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Flood Risk Assessment AEG4552_S6_Sheffield_01

Site Address: Land off Livesey Street

Neepsend

Sheffield

S6 2DA

UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage Strategies

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Document Issue Record

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Prepared for: Green Frog Power (Livesey) Limited

Reference: AEG4552_S6_Sheffield_01

Site Location: Land off Livesey Street, Neepsend, Sheffield, S6 2DA

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Summary

Development Description	Existing	Proposed
Development Type	A brownfield site	Electricity infrastructure - several transformers and an electrical substation
EA Vulnerability Classification	Less Vulnerable	Essential Infrastructure
Ground Level	No Change	TBC
Impermeable Surface Area	N/A ²	N/A ²
Surface Water Drainage	N/A ²	To be in accordance with the NPPF and PPG Flood and Coast Guidance
Site Size	9263m ²	No change
Risk to Development	Summary	Comment
EA Flood Zone	Flood Zone 2	
Flood Source	Fluvial	River Don and River Loxley
SFRA Available	Sheffield Level 1 Strategic Flood Risk Assessment (Sheffield City Council, 2023)	
Management Measures	Summary	Comment
Ground floor level above extreme flood levels	N/A ²	To be in accordance with the NPPF and PPG Flood and Coast Guidance
Safe Access/Egress Route	N/A ¹	Site likely to remain unmanned for majority of operation. Safe access/ egress not required. Any planned maintenance should be rearranged on receipt of a Flood Warning.
Flood Resilient Design	N/A ²	To be in accordance with the NPPF and PPG Flood and Coast Guidance
Site Drainage Plan	N/A ²	To be in accordance with the NPPF and PPG Flood and Coast Guidance

Flood Warning and Evacuation Plan	N/A ¹	Site likely to remain unmanned for majority of operation. Safe access/ egress not required. Any planned maintenance should be rearranged on receipt of a Flood Warning.
Offsite Impacts	Summary	Comment
Displacement of floodwater	N/A ²	Site is located in Flood Zone 2
Increase in surface run-off generation	N/A ²	To be in accordance with the NPPF and PPG Flood and Coast Guidance
Impact on hydraulic performance of channels	None	The River Don is located approximately 120m east of the site location. River Loxley is located approximately 180m south west of the site location.

¹ not required for this assessment

² data not available.

1. Introduction

- 1.1. Aegaea were commissioned by Green Frog Power (Livesey) Limited to undertake a Flood Risk Assessment (FRA) to facilitate a planning application for the proposed development. This FRA has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance.
- 1.2. This FRA is intended to support a full planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.

Site Overview

- 1.3. The site of the proposed development is Land off Livesey Street, Neepsend, Sheffield, S6 2DA (Figure 1).

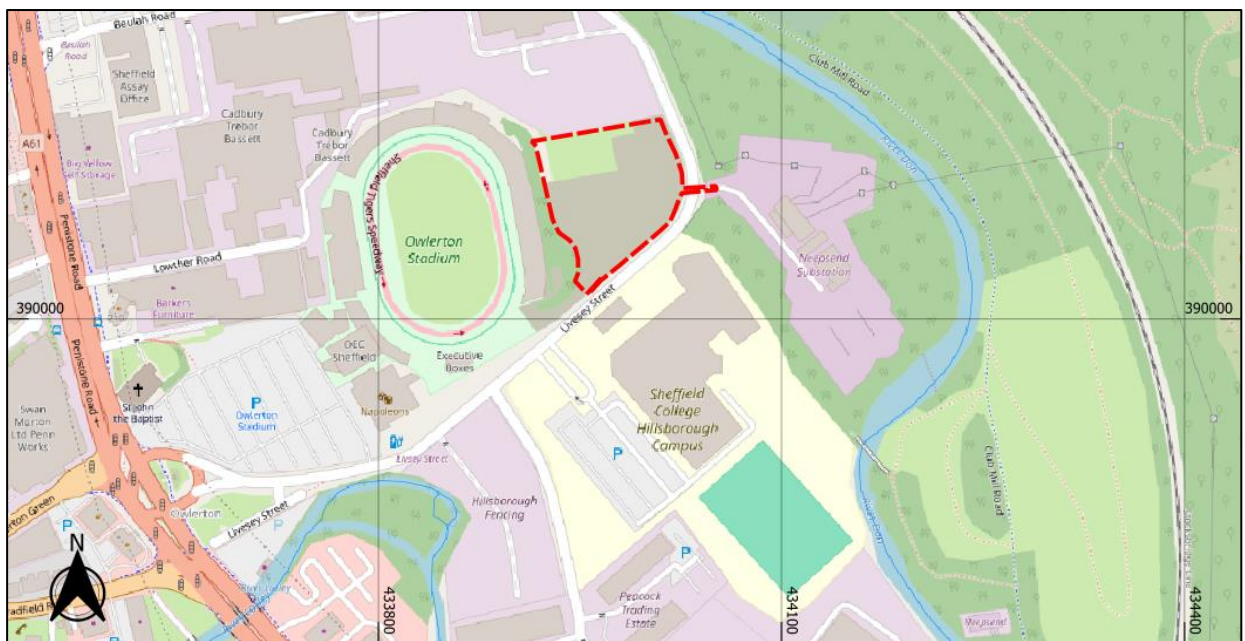


Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors)

- 1.4. The existing site is a brownfield site. The proposed development is to provide an electrical compound to provide a transformer, cylindrical air core reactors and supporting infrastructure.
- 1.5. In the absence of a topographical survey, Environment Agency Light Detection and Ranging (LiDAR) data Digital Terrain Model has been used to review the topography of the site. The LiDAR data shows the ground elevation of the site varies between approximately 57.4m Above

Ordnance Datum (AOD) and 63.96m AOD. Analysis of topographic levels indicates that the site generally slopes with a fall to the north.

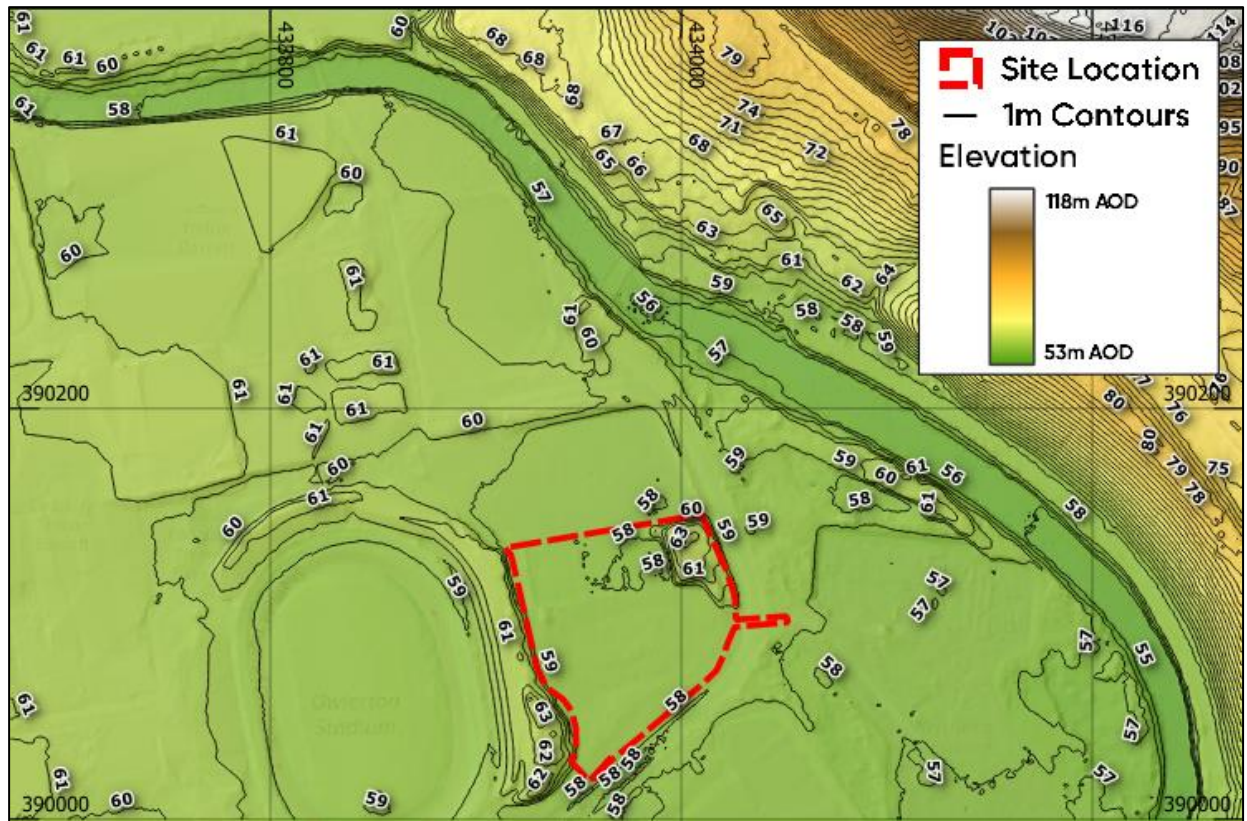


Figure 2: Site Topography (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.6. Sheffield City Council is the Local Planning Authority (LPA) for the site and also the designated Lead Local Flood Authority (LLFA). The site sits within the Environment Agency (EA)'s Yorkshire region.

Planning Policy and Guidance

1.7. UK government planning guidance states¹ that an FRA is required for developments which are:

- *in flood zone 2 or 3 including minor development and change of use*
- *more than 1 hectare (ha) in flood zone 1*
- *less than 1 ha in flood zone 1, including a change of use in development type to a more vulnerable class (for example from commercial to residential), where they could be affected by sources of flooding other than rivers and the sea (for example surface water drains, reservoirs)*
- *in an area within flood zone 1 which has critical drainage problems as notified by the Environment Agency*

1.8. The site is located within Flood Zone 2 and therefore an FRA is required in accordance with the NPPF.

1.9. The objective of this FRA is to demonstrate that the proposals are acceptable in terms of flood risk. This report summarises the findings of the study and specifically addresses the following issues in the context of the current legislative regime:

- Fluvial flood risk
- Surface water flood risk
- Risk of flooding from other sources

¹<https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications#when-you-need-an-assessment>

2. Planning Policy

2.1. Inappropriate development in a flood risk area could pose significant risk in terms of personal safety and damage to property for the occupiers of the development or for people elsewhere. The approach taken in the assessment of flood risk at the planning stage is set out in national, regional, and local planning policy and associated guidance. This section summarises the key policies and guidance relevant to the proposed development.

National Planning Policy Framework (NPPF)

2.2. The National Planning Policy Framework² (NPPF) (DLUHC, 2023) which includes UK Government policy on development and flood risk states:

165. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

173. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*
- b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;*
- c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*

²<https://www.gov.uk/guidance/national-planning-policy-framework>, last updated Dec 2023

- d) *any residual risk can be safely managed; and*
- e) *safe access and escape routes are included where appropriate, as part of an agreed emergency plan.*

2.3. Footnote 59 of the NPPF states:

A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

2.4. Flood Zones in England are defined as follows:

Table 1: Flood Zone Definitions

Flood Zone	Definition
Zone 1 Low Probability	Land having less than 1 in 1,000 annual probability of river or sea flooding (all land outside Zones 2 and 3).
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.
Zone 3b The Functional Floodplain	<p>This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise:</p> <p>land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or</p> <p>land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding).</p> <p>Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)</p>

- 2.5. An FRA should be appropriate to the scale, nature, and location of the development. It should identify and assess the risk from all sources of flooding to and from the development and demonstrate how any flood risks will be managed over the lifetime of the development.
- 2.6. An assessment of hydrological impacts should be undertaken, including to surface water runoff and impacts to drainage networks in order to demonstrate how flood risk to others will be managed following development and taking climate change into account.

2.7. The Planning Practice Guidance, which was substantially revised in March 2015 in relation to drainage, requires that sustainable drainage systems (SuDS) should be considered and included where practicable, in line with Defra Technical Standards³.

Local Plan

2.8. The Local Plan prepared by the Local Planning Authority, Sheffield City Council⁴, sets out the policies for development in the local area.

2.9. Policy CS 67 Flood Risk Management outlines the requirements for new development within the area. It states:

The extent and impact of flooding will be reduced by:

- a. requiring that all developments significantly limit surface water run-off;*
- b. requiring the use of Sustainable Drainage Systems or sustainable drainage techniques on all sites where feasible and practicable;*
- c. promoting sustainable drainage management, particularly in rural areas;*
- d. not culverting and not building over watercourses wherever practicable;*
- e. encouraging the removal of existing culverting;*
- f. not increasing and, where possible, reducing the building footprint in areas of developed functional floodplain;*
- g. not locating or subdividing properties that would be used for more vulnerable uses in areas of developed functional floodplain;*
- h. developing only water-compatible uses in the functional floodplain;*
- i. designating areas of the city with high probability of flooding for open space uses where there is no overriding case for development;*

3 Technical Standards Accessed Online

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf

⁴ <https://www.sheffield.gov.uk/sites/default/files/2022-07/core-strategy-adopted-march-2009.pdf>

- j. developing areas with high probability of flooding only for water-compatible uses unless an overriding case can be made and adequate mitigation measures are proposed;

- k. ensuring any highly vulnerable uses are not located in areas at risk of flooding;

- l. ensuring safe access to and from an area with a low probability of flooding. Where an overriding case remains for developing in a zone with high probability of flooding, development will be permitted only if:

- m. more vulnerable uses, including housing, would be above ground floor level; and

- n. the lower floor levels of any other development with vulnerable equipment would remain dry in the event of flooding; and

- o. the building would be resilient to flood damage; and

- p. adequate on and off-site flood protection measures would be provided.

Housing in areas with a high probability of flooding will not be permitted before 2016/17.

Sequential and Exception Tests

2.10. The Sequential and Exception Tests are applied in specific cases defined by UK Government policy. Their purpose is to drive development to areas of low flood risk and to support developments which improve flood risk for developments in areas at risk of flooding.

Sequential Test

2.11. The overall aim of the Sequential Test is to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk.

2.12. However, it is noted that the proposed development is categorised as Essential Infrastructure and thus there is an overriding need for the development to be located within the immediate vicinity of the site/ area it is to provide grid stability. As such, it may not be appropriate to locate the development on another site at a lower risk of flooding.

Exception Test

- 2.13. The Exception Test is applied to sites based on the Flood Zone and the nature of the development. As the proposed development consists of electricity infrastructure it would be classed as 'Essential Infrastructure' in line with government development use classes.
- 2.14. The Flood Risk Vulnerability Classification table⁵ provided below in Table 2 shows which vulnerabilities are appropriate in each Flood Zone.
- 2.15. Table 2 shows Flood Zone 2 is an appropriate location for 'Essential Infrastructure' uses without the need for an Exception Test.

Table 2: Flood risk vulnerability and flood zone 'incompatibility'

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a	Exception Test required	x	Exception Test required	✓	✓
Zone 3b	Exception Test required	x	x	x	✓

Summary

- 2.16. This flood risk assessment has been prepared with due consideration to the above local and national policy.

⁵<https://www.gov.uk/guidance/flood-risk-and-coastal-change#table2>

3. Consultation and Review

Consultation

- 3.1. The site is within the remit of Sheffield City Council as Lead Local Flood Authority (LLFA).
- 3.2. A Product 4 has been requested from the EA but not provided at the time of writing. This report should be updated on receipt of a response from the EA.

Documents and Online Mapping

- 3.3. Local Governments and Lead Local Flood Authorities provide documents which contain data and policies on flood risk and new development in their areas. These documents are introduced and briefly summarised below. For the purposes of this FRA, these documents have been reviewed for relevant information and any relevant data is discussed within the appropriate sub heading of this report.
- 3.4. The following sources of information have been reviewed for this assessment:
 - Flood Map for Planning on the Environment Agency website <https://flood-map-for-planning.service.gov.uk/>
 - Long Term Flood Risk Information on the Environment Agency website <https://www.gov.uk/check-long-term-flood-risk>
 - National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities, 2023)
 - Planning Practice Guidance - Flood Risk and Coastal Change (Department for Levelling Up, Housing and Communities, 2022)
 - Geoindex Onshore (British Geological Survey, 2023)
 - Sheffield Development Framework Core Strategy (Sheffield City Council, 2009)
 - Sheffield Level 1 Strategic Flood Risk Assessment⁶ (Sheffield City Council, 2023)

⁶ https://ehq-production-europe.s3.eu-west-1.amazonaws.com/7e5c46bdaa849bcf4512893e8693157e34f1c3c9/original/1673106448/01b561dde4abe585768520bb6d214428_Sheffield_Level_1_Strategic_Flood_Risk_Assessment_%282023%29.pdf?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIA4KKNQAKICO37GBEP%2F20240322%2Ffeu-

Strategic Flood Risk Assessment (SFRA)

- 3.5. The SFRA, published in 2023, provides the evidence base for the Local Planning Authority Sheffield City Council Local Plan and guidance for consideration when determining planning applications. The SFRA seeks to place new development into areas of lower flood risk taking into account current flood risk, future flood risk, and the effect a proposed development would have on the risk of flooding.
- 3.6. The SFRA mapping provided by Sheffield City Council has been used throughout production of this report as a source of information, particularly pertaining to historical flood incidents.

Local Flood Risk Management Strategy (LFRMS)

- 3.7. The Local Flood Risk Management Strategy sets out roles and responsibilities for flood risk management, assesses the risk of flooding in the area, where funding can be found to manage flood risk, and the policies, objectives, and actions of the Lead Local Flood Authority.
- 3.8. The Sheffield City Council LFRMS is used within this report to identify any flood management infrastructure and historical incidences of flooding.

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4. Sources of Flood Risk

Fluvial

- 4.1. Flooding from watercourses arises when flows exceed the capacity of the channel, or where a restrictive structure is encountered, resulting in water overtopping the banks into the floodplain.
- 4.2. The site is located within Flood Zone 2. Flood Zone 2 denotes a risk of flooding from fluvial sources between a 1 in 100 (1%) and 1 in 1,000 (0.1%).

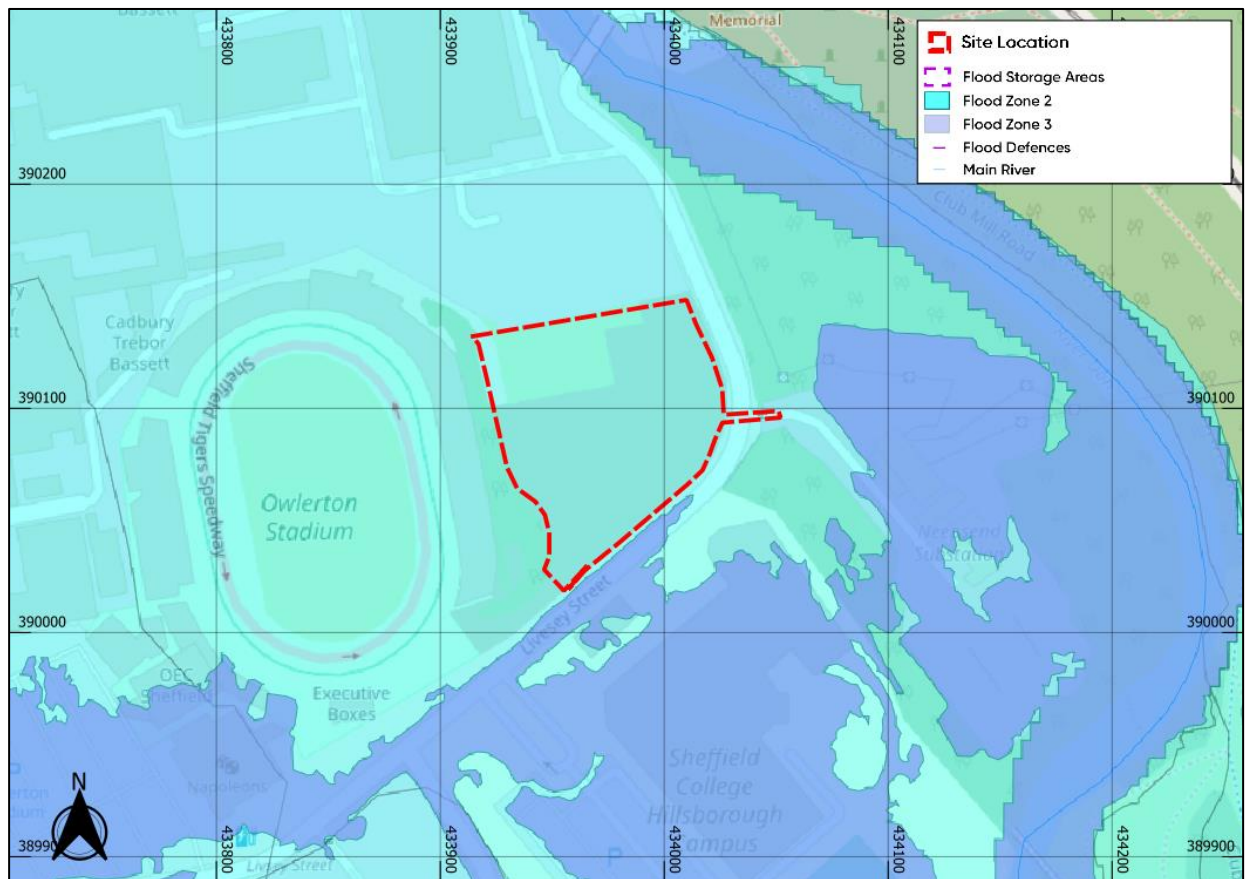


Figure 3: EA Flood Map for Planning (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Main Rivers

- 4.3. The River Don is located approximately 120m east of the site location. River Loxley is located approximately 180m south west of the site location.

Ordinary Watercourses

4.4. There are no ordinary watercourses within the redline application boundary.

Historical Fluvial Flooding

4.5. The EA Recorded and Historical Flood Outlines shows main river fluvial flooding on-site in 2007 caused by channel capacity exceeded (no raised defences).

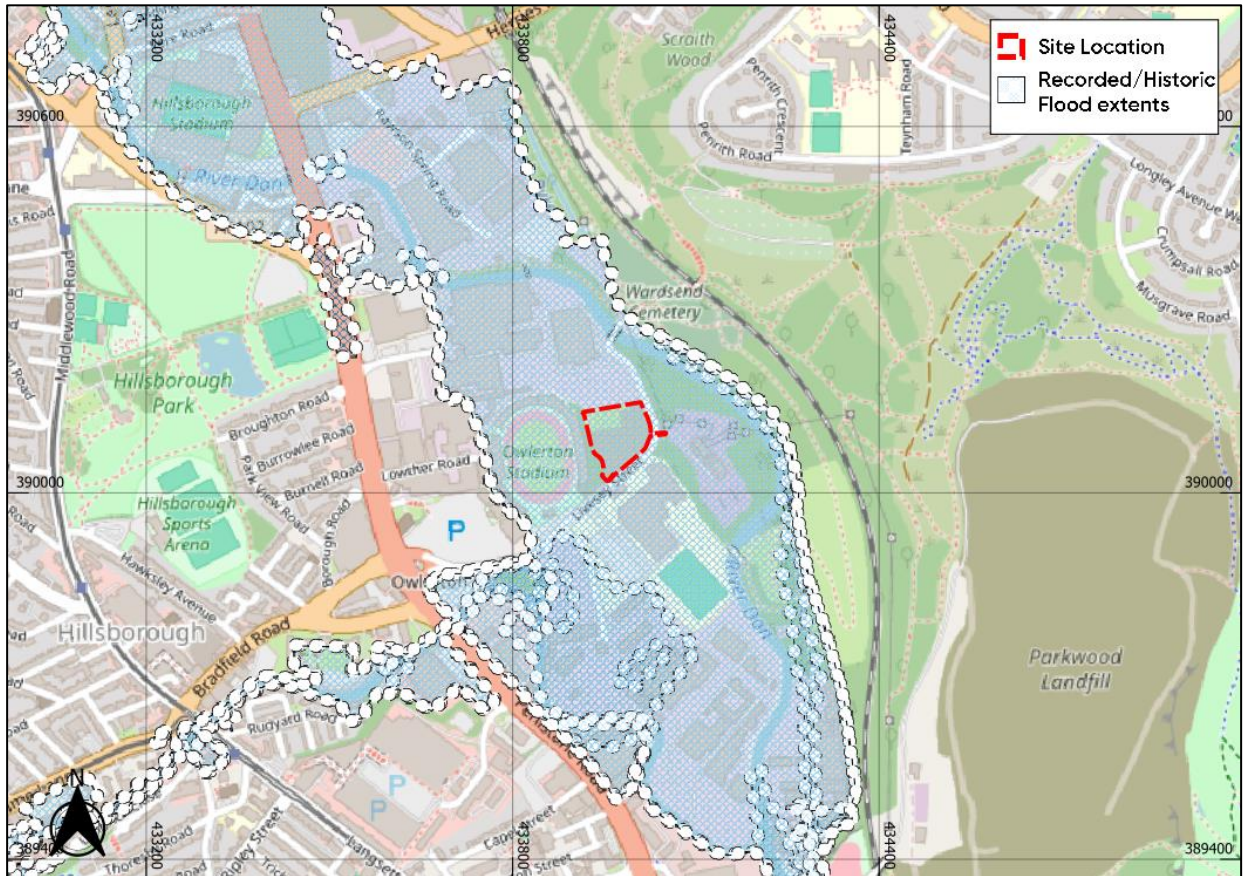


Figure 4: EA Historic Flood Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

EA Data

4.6. A Product 4 has been requested from the EA but not provided at the time of writing. This report should be updated on receipt of a response from the EA.

Tidal

- 4.7. Tidal flooding occurs when a high tide and high winds combine to elevate sea levels. An area behind coastal flood defences can still flood if waves overtop the defences or break through them. Tidal flooding can also occur a long way from the coast by raising river levels. Water may overtop the river bank or river defences when tide levels are high. The site is a significant distance from any tidal source and above the anticipated extreme tidal levels, even when considering the impacts of climate change.
- 4.8. The risk of flooding from tidal sources is considered low.

Canals

- 4.9. The Canal and River Trust (CRT) generally maintains canal levels using reservoirs, feeders, and boreholes and manages water levels by transferring it within the canal system.
- 4.10. No CRT canals were identified within 1km of the site.
- 4.11. The risk of flooding to this site from canals is considered to be low.

Pluvial

- 4.12. Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.
- 4.13. Annual surface water flood risk is labelled by the EA as:
- 'High Risk'; >3.3% AEP (annual probability greater than 1 in 30).
 - 'Medium Risk'; 1.1% to 3.3% AEP (annual probability between 1 in 100 and 1 in 30).
 - 'Low Risk'; 0.1% to 1% AEP (annual probability between 1 in 1000 and 1 in 100).
 - 'Very Low Risk'; <0.1% AEP (annual probability less than 1 in 1000).
- 4.14. Examination of the EA's Flood Risk from Surface Water mapping for High Risk, Medium Risk, and Low Risk AEP flood events shows the site and its immediate vicinity is at risk of flooding in 'Medium' and 'Low' surface water flood events (Figure 5).
- 4.15. The modelled 1 in 100-year flood depth map, Figure 6, shows the site to be affected, with an area of approximately 350m² only having a depth of 0.15m to 0.30m.

4.16. The modelled 1 in 1000-year flood depth map, Figure 7, shows the site to be affected by depths up to 0.30m to 0.60m.

4.17. Based on the above, the site is considered to be of low risk from this source.

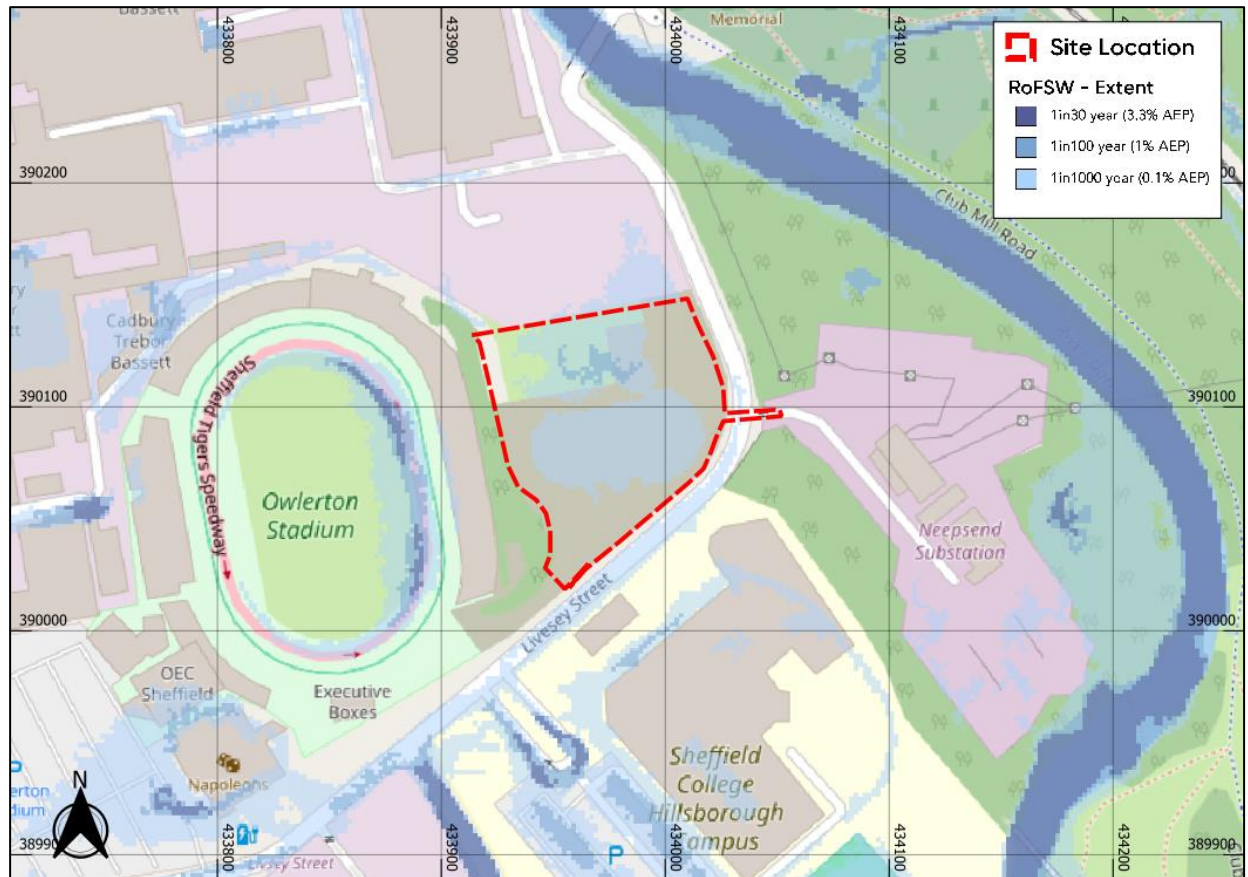


Figure 5: EA Surface Water Flood Risk Mapping Surface Water Extent Maps (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

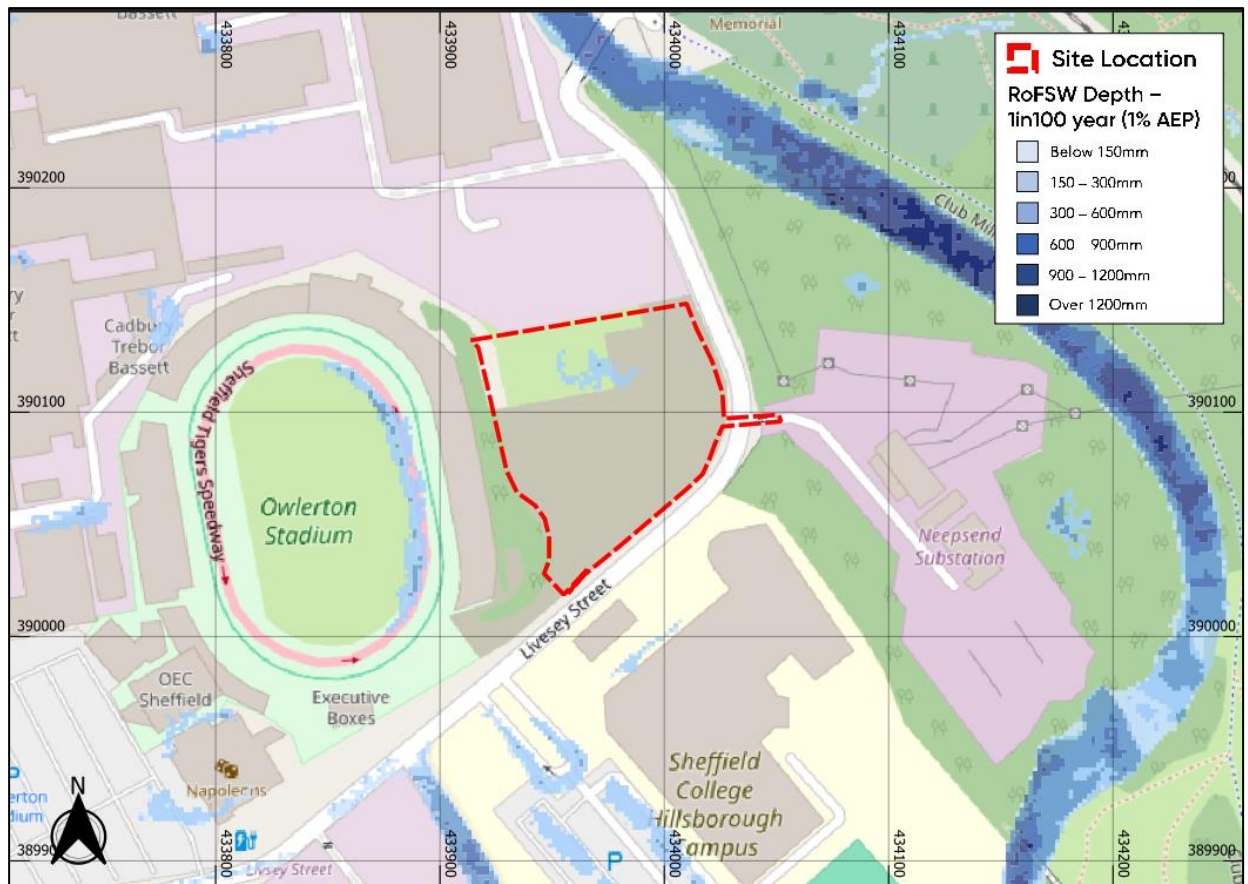


Figure 6: EA Surface Water Flood Risk Mapping 1 in 100 year extent and depths map (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

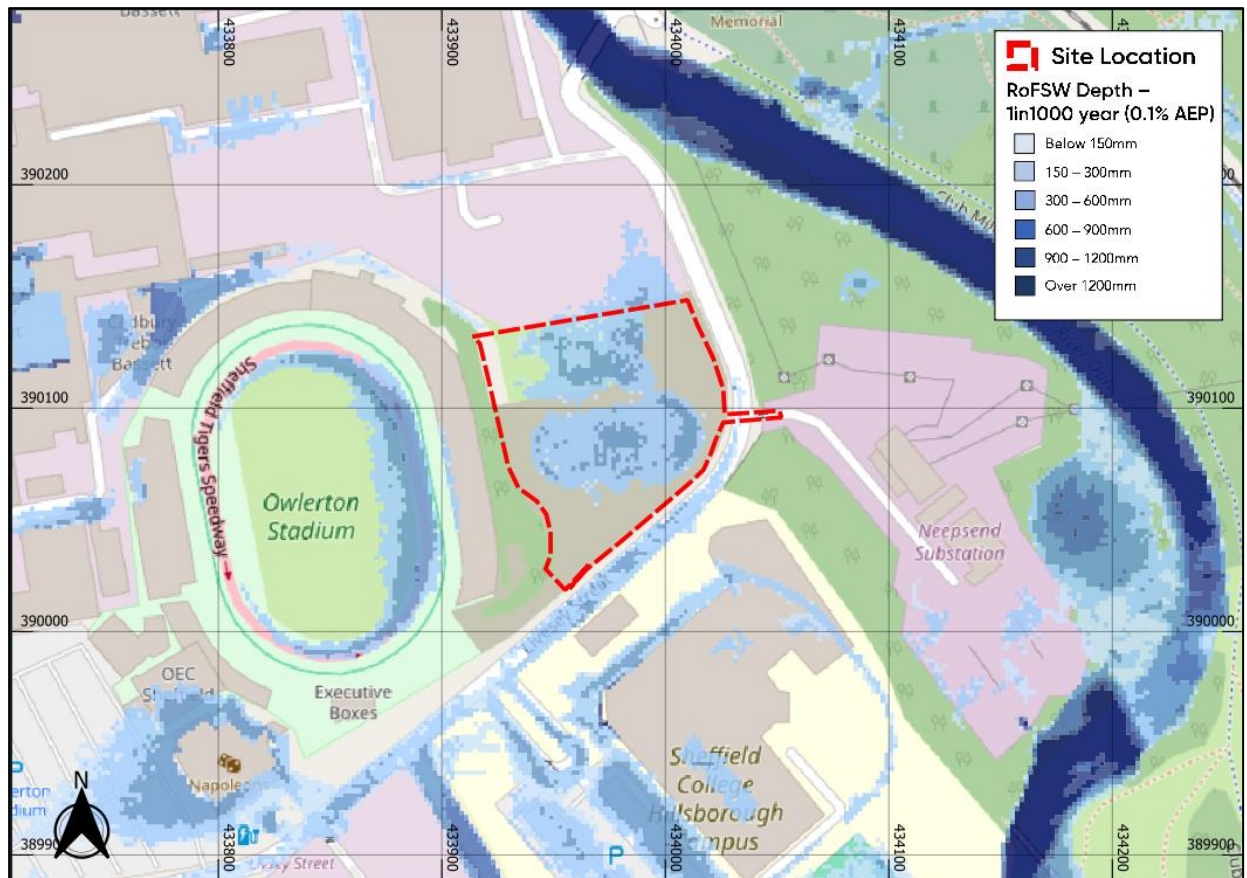


Figure 7: EA Surface Water Flood Risk Mapping 1 in 100 year extent and depths map (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Reservoirs

- 4.18. Flooding can occur from large waterbodies or reservoirs if they are impounded above the surrounding ground levels or are used to retain floodwater. Although unlikely, reservoirs and large waterbodies could overtop or breach leading to rapid inundation of the downstream floodplain.
- 4.19. According to the EA's Flood Risk from Reservoirs mapping the site is at risk of flooding in the event of a breach at multiple reservoirs (Figure 8). The worst reservoir failure model is a 'dry day' scenario meaning that it could be caused by reservoir walls failing due to old age, accident, or because excess flood water has been added to the reservoir.

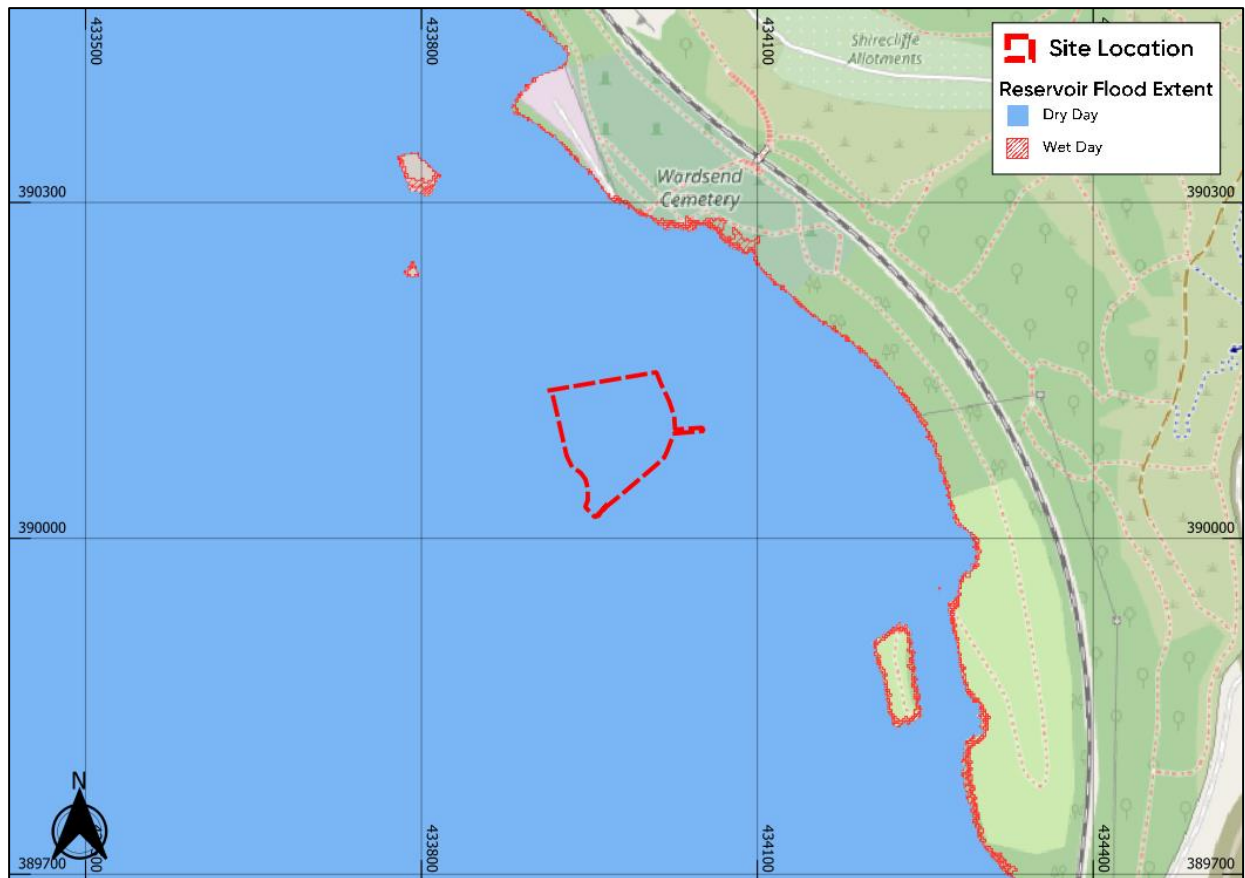


Figure 8: EA Reservoir Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). ©<https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

4.20. All large reservoirs must be inspected and supervised by reservoir panel engineers as detailed by the Reservoirs Act 1975 in England and Wales. The EA are responsible to ensure that reservoirs are inspected regularly, and essential safety work carried out. As reservoirs are highly managed the maximum flood extent provided in the EA Risk of Flooding from Reservoirs mapping is considered a worst-case scenario. As reservoir flooding is unlikely and the modelled flood depths are based on the worst-case scenario, flooding from this source may be considered as a relatively low risk. Although to be precautionary flood resilient design and building practices could be implemented to further reduce risk.

Groundwater

4.21. Groundwater flooding occurs in areas where underlying geology is permeable and water can rise within the strata sufficiently to breach the surface.

- 4.22. The British Geological Survey's (BGS) mapping shows the superficial deposits underlying the site are alluvium - gravel, sand, silt and clay. The bedrock geology underlying the site is Pennine lower coal measures formation - mudstone and siltstone.
- 4.23. Historical BGS boreholes/trial pit within the vicinity of the site, BGS: 214905, located 25m southeast of the site, was a borehole of 3.40m of depth. The borehole recorded mostly sandy, gravel, clays. Water inflow was recorded in the trial pit from side B at a depth of 0.5m.
- 4.24. To further understand the risk review of an additional record has been conducted. Borehole 15933598 located 33m southeast of the site was bored to a depth of 1.5m. The borehole recorded sandy clay and boulder sandstone; no groundwater was encountered.
- 4.25. Prior to any construction it is recommended to undertake a ground investigation to confirm the below groundwater level. This will allow the development to better understand the risk of flooding from groundwater to the site.

Sewers

- 4.26. Foul or surface water sewers can be a cause of flooding if the drainage network becomes overwhelmed, either by blockage or due to local development beyond the designed capabilities of the drainage system.
- 4.27. The Sheffield SFRA January 2023 has been reviewed. Figure 5-2 of the SFRA provides recorded sewer flooding incidents across Sheffield (Figure 9). The approximate site location is marked in red. It can be seen that there have been a number of recorded sewer incidents near the site but not in its immediate vicinity.

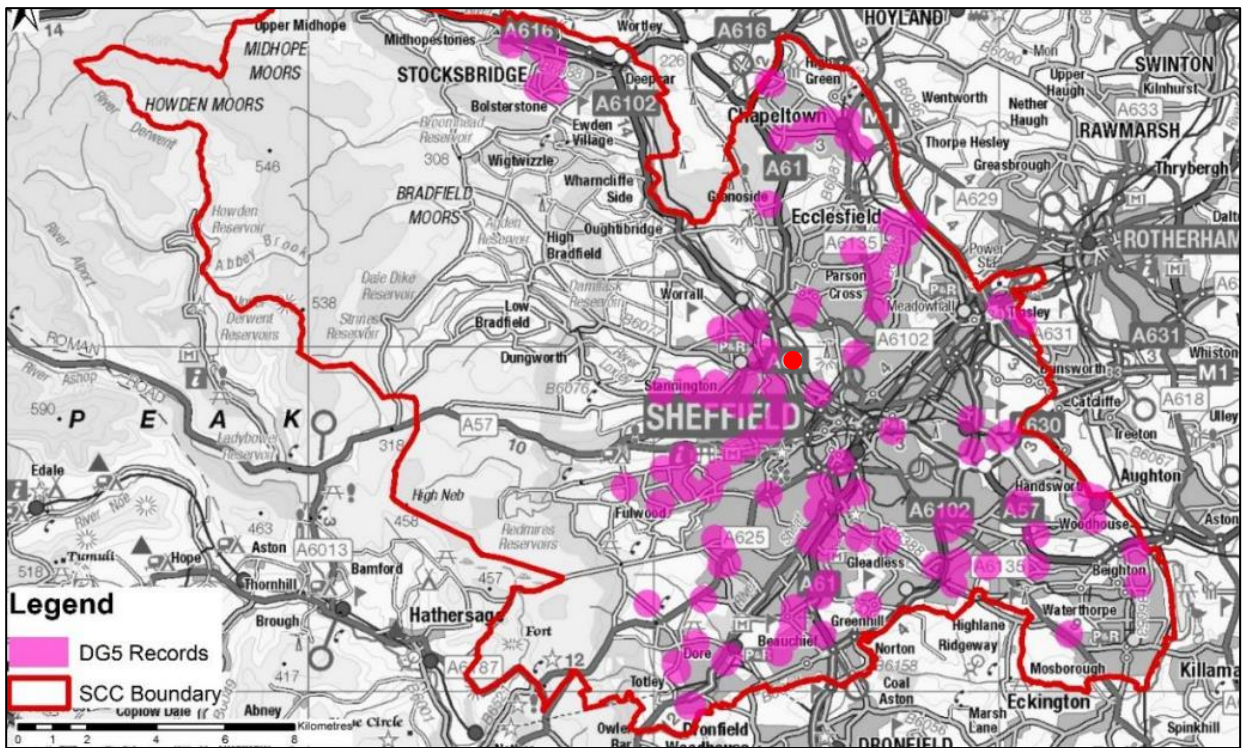


Figure 9: DG5 historic flood incidents from sewers due to hydraulic overloading in a 1 in 30 AEP, or less, rainfall event – Sheffield SFRA, 2023

5. Flood Risk Mitigation

Fluvial

- 5.1. The proposed development is in Flood Zone 2 and is for Essential Infrastructure. The development in accordance with the Flood risk vulnerability and flood zone 'incompatibility' shows that this development is appropriate.
- 5.2. The proposed development will be designed to be in accordance with the guidance of the NPPF, 2023 and PPG Flood risk and coastal change, August 2022.
- 5.3. A Product 4 has been requested from the EA but not provided at the time of writing. This report should be updated on receipt of a response from the EA.

Pluvial

- 5.4. The site is shown to be partially affected by the modelled 1 in 100 year event. The site is shown to be at risk of the modelled 1 in 1000 year event. The depths across the site are modelled to be 0.30m to 0.60m.
- 5.5. It is recommended that the essential infrastructure should be set a minimum 600mm above the external ground levels.

Reservoirs, Groundwater and Sewers

- 5.6. Flood risk from other these is considered to be low, therefore mitigation is not required.
- 5.7. Prior to any construction it is recommended to undertake a ground investigation to confirm the below groundwater level. This will allow the development to better understand the risk of flooding from groundwater to the site.

Increase to Flood Risk Elsewhere

- 5.8. The proposed development is in Flood Zone 2 and is for Essential Infrastructure. The development in accordance with the Flood risk vulnerability and flood zone 'incompatibility' shows that this development is appropriate.
- 5.9. The proposed development will be designed to be in accordance with the guidance of the NPPF, 2023 and PPG Flood risk and coastal change, August 2022.

Flood Warnings

- 5.10. The site is in the Environment Agency (EA) 'River Loxley at Owlerton' flood warning service area. This service allows site owners to register an address along with contact details so that, in the event of a flood being forecast, they are sent an alert. As a further precaution and risk reduction, the owner of the site should sign up.
- 5.11. Flood warnings/alerts can be enforced at any time of the day or night. Signing up for this service provides site owners some notice before a flood event. The amount of time afforded before a flood occurs depends on the site-specific location (e.g. proximity to the source of flooding, topography of the surrounding area) and the flood mechanism (e.g. bank over topping versus a breach event). Flood alerts and warnings provide site managers with time to take necessary action, e.g. communication of the risk of flooding to occupants/employees etc, evacuation of occupants offsite or to a safe level, removal of valuable items out of reach of flooding and the mounting of site-specific flood defences.

6. Conclusions

- 6.1. This FRA has been undertaken with reference to the requirements of NPPF and Planning Practice Guidance with respect to the development at Land off Livesey Street, Neepsend, Sheffield, S6 2DA. It has been written to support a planning application and prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.
- 6.2. An assessment of the risk of flooding from all sources has been undertaken and is summarised in the table below:

Source of Flooding	Flood Risk Summary
Fluvial	The proposed development is in Flood Zone 2 and is for Essential Infrastructure. The development in accordance with the Flood risk vulnerability and flood zone 'incompatibility' shows that this development is appropriate.
Pluvial	The site is shown to be partially affected by the 1 in 100 year event. The site is shown to be at risk of the 1 in 1000 year event. The depths across the site are modelled to be 0.30m to 0.60m. It is recommended that the essential infrastructure should be set a minimum 600mm above the external ground levels.
Tidal Reservoirs Groundwater Sewers Canals	The site is considered to be at low risk from other sources.

- 6.3. The FRA supports the planning application and demonstrates that there is an acceptable level of flood risk to the site if the mitigation strategies recommended are implemented in the scheme.
- 6.4. The following conclusions can be drawn from this FRA:
- The proposed development is in Flood Zone 2 and is for Essential Infrastructure. The development in accordance with the Flood risk vulnerability and flood zone 'incompatibility' shows that this development is appropriate.

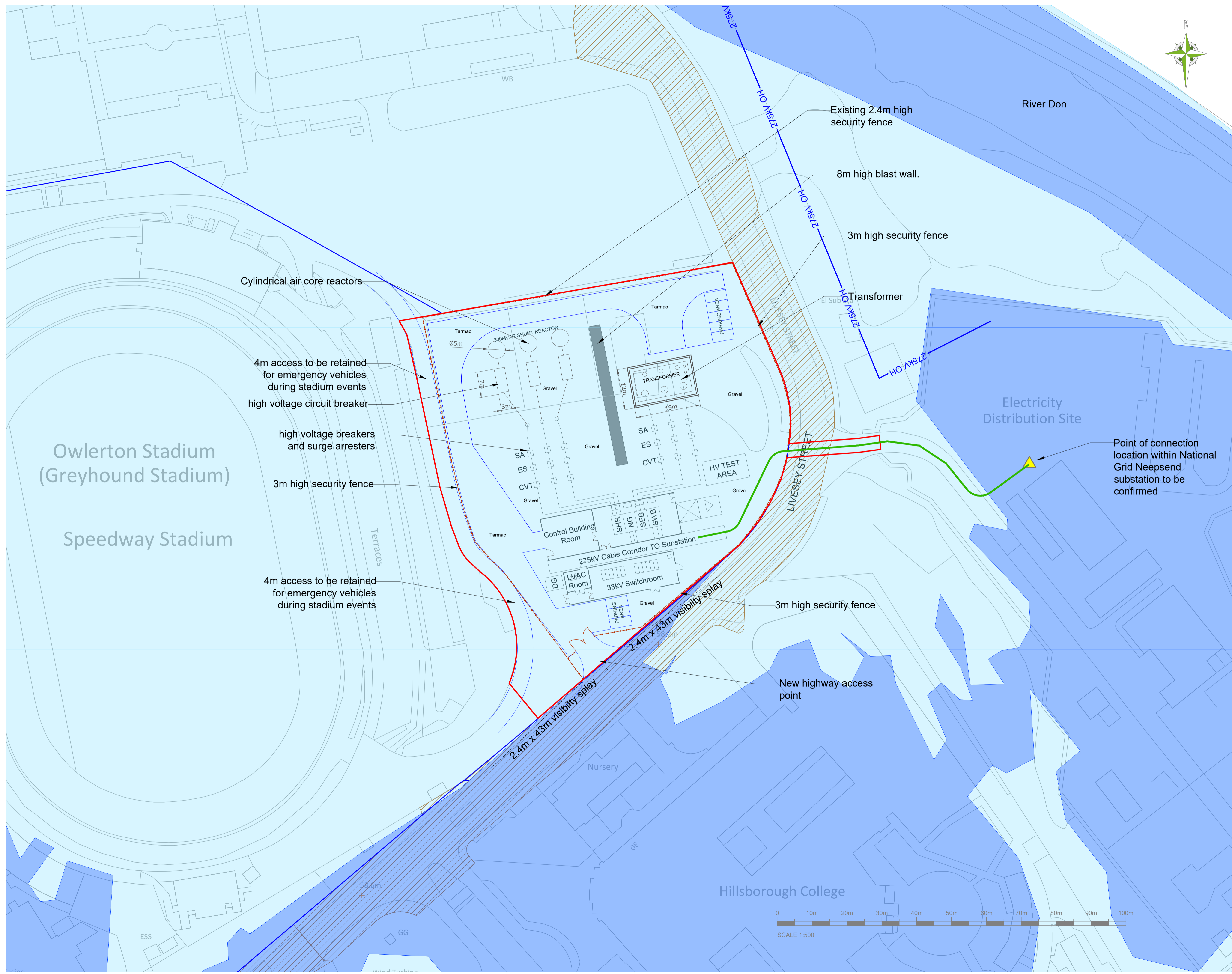
6.5. This Flood Risk Assessment should be submitted as part of the planning application to satisfy the requirements under NPPF.

Appendix A - Development Proposals

PLANNING PLAN

LEGEND:

- SITE INFRASTRUCTURE:**
- LANDLORDS PROPERTY
 - PROPOSED SITE
 - - - PERIMETER FENCELINE
 - ▲ POINT OF CONNECTION ▲
 - PROPOSED CABLE CONNECTION ROUTE
 - ADOPTED HIGHWAY
 - FLOOD ZONE 2
 - FLOOD ZONE 3



B	Generally updated	21/03/24	DS
A	First Issue	28/02/24	DS
rev	revision notes	date	drawn
REVISIONS			

Planning

ALL DIMENSIONS TO BE CHECKED ON SITE
 WORK TO FIGURED DIMENSIONS ONLY
 REPORT DISCREPANCIES TO THE GFP
 AT ONCE BEFORE PROCEEDING
 COPYRIGHT ACT APPLIES



Project Title:
 LIVESY STREET
 NEEPSSEND
 SHEFFIELD
 S6 2DA

Drawing Title:
 PROPOSED SITE PLAN

Scale @A1: 1:500 Date: 28.02.24
 Drawn: DS Checked: RA
 Drawing No: 248-PP-013 Rev: B