information not held

Where we have advised that we do not hold information we have applied Regulation 10(4)(a) of the EIRs, the text of which is reproduced below.

10 (4) A Scottish public authority may refuse to make environmental information available to the extent that;- (a) it does not hold that information when an applicant's request is received.

The exception in Regulation 10(4)(a) is subject to the public interest test in Regulation 10(1)(b) of the EIRs. As SEPA does not hold the information in question there is no conceivable public interest in requiring that the information be made available.

What to expect when making a Request for Information

Each request for information, under The Environmental Information (Scotland) Regulations 2004 or the Freedom of Information (Scotland) Act 2002, is formally logged by the authority. The request falls within a process that has two internal stages carried out by the authority; a right of appeal to the Scottish Information Commissioner followed by an appeal to the Court of Session on a point of law only.

- Stage 1 Request for information
- Stage 2 Formal Review
- Stage 3 Appeal for decision by Scottish Information Commissioner (OSIC)
- Stage 4 Appeal to the Court of Session on a point of law only.

Each enquiry will have a unique Reference Number which should be quoted when you contact us.

How you will be kept informed

You will receive an acknowledgement for your request and Formal Review. We aim to reply to all enquiries promptly, within 20 working days. You will receive a response along with the requested information and/or an explanation regarding any withheld information. We may also contact you if we require clarification or if we are issuing a fees notice.

What happens once your enquiry has been responded to?

If you are not happy with the response or have failed to receive a response, you have the right to request a Formal Review from SEPA.

Guidance on your rights and how to ask for a review is on the Scottish Information Commissioner's website; https://www.foi.scot/asking-for-a-review

We will ensure that all personal data is processed, recorded and retained in accordance with the requirements of the Data Protection Act 2018 throughout the handling of each request. You have a right to see information about yourself via submitting a Subject Access Request under the Data Protection Act 2018.

What to do if you are not happy with how your enquiry and review were handled

If you are unsatisfied with our Formal Review response or have failed to receive a response, you can then appeal to the Scottish Information Commissioner via the links below.

www.foi.scot/appeal

https://www.foi.scot/contact-us

Should you wish to appeal against the Scottish Information Commissioner's decision, you have the right to appeal to the Court of Session on a point of law only. Any such appeal must be made within 42 days after the date of intimation of the decision.