

**NEW ROTTERDAM WHARF, GLASGOW
LEVEL 2 FLOOD RISK ASSESSMENT
FOR
SCOTTISH OPERA**

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SCOTTISH OPERA**

SITE SUMMARY INFORMATION

Name of Site:	New Rotterdam Wharf, Glasgow
Ordnance Survey Grid Reference:	NS 58750 66690
Site Address:	40 Edington St, Glasgow G4 9RD
Local Authority:	Glasgow City Council
Land Use (Existing):	Commercial
On site buildings:	Yes
Proposed Site Use:	Commercial and residential
Area (hectares):	1.6ha
Local Development Plan (LDP):	City Development Plan (2017): Economic Development, Citywide Policy: CDP1 Place Making Principle and CDP2 Sustainable Spatial Strategy
Type of Investigation:	Level 2 Qualitative Flood Risk Assessment

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Est. 2000



1 INTRODUCTION

1.1 BACKGROUND

The development of a site on the north of Glasgow centre is currently under consideration by the Client, Scottish Opera.

To meet the requirements of the planning guidance, Terrenus Land & Water Ltd was appointed by Struer Consulting Engineers Limited on behalf of the Client to undertake a flood risk assessment for the site.

This report sets out the findings of the Level 2 Flood Risk Assessment.

1.2 SCOPE OF STUDY

The following tasks were undertaken during the course of this investigation:

- Site walkover inspection;
- Project commission topographic spot height data collection;
- Consultation with Scottish Canals and SEPA;
- Collation of available data;
- Assessment of data;
- Undertake a qualitative assessment of the potential impacts of flooding; and,
- Provision of an interpretative Flood Risk Assessment report.

1.3 NATIONAL PLANNING FRAMEWORK 4 (NPF4)

The National Planning Framework 4 (NPF4) superseded the Scottish Planning Policy (SPP) on the 13th of February 2023. Under NPF4, the 1 in 200-year storm event plus allowance for Climate Change constitutes the design storm event.

The findings of this flood risk assessment are in line with the NPF4 legislation.

1.4 PROPOSED SITE END-USE

It is understood that the proposed development will comprise the improvement of Scottish Opera facilities with new studios and offices with 600 room student residence. At the time of writing this report, final development plans were not available.

The Flood Risk Assessment will take into account that the development comprises flatted units with habitable dwellings on the ground floor and will also consider a Return period of 1 in 500 years plus Climate Change.

It is noted that the vulnerability class in the proposed development will increase to Highly Vulnerable according to the SEPA Land Use Vulnerability Classification¹ as shown on Table 1 of the guidance document.

¹ <https://www.sepa.org.uk/media/143416/land-use-vulnerability-guidance.pdf>

1.6 LIMITATIONS OF REPORT

Terrenus Land & Water Ltd. has prepared this report for the sole use of the Client, in accordance with generally accepted consulting practice and for the intended purpose as stated in the related contract agreement. No other warranty, expressed or implied, is made as to the professional advice included in this report. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from Terrenus Land & Water Ltd; a charge may be levied against such approval.

To the best of our knowledge, information contained in this report is accurate at the date of issue. There may be conditions pertaining at the site not disclosed by the study, which might have a bearing on the recommendations provided if such conditions were known. We have, however, used our professional judgement in attempting to limit this during the assessment.

It is important therefore that these implications be clearly recognised when the findings of this study are being interpreted. In addition, this should be borne in mind if this report is used without further confirmatory investigation after a significant delay.



2 SITE DETAILS

2.1 DATA SOURCES

The following data sources were consulted during the Flood Risk Assessment:

- Client supplied data including site location.
- Client supplied topographic survey.
- SEPA Flood Maps.
- British Geological Survey Interactive Map (Geology of Britain Viewer)²;
- Publicly available online aerial imagery and mapping;
- Publicly available online historic maps;
- Consultations with SEPA and Glasgow City Council;
- Scottish Water Asset Plans;
- Phase 5 (0.5m resolution) Light Detection and Ranging (LiDAR) dataset from Scottish Remote Sensing Portal³; and
- Available additional information.

2.2 SITE LOCATION & DESCRIPTION

The site forms a rectangular plot on the north of Glasgow centre. The site covers approximately 1.6ha and is centred around National Grid Reference NS 58750 66690. The location of the site is shown on Figure 1, enclosed in the Appendix.

A site visit was carried out on the 27th of September 2023 and forms the basis of the site description, with a photographic record of the site visit is included in the Appendix.

The site comprises the Scottish Opera building located in the west of the site with associated carparks in the northwest and southwest of the site. The Scottish opera building is a double storey building comprised of brick and metal sheet cladding. The eastern section of the site consists of a flat lying concrete covered area with woodlands in the southeastern corner. The eastern section is elevated 3m above the western section, divided by a brick wall. The eastern section and carparks contain shipping containers.

There were gullies located within the western section however there were none in the eastern section of the site.

The site is bounded to the north by Sawmillfield street and to the west by Edingston Street. The south is bound by Corn Street and the east is bound by the toe of the Forth and Clyde canal embankment. The east of the site has an 8m high retaining brick wall whilst the rest of the site is bounded by metal fencing.

Overall, the site slopes from east to the west. The site has terraced slopes whereby the eastern section has an elevation of 36mOD to 36.2mOD. The east of the site has an elevation of around 40mOD with the southeast having an elevation of 42mOD.

2.2.1 Topographic Data

The following sources were used to determine the local and wider topographic data:

- The Scottish Remote Sensing Portal data for LiDAR (Light Detection and Ranging) for Scotland Phase 5 DTM; and

² <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

³ <https://remotesensingdata.gov.scot/data#/list>

- Project commissioned GS07 Leica Geosystem Survey Staff spot height data.

The Scottish Remote Sensing Porta data for the LiDAR (Light Detection and Ranging) for Scotland Phase 5 Digital Terrain Model (DTM) was extracted and used under Open Government License v3.0 to determine indicative overland flow pathways and provide regional topographic data. The Scottish Public Sector Phase 5 LiDAR was initially captured by Fugro for Scottish Power Energy Network (SPEN) from 2020 to 2021 to monitor their overhead power cable network under their Virtual World Asset Management programme. The Scottish Government procured this dataset with a contribution from SEPA for public use in 2021. This dataset reflects the Digital Terrain Model (DTM) produced from the point cloud data.

2.2.2 Ground Truthing

The LiDAR dataset was ‘truthed’ against the project commissioned spot height survey at the site and surrounding area. Figure 3, contained within the Appendix, records the locations of the survey points chosen for comparison.

Point ID	LiDAR (mOD)	Terrenus Spot Heights Survey (mOD)	Deviation (m)
1	35.69	35.69	-
2	39.89	39.85	0.04
3	40.40	40.41	0.01
4	34.88	34.89	0.01
5	40.44	40.44	-
6	38.37	38.38	0.01
Average Deviation			0.012
Maximum Deviation			0.04

Table A – Topographic Survey Comparison

Table A above, provides a sample of the LiDAR data compared with spot height survey points and topographic survey data. The average deviation between the LiDAR and survey data is 0.012m, with the greatest differential being 0.04m.

The conclusion of this truthing exercise is that the LiDAR dataset can be considered a reasonable representation of the local landform for flow accumulation pathway tracing purposes.

2.3 SITE HISTORY

The First Ordnance Survey dated 1865 indicates that the site was occupied by numerous buildings within a developed area. The Forth and Clyde canal is located to the east of the site.

The 1897 edition indicates that the site is occupied by an Iron Works, there are no other changes noted.

The 1914 edition indicates that the whole site comprises a large building classified as Electric Generating Station.

No changes recorded in 1920, 1932 and 1946, 1950, 1956, 1968 editions.

The 1970 edition indicates that the majority of the site comprises a building which was a Maintenance Depot.

2.4 SITE NEIGHBOURS

The north, west and south of site is surrounded by commercial buildings. To the east is the Forth and Clyde Canal.

2.5 HYDROLOGY AND DRAINAGE

The nearest water feature to the site is 20m to the east which is the Forth and Clyde at a level of 47.9mOD. The canal is heavily managed and has overflow routes. Between the site and canal is an 8m retaining wall.

The nearest watercourse is the River Kelvin located 1.20km northwest at a level of 22mOD.

There are standard road gullies found within the western part of the site and along Sawmillfield, Edington and Corn Street.

2.5.1 SEPA Flood Map

The Scottish Environment Protection Agency (SEPA) has produced 'Flood Maps' for the local area. These maps are enhanced and show potential flooding from coastal, rivers (fluvial) and surface water (pluvial) sources. In addition, the maps provide a breakdown of flood likelihood in broad agreement with the Scottish Planning Policy Risk Framework.

A review of the map indicates no likelihood of coastal flooding or future coastal flooding at or in the vicinity of the site.

A review of the map indicates that there is Low, Medium and High Likelihood of surface water flooding in the north west of site. There is also Low and Medium surface water flooding shown along the canal to the east of the site.

The site is outwith the likelihood of fluvial flooding and future fluvial flooding.

As stated by SEPA, their flood risk maps do not represent a site-specific flood risk assessment and any conclusion based SEPA makes the following statement about the Flood Map:

"The river flood map was developed using a nationally consistent approach to producing flood hazard information, such as depth of water and speed of flow arising from river flooding. It is based on a two-dimensional flood modelling method applied across Scotland to all catchments greater than 3km². The river flood map includes hydraulic structures and defences such as bridges, culverts and flood storage areas where appropriate information was available.

and

The surface water flood map combines information on rainfall and sewer model outputs. It incorporates data from a national surface water study, a regional surface water study with increased resolution in selected areas and a Scottish Water sewer flooding assessment."

The flood map should be treated with caution and SEPA makes the following general comment:

"The flood maps are designed to provide a community level assessment of flooding and its impacts. They model flooding at a national scale. As with any approach of this scale, there are limitations and assumptions made to enable modelling and a consistent approach to be applied across Scotland. Limitations arise from the data used to create the maps, the modelling techniques applied and the ability to incorporate datasets from local studies into a national approach."

Additional background details of the SEPA flood map can be found on the SEPA website: http://www.sepa.org.uk/flooding/flood_maps.aspx

2.5.2 Flood Defence Schemes

There are no flood defence schemes for this site or the vicinity.

2.5.3 Scottish Water Assets

A review of the Scottish Water Asset plans was made using the online Scottish Water Asset Portal database.

There are no water supplies within site. Outwith site to the north, west and south, beneath the roads are 3inch water mains.

There are no wastewater networks within site. Outwith the site to the north, beneath Sawmillfield Street, is 375mm combined sewer which flows west to beneath the A81 and away from site. Within Edingston Street are two combined sewers that flow north and south from the centre of the street to Corn Street and Sawmillfield Street eventually to the A81 which flows south away from site.

2.6 GEOLOGICAL SETTING

The British Geological Survey GeoIndex information indicated that the superficial deposits at the site comprise Glacial Till. Due to previous development of the site, made ground including buried foundations may be present.

The underlying bedrock material is recorded to comprise Limestone Coal Formation which are Carboniferous in age.

From available nearby BGS borehole records, bedrock is found at around 17mbgl.

2.6.1 Hydrogeology

The 1:625,000 scale Hydrogeological Map of Scotland records the bedrock beneath the site to be a Moderately productive aquifer in which flow is virtually all in fissures and other discontinuities. It is noted that higher yields can be found in mined areas although water quality within these areas is poor, and high amounts of iron and fluoride is noted.

2.6.2 Groundwater Vulnerability

The 1:625,000 scale Groundwater Vulnerability Map of Scotland records the aquifer beneath the site to be Moderately Permeable.

The geological classification records that flow within these layers are virtually all through fractures and other discontinuities. Superficial drift deposits that overlie the solid geological strata can sometimes be substantial in thickness.

2.6.3 SEPA Groundwater Map

Groundwater flood likelihood is defined as a flooding caused by water rising up from underlying rocks or flowing from springs. Groundwater is generally a contributing factor to flooding rather than the primary source. This map shows where groundwater could influence the duration and extent of flooding from other sources. It does not show where groundwater alone could cause flooding.

The SEPA Groundwater Map records no areas of Low Likelihood within the site or within the vicinity of the site.

2.7 CONSULTATIONS

Scottish Canals and SEPA were contacted to establish whether records were available on historic flooding, culverts in the vicinity of the site, and other salient points.

2.7.1 Scottish Canals Consultation Response

No response has been received from Scottish Canals at the time of reporting.

2.7.2 SEPA Consultation Response

No response has been received from SEPA at the time of reporting.

3 FLOOD RISK ASSESSMENT

3.1 GENERAL

Flooding occurs when the amount of water arriving on land exceeds the capacity of the land to discharge that water (by infiltration, fluvial flow, overland flow, groundwater rise or a failed drainage system). It can occur on any level or near-level areas of land but the main concern in inland areas is with land adjacent to watercourses (fluvial flooding) and the possibility of overland flow (surface water flooding).

3.2 COASTAL AND TIDAL FLOODING

Due to the inland location of the site, the distance from the coast or nearest tidal influence, and the site being recorded at around 35mOD, the site is not considered to be at risk of coastal or tidal flooding.

3.3 FLUVIAL FLOOD RISK

The nearest watercourse is the River Kelvin located 1.2km northwest of the site and sits 14mOD lower than the site.

The site is therefore considered to be outwith the risk of future medium fluvial flooding.

3.4 SURFACE WATER

LiDAR data was interrogated to determine the general overland flow pathways for the site and the surrounding area.

Flow accumulation pathways were generated using 'Flow Accumulation (Flow Tracing)' process of the Quantum Geographic Information System (QGIS) software. The process used 0.5m Phase 5 LiDAR DTM. Flow accumulation pathways, which are indicative of overland flow routing are shown on Figure 4, included in the Appendix. As the Phase 5 LiDAR DTM does not take into consideration of buildings in the area some of the pathways are inaccurate.

Runoff from site will generally follow the local topography to flow west. Within the site, there is a flow pathway that begins along the eastern boundary to flow north then west away from site. In the southeast of the site flow pathways flow south and away from site. Within the centre of the site there is a flow pathway which can be disregarded as there is a building present.

Outwith the site to the east is a flow pathway along the canal which flow south away from site. Along Sawmillfield Street is a flow pathway that flows west to the A81.

Localised nuisance ponding and shallow flow may occur within the eastern section of the site however pedestrian and vehicular access will not be prevented. The site is therefore not considered to be at risk of surface water flooding under NPF4.

3.4.1 Forth and Clyde Canal

The Forth and Clyde Canal is at a level of 47.9mOD which is above site however the canal is heavily managed with overflow routes to prevent the canal from overtopping.

Given the management nature of the canal a failure of this structure is considered unlikely. No obvious distress was noted in the canal embankment works or retaining wall close to the site.

3.6 LOCAL DRAINAGE

In the event of failure of Scottish Water Infrastructure within Sawmillfield Street, the resultant flow will be to the west to the A81 and contained within the road corridors. If Scottish Water Infrastructure within Edington Street failed, the resultant flow will flow south due to the sloping topography onto Corn Street, then the A81 away from site. If Scottish Water Infrastructure within Corn Street failed, the resultant flow will flow west onto the A81 and away from site.

It is concluded that in the event of drainage failure in the vicinity of the site, any resulting flow will be directed off and away from site. The site is considered to be outwith the risk of flooding from a failure in local drainage infrastructure.

3.7 GROUNDWATER RISE

SEPA indicates that the site and the wider area lies outwith any areas of Low (1 in 1000 year) Likelihood of Groundwater flooding.

Groundwater beneath the site and in the local area will follow the local topography and flow west, away from the site. There were no springs or wells noted within the site or within the wider vicinity of the site during the site walkover or from historical site review.

The underlying natural soils indicate that perched water below the site is likely. Shallow perched ground water has resulted in poor drainage on site.

The site is not considered to be at risk of groundwater flooding or isolated groundwater rise.

4 DISCUSSION AND RECOMMENDATIONS

4.1 GENERAL

For new developments or redevelopment sites, the acceptable risk of flooding should take into account various factors including risk to human health and the direct and indirect financial losses relating to flooding.

The flood risk assessment concludes that the site is not at risk of flooding from sea, fluvial, groundwater, surface water and local drainage.

In line with NPF4, the site lies outwith the future risk of flooding from all sources and is therefore considered to be suitable for the proposed development. Dry emergency pedestrian and appropriate vehicular access to the site will be available through Sawmillfield Street, Edington Street and Corn Street for the design storm event.

4.2 DEVELOPMENT AND POSSIBLE MITIGATION MEASURES

The development will include an appropriate drainage strategy and will adopt the use of an appropriate Sustainable Drainage System (SuDS). The use of an appropriate SuDS will assist in mitigating the effects of surface water flooding within areas and decrease the impact of the increased hardstanding.

Final ground levels are likely to be similar to existing and it is recommended that finished floor levels should be set to a minimum of 300 mm above final ground levels. Existing overland flow pathways should be recognised and incorporated into drainage design.

The possibility of shallow, perched, groundwater below the site should be considered as part of the development, however water ingress to any excavations is likely to be limited and would likely be controlled by minimal measures, such as sump pumping.

4.3 EFFECTS ON SITE NEIGHBOURS

The proposed development will increase the impermeable cover at the site and lead to increased rainfall runoff. Implementation of appropriate SuDS measures is expected to attenuate rainfall runoff from the site to greenfield runoff rates, which will be equal to that of the current site. There will, therefore, be a neutral impact on site neighbours.

4.4 OVERALL FLOOD RISK ASSESSMENT CONCLUSION

New development should be free from significant flood risk from any source and that such development should not:

- materially increase the probability of flooding elsewhere;
- add to the area of land which requires protection by flood prevention measures;
- affect the ability of the future functional floodplain to attenuate the effects of flooding by storing flood water;
- interfere detrimentally with the flow of water in the floodplain; or
- compromise options for future river management.

The proposed development is feasible with adoption of the above mitigation measures and in line with the principles of Glasgow City Council guidance and Planning policy NPF4. Dry emergency pedestrian and suitable vehicular access is available to the site through available through Sawmillfield Street, Edington Street and Corn Street.

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Terrenus Land & Water Ltd wishes to thank Scottish Opera and Struer Consulting Engineers Limited for the opportunity to prepare this report and trust that it meets with your requirements. However, should you wish to discuss the contents of the report then please do not hesitate to contact the undersigned.

**Signed for and on behalf of
Terrenus Land & Water Ltd**



Alex Muir

Senior Consultant



William Hume

Director

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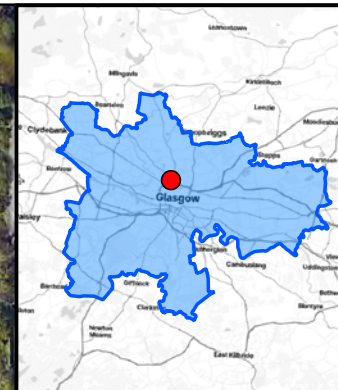
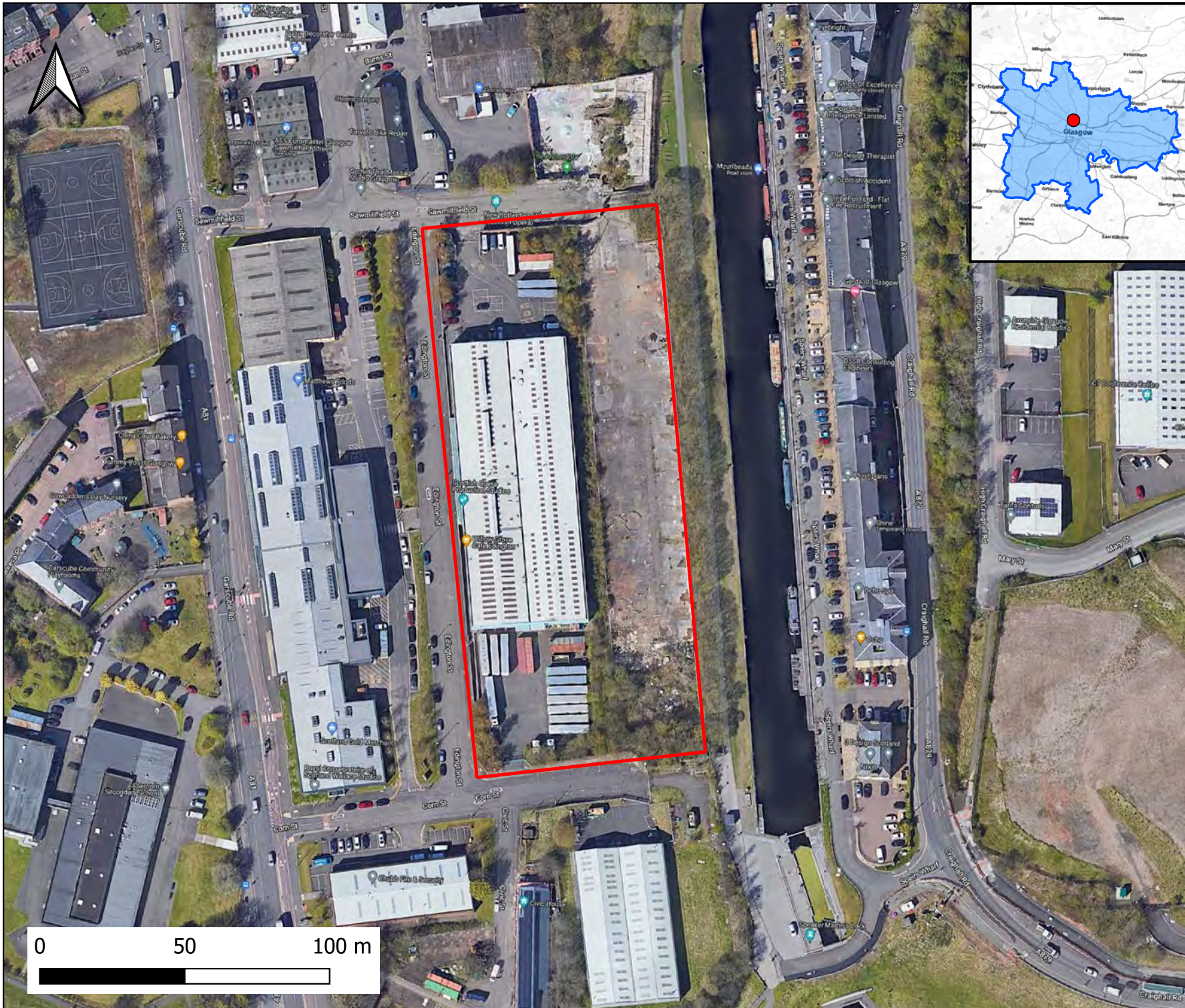
APPENDIX

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FIGURES



- Site Boundary
 - Site Location
 - County Boundaries
 - Glasgow City
- Google Satellite Hybrid

Site Grid Reference:
NS 58750 66690



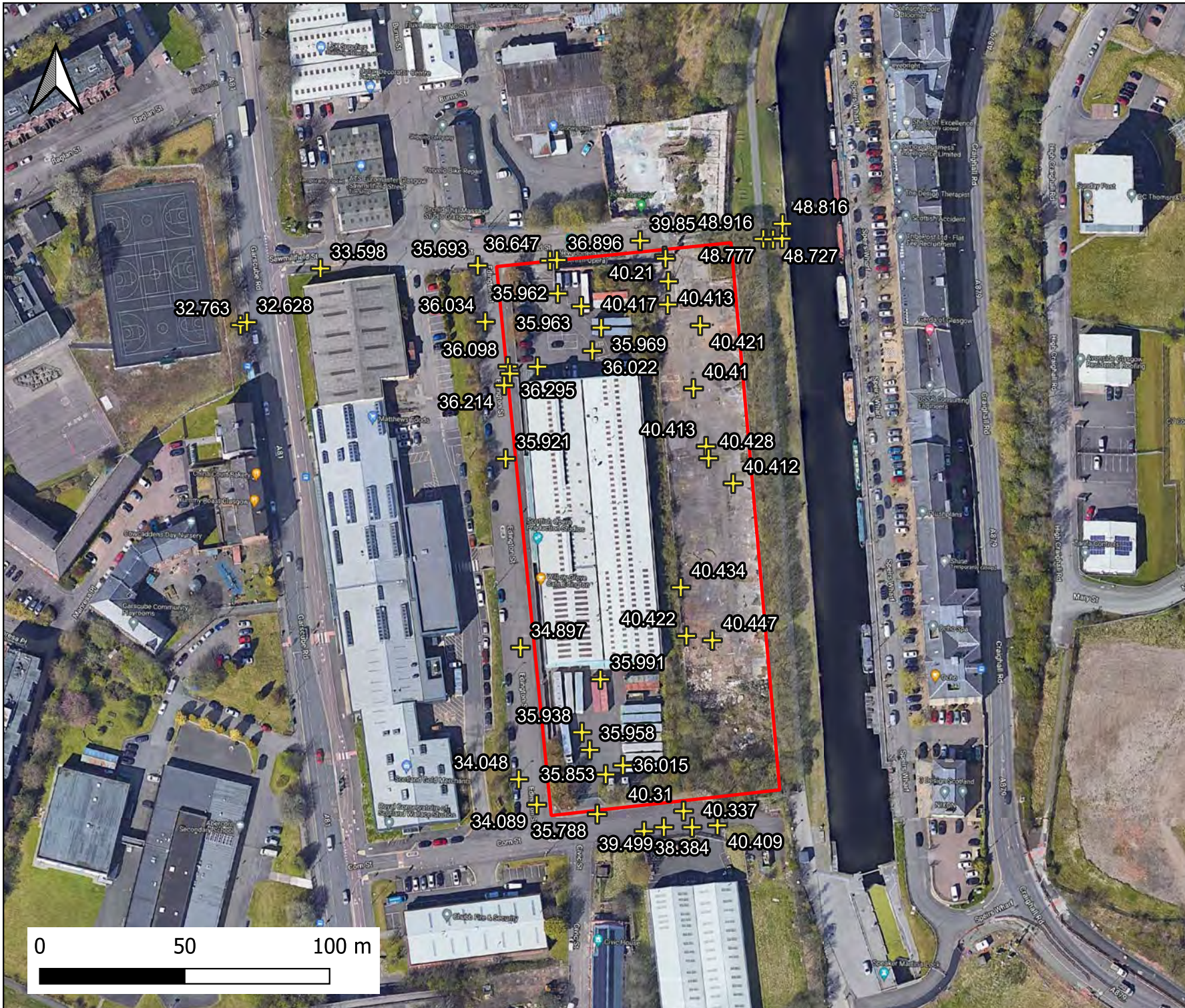
Terrenus Land & Water Ltd
Hamilton International Park
G72 0BN
www.terrenus.co.uk

Client:
Scottish Opera

Project:
New Rotterdam Wharf

Drawing Title:
Site Location Plan

Drawn: ED	Checked: AM	Approved: WH
Date: 21/09/23	Figure: 1	



Terrenus Spot Heights
 Site Boundary
 Google Satellite Hybrid

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Client:
 Scottish Opera

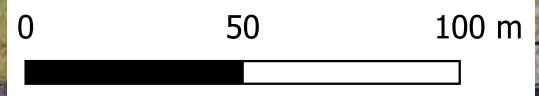
Project:
 New Rotterdam Wharf

Drawing Title:
 Terrenus Spot Heights

Drawn: ED	Checked: AM	Approved: WH
Date: 27/09/2023	Figure:	2



 Survey Comparison Point
 Site Boundary
 Google Satellite Hybrid




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Drawing Title:
 Survey Comparison Points

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Site Boundary

Flow Accumulation Pathways Band 1

- Low
- Low-Medium
- Medium
- Medium-High
- High

Google Satellite Hybrid

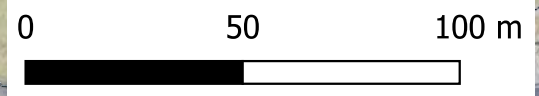


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Client:
 Scottish Opera

Project:
 New Rotterdam Wharf

Drawing Title:
 Flow Accumulation Pathways



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Date: 27/09/2023	Figure:	4

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PHOTOGRAPHIC PLATES



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Plate 1 – View east along Sawmillfield Street.



Plate 2 – View west along Sawmillfield Street



Plate 3 – View south along Edington Street with Scottish Opera on the left.

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REPORT PLATES
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Plate 4 – View north along Edington Street with Scottish Opera on the right.



Plate 5 – View west along Corn Street.



Plate 6 – View southwest of the site from Corn Street.

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Plate 7 – View of eastern section of site from the northern boundary.



Plate 8 – View south of the Forth and Clyde Canal.



Plate 9 – View north of the Forth and Clyde Canal.

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SEPA CHECKLIST

Flood Risk Assessment (FRA) Checklist

This document must be attached within the front cover of any Flood Risk Assessments issued to Local Planning Authorities (LPA) in support of a development proposal which may be at risk of flooding. The document will take only a few minutes to complete and will assist SEPA in reviewing FRAs, when consulted by LPAs. This document should not be a substitute for a FRA.

Development Proposal Summary

Site Name:	New Rotterdam Wharf, Glasgow		
Grid Reference:	Eastings: 258750	Northings: 666690	
Local Authority:	Glasgow City Council		
Planning Reference number (if known):			
Nature of the development:	Residential	If residential, state type:	
Size of the development site:	0.69	Ha	
Identified Flood Risk:	Source: Pluvial	Source name:	

Land Use Planning

Is any of the site within the functional floodplain? (refer to SPP para 255).	No	If yes, what is the net loss of storage?		m ³
Is the site identified within the local development plan?	Yes	Local Development Plan Name:	City Development Plan	Year of Publication: 2017
If yes, what is the proposed use for the site as identified in the local plan?	Mixed Use	Allocation Number / Reference:	City Development Plan (2017): Economic Development, Citywide Policy: CDP1 Place Making Principle	
Does the local development plan and/or any pre-application advice, identify any flood risk issues with or requirements for the site.	No	If Other please specify:	Commercial and residential	
What is the proposed land use vulnerability?	Highly Vulnerable	If so, please specify:		
		Do the proposals represent an increase in land use vulnerability?	Yes	

Supporting Information

Have clear maps / plans been provided within the FRA (including topographic and flood inundation plans)?	Yes		
Has sufficient supporting information, in line with our Technical Guidance, been provided? For example: site plans, photos, topographic information, structure information and other site specific information.	Yes		
Has a historic flood search been undertaken?	No	If flood records in vicinity of the site please provide details:	
Is a formal flood prevention scheme present?	No	If known, state the standard of protection offered:	
Current / historical site use:	Scottish Opera		
Is the site considered vacant or derelict?	No		

Development Requirements

Freeboard on design water level:	0.3	m	
Is safe / dry access and egress available?	Vehicular and Pedestrian	Min access/egress level:	m AOD
Design levels:	Ground level:	Min FFL:	m AOD

Mitigation

Can development be designed to avoid all areas at risk of flooding?	Yes	
Is mitigation proposed?	No	
If yes, is compensatory storage necessary?	No	
Demonstration of compensatory storage on a "like for like" basis?	Select from List	
Should water resistant materials and forms of construction be used?	No	



Flood Risk Assessment (FRA) Checklist

(SS-NFR-F-001 - Version 14 - Last updated 28/05/2019)

Hydrology	
Is there a requirement to consider fluvial flooding?	No
Area of catchment:	0.382 km ²
Estimation method(s) used (please select all that apply):	<input checked="" type="checkbox"/> Pooled Analysis <input type="checkbox"/> Single Site Analysis <input type="checkbox"/> Enhanced Single Site <input checked="" type="checkbox"/> ReFH2 <input checked="" type="checkbox"/> FEH/RM <input type="checkbox"/> Other
Estimate of 200 year design flood flow:	0.642 m ³ /s
Qmed estimate:	0.21 m ³ /s
Statistical Distribution Selected:	Generalised Logistic
	Is a map of catchment area included in FRA? <input checked="" type="checkbox"/> Yes If Pooled analysis have group details been included? <input type="checkbox"/> No If other (please specify methodology used): <input type="checkbox"/>
	Method: <input checked="" type="checkbox"/> Catchment Descriptors Reasons for selection: <input checked="" type="checkbox"/> Best Fit (Closest to Zero)
Hydraulics	
Hydraulic modelling method:	Manning
Number of cross sections:	
Source of data (i.e. topographic survey, LiDAR etc):	LiDAR & Spot Height
Modelled reach length:	m
Any changes to default simulation parameters?	
Model timestep:	
Model grid size:	Select from List
Any structures within the modelled length?	
Maximum observed velocity:	m/s
Brief summary of sensitivity tests, and range:	
variation on flow (%)	%
variation on channel roughness (%)	%
blockage of structure (range of % blocked)	%
boundary conditions:	
(1) type	Upstream
(2) does it influence water levels at the site?	Downstream
Has model been calibrated (gauge data / flood records)?	Specify if other: <input type="checkbox"/>
Is the hydraulic model available to SEPA?	Specify if other: <input type="checkbox"/>
Design flood levels:	
200 year	see report m AOD
200 year plus climate change	see report m AOD
Cross section results provided?	Select from List
Long section results provided?	Select from List
Cross section ratings provided?	Select from List
Tabular output provided (i.e. levels, velocities)?	
Mass balance error:	%
Coastal	
Is there a requirement to consider coastal / tidal flooding?	No
Estimate of 200 year design flood level:	m AOD
Estimation method(s) used:	Select from List
Allowance for climate change (m):	m
Allowance for wave action etc (m):	m
Overall design flood level:	m AOD
	If other please specify methodology used: <input type="checkbox"/>
Comments	
Any additional comments:	
Approved by:	
Organisation:	
Date:	

Note: Further details and guidance is provided in 'Technical Flood Risk Guidance for Stakeholders' which can be accessed here:-

[CLICK HERE](#)