

AMBIENTAL

ENVIRONMENTAL ASSESSMENT

Flood Risk Assessment

31a Riverside Road, Haringey,
London, N15 6DA

Document Issue Record

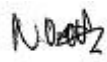
Project: Phase 1 Flood Risk Assessment

Prepared for: Mr Gluck

Reference: 4675

Site Location: 31a Riverside Road, Haringey, London, N15 6DA

Proposed Development: It is understood that planning permission was recently approved for the construction of a 1 bed end terrace property at the site (Haringey Ref HGY/2015/1638). It is understood that the developer is now submitting a new application at the site to construct a 2 bed end terrace dwelling with a basement level. As a result of the additional bedroom, the internal layout has changed slightly compared to the previously approved application. No bedrooms will be at basement level.

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1. Summary

- 1.1 Ambiental Environmental Assessment has been appointed by Mr Gluck to undertake a National Planning Policy Framework (NPPF) compliant Flood Risk Assessment (FRA) for the proposed development at 31a Riverside Road, Haringey, London, N15 6DA.
- 1.2 The site is currently a brownfield site. It is understood that planning permission was recently approved for the construction of a 1 bed end terrace property at the site (Haringey Ref HGY/2015/1638). It is understood that the developer is now submitting a new application at the site to construct a 2 bed end terrace dwelling with a basement level. As a result of the additional bedroom, the internal layout has changed slightly compared to the previously approved application. No bedrooms will be at basement level or ground floor, however.
- 1.3 With reference to the Environment Agency (EA) Flood Map for Planning, the proposed development is located within Flood Zone 1. However, the site is located within the EA modelled maximum flood extent following reservoir failure and therefore requires an FRA under the NPPF. Furthermore, the Haringey Strategic Flood Risk Assessment (SFRA, 2013) states that:

“Basement development within the RIM [Reservoir Inundation Model] outline should include an assessment of a breach in the reservoir that could affect the proposed development within their FRA. On the basis of the results from the FRA, consideration should be given to the flood risk from reservoir breach and the appropriate response (i.e. emergency plan or flood resistant design).”

- 1.4 The EA Risk of Flooding from Reservoirs mapping indicates that following a breach of the nearby reservoirs, the site could experience depths of between 0.3m and 2m, and greater than 2m in places. These depths are based on ground levels and as a result, depths could be greater in the proposed basement.
- 1.5 The Haringey SFRA does however state the following with regard to basements in areas of mapped flood risk:

“Basement dwellings may be feasible with the proviso that there is internal access to an upper ground floor level and no sleeping accommodation is located within the basement level.”

- 1.6 Plans provided by the client indicate that there will be internal access from the proposed basement (which will be used as a kitchen, dining room, toilet and study) to the upper floors of the proposed dwelling. As such, in the event of failure of the nearby reservoirs, emergency safe refuge could be sought on site by using the internal access to reach the first floor.

- 1.7 As such, and given that:

- Planning permission has already been granted for the construction of the end terrace dwelling, and the latest application seeks to add a basement level and additional bedroom to the proposed development;
- No bedrooms will be located at basement or ground floor;
- Internal access will be maintained from the basement to the first floor to allow emergency refuge a reservoir breach event,

following the guidelines contained within the NPPF, the proposed development could be considered suitable assuming appropriate mitigation (including adequate warning procedures) can be maintained for the lifetime of the development.

Development Description	Existing	Proposed
Development Type:	Brownfield site (land associated with existing dwelling)	Construction of new dwelling (already approved) with addition of basement level
Number of Bedrooms:	N/A ²	2 bedroom dwelling
EA Vulnerability Classification:	More Vulnerable	Highly Vulnerable
Ground Floor Level:	Elevations on site vary between approximately 8.41mAOD and 8.94mAOD (2m LiDAR data).	Finished floor levels (FFLs) unknown at time of writing
Level of Sleeping Accommodation:	N/A ²	First floor
Impermeable Surface Area:	N/A ² however aerial imagery indicates entire site impermeable	Negligible change
Surface Water Drainage:	N/A ²	No drainage condition was attached to recent permission for new dwelling. The addition of a basement level should not have significant impact on previous drainage proposals.
Site Size:	Approximately 94m ²	No change
Risk to Development	Summary	Comment
EA Flood Zone:	1	
Flood Source:	Reservoir	William Girling, West Warwick, Lockwood, King George V and East Warwick Reservoirs, all owned by Thames Water Ltd
1:100 Year Flood Level:	N/A ²	
1:100 Year Flood Level & Climate Change:	N/A ²	Site is located in Flood Zone 1
1:1000 Year Flood Level:	N/A ²	
Recorded Flood Events in Area:	Yes	1947 (fluvial)
Recorded Flood Events at Site:	No	Site outside 1947 fluvial event and no records in SFRA/ SWMP to indicate historic pluvial or sewer flooding at site
SFRA Available:	Yes	Haringey Strategic Flood Risk Assessment (2013) and Surface Water Management Plan (2011)
Management Measures	Summary	Comment
Ground floor level above extreme flood levels:	Yes	Site is located in Flood Zone 1. Ground levels could experience depths of 0.3m to 2m and greater than 2m following reservoir failure however internal access maintained to first floor
Safe Access/Egress Route:	Yes	Site located in Flood Zone 1. Internal access maintained to first floor to allow emergency safe refuge on site in reservoir breach event
Flood Resilient Design:	Yes	Section 8 of this report
Site Drainage Plan:	N/A ¹	No drainage condition was attached to recent permission for new dwelling. The addition of a basement level should not have significant impact on previous drainage proposals.
Flood Warning & Evacuation Plan:	N/A ¹	Site located in Flood Zone 1. Internal access maintained to first floor to allow emergency safe refuge on site in reservoir breach event
Offsite Impacts	Summary	Comment
Displacement of floodwater:	None	Site is located in Flood Zone 1 and outside 1:100 year pluvial extent
Increase in surface run-off generation:	Negligible	No drainage condition was attached to recent permission for new dwelling. The addition of a basement level should not have significant impact on previous drainage proposals.
Impact on hydraulic performance of channels:	None	Development should not affect watercourses

Table 1 Summary of flood risks, impacts and proposed flood mitigation measures.

N/A¹ not required for this assessment; N/A² data not available.

2. Policy Compliance

- 2.1 The site is located within the EA modelled maximum flood extent following reservoir failure and therefore requires an FRA under the NPPF. Furthermore, the Haringey Strategic Flood Risk Assessment (SFRA, 2013) states that:

“Basement development within the RIM [Reservoir Inundation Model] outline should include an assessment of a breach in the reservoir that could affect the proposed development within their FRA. On the basis of the results from the FRA, consideration should be given to the flood risk from reservoir breach and the appropriate response (i.e. emergency plan or flood resistant design).”

- 2.2 As such, a Flood Risk Assessment is required in support of the planning application for the proposed development.

3. Development Description and Site Area

Proposed Development and Location

- 3.1 The proposed development is located at 31a Riverside Road, Haringey, London, N15 6DA (Figures 1 and 2).
- 3.2 The site is currently a brownfield site. It is understood that planning permission was recently approved for the construction of a 1 bed end terrace property at the site (Haringey Ref HGY/2015/1638). It is understood that the developer is now submitting a new application at the site to construct a 2 bed end of terrace dwelling with a basement level. As a result of the additional bedroom, the internal layout has changed slightly compared to the previously approved application. No bedrooms will be at basement level or ground floor.
- 3.3 Elevations on site vary between approximately 8.41mAOD and 8.94mAOD (2m LiDAR data). Analysis of topographic levels indicate that the site generally slopes to the east.

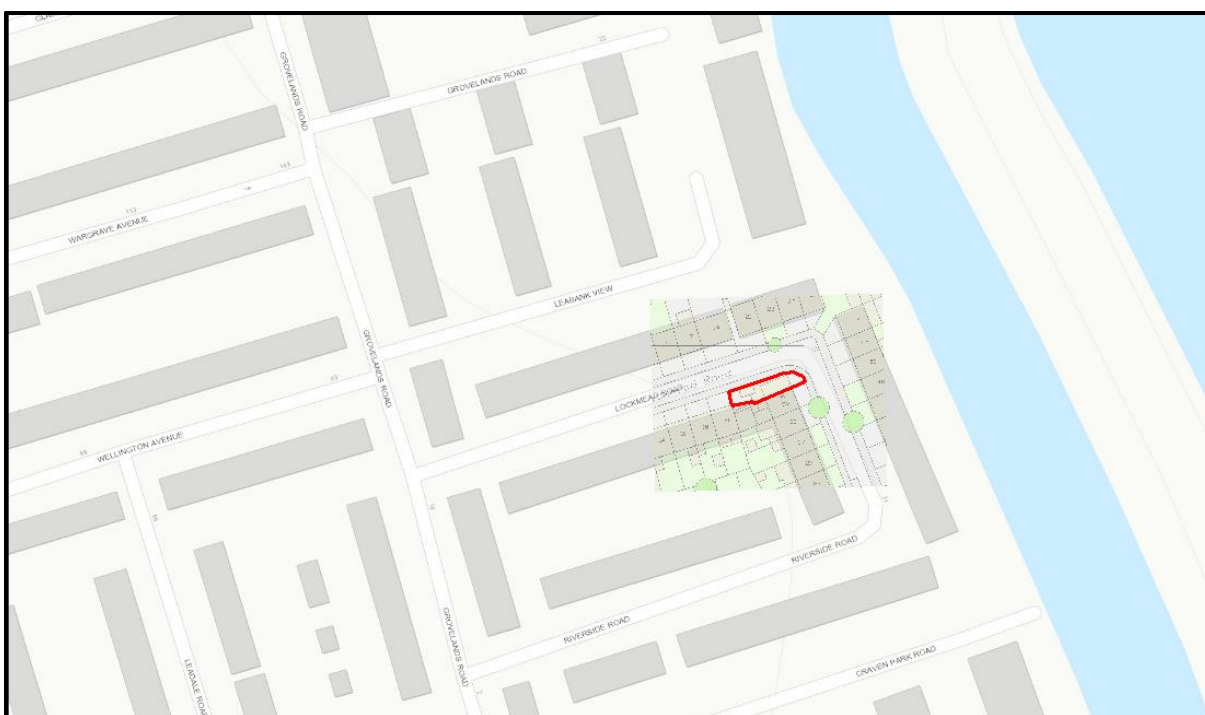


Figure 1 Location Map, identifying the location of the proposed development (Source: OS)

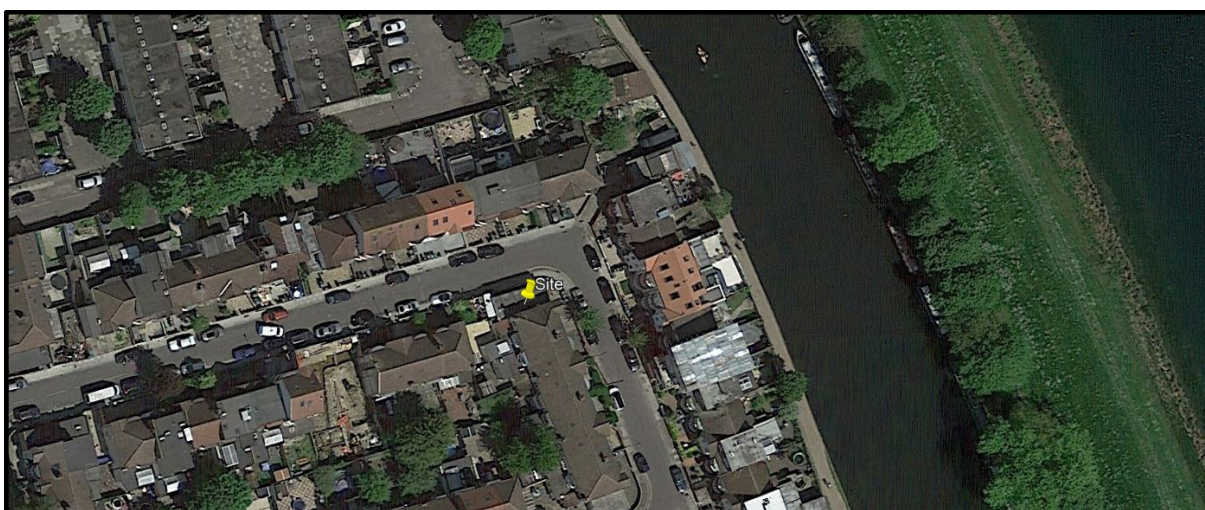


Figure 2 Aerial Map, identifying the location of the proposed development (Source: Google)

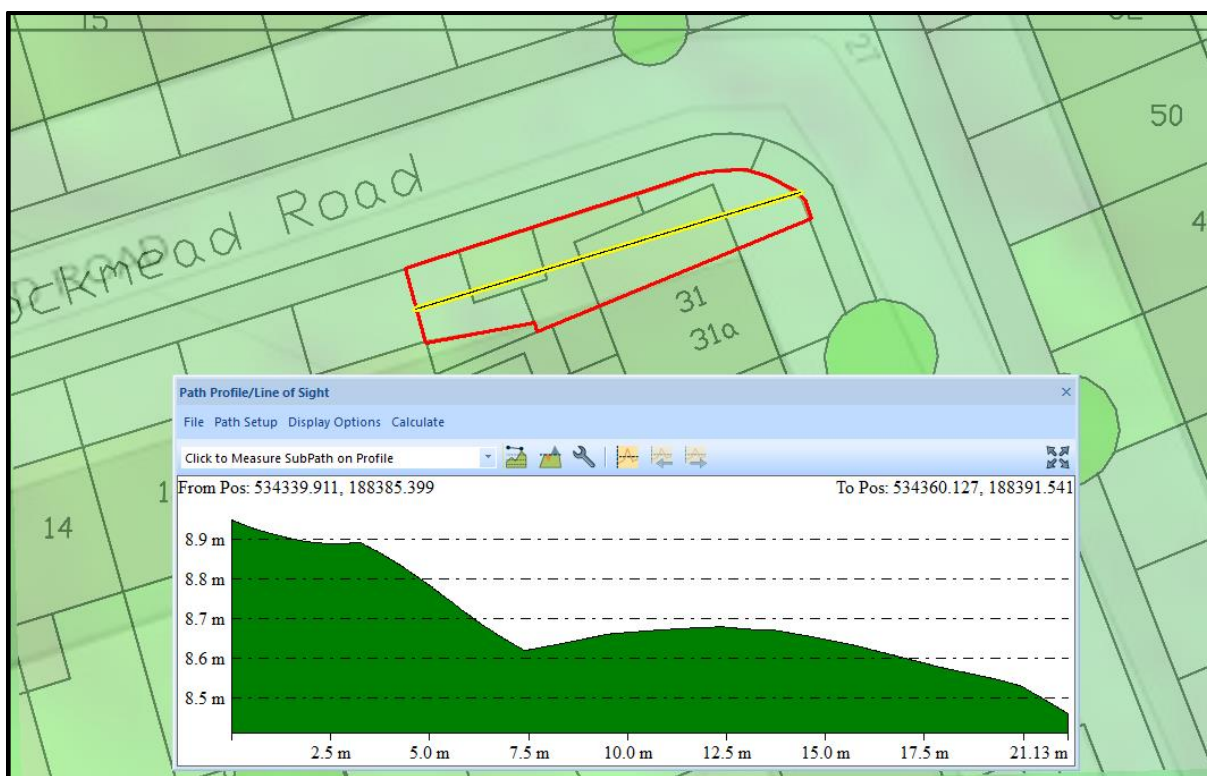


Figure 3 Topography (Source: 2m LiDAR data)

Vulnerability Classification

- 3.4 The EA Flood Map for Planning demonstrates that the proposed development lies within Flood Zone 1 with a low probability of less than 1 in 1,000 (0.1%) of river/ tidal flooding in any year.
- 3.5 Under the principles of NPPF the proposed development is 'Highly Vulnerable'.

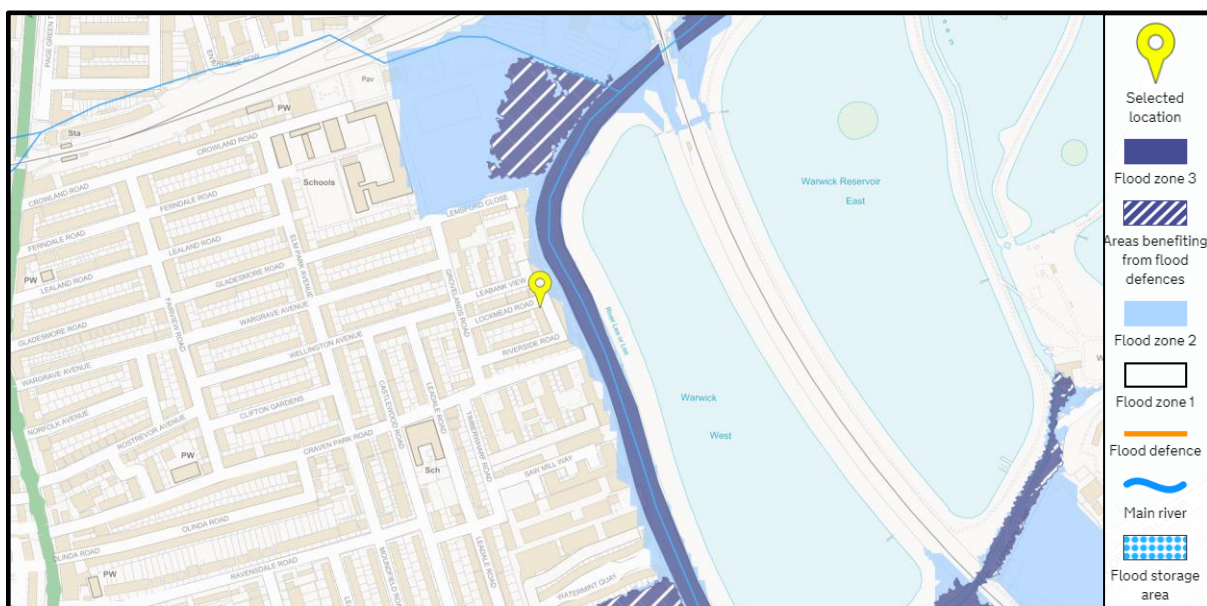


Figure 4 EA Flood Map for Planning

Geology

- 3.6 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site is London Clay (Source: BGS).
- 3.7 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the superficial deposits underlying the site are Alluvium comprising clay, silt, sand, and peat. This formation is a Secondary (undifferentiated) aquifer (Source: EA; Magic Map online resource). A Secondary (undifferentiated) aquifer is permeable, supporting water supplies at a local scale and may contribute to base flow of rivers and/or low permeability but with limited groundwater available in fissures or thin geological horizons.
- 3.8 This aquifer is considered to be a highly vulnerable secondary aquifer. Soils have little ability to attenuate pollutants and therefore pollutants can rapidly reach groundwater.
- 3.9 Source protection zones are defined around large potable groundwater abstraction sites, and indicate the risk of contamination from activities in the vicinity of the abstraction site. The site is within a Zone I - Inner Protection Zone. There is a predicted travel-time of 50 days for pollutants below the water table to reach the abstraction point.

4. Sequential Test/Exception Test

- 4.1 Under the NPPF, all new planning applications should undergo a *Sequential Test*. This test should be implemented by local planning authorities with a view to locating particularly vulnerable new developments (e.g. residential, hospitals, mobile homes etc.) outside of the floodplain.
- 4.2 The NPPF *Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table* is reproduced below;

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test Required	✓	✓
	Zone 3a	Exception Test Required	✓	✗	Exception Test Required	✓
	Zone 3b <i>Functional Floodplain</i>	Exception Test Required	✓	✗	✗	✗

Table 2 The Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table as specified by NPPF.
 Please note: ✓ means development is appropriate; ✗ means the development should not be permitted.

- 4.3 Using the principles of the Sequential Test outlined above, the proposed development is 'Highly Vulnerable'. The site is located within Flood Zone 1 (as defined by the EA) and is therefore sequentially located and also does not require the application of the Exception Test.

5. Site Flood Hazards

Sources of Flooding

- 5.1 The proposed development is located within Flood Zone 1 (low risk of flooding) and is considered to be 'Highly Vulnerable' according to NPPF guidelines. Table 3 summarises the potential sources of flooding to the site:

Source	Description
Fluvial	River Lea
Surface	Surrounding road network
Groundwater	N/A
Sewer	N/A

Table 3 Summary of flood sources.

Fluvial

- 5.2 The River Lea (EA Main River) is located approximately 35m to the east of the development site.
- 5.3 The site is located in Flood Zone 1 (low risk of flooding from fluvial sources).
- 5.4 The EA have provided recorded flood outlines for historic flood events within the vicinity of the site. The site is located outside of all recorded flood outlines for fluvial events as provided by the EA.
- 5.5 As such, the risk of flooding from fluvial sources could be considered **low**.

Surface Water (Pluvial)

- 5.6 The Environment Agency Flood Risk from Surface Water map (Figure 5) shows the proposed development to be within an area of 'Low' risk of flooding from surface water. The adjacent road network is at a 'Medium' risk of surface water flooding. Areas identified to be at 'Low' risk have a 0.1% to 1% annual risk of flooding from this source. Areas identified to be at 'Medium' risk have a 1% to 3.3% annual risk of flooding from this source.
- 5.7 The EA Surface Water Flood Depth Map for the High Risk Scenario (Figure 6) indicates that the proposed development is not affected in this event.
- 5.8 The EA Surface Water Flood Depth Map for the Medium Risk Scenario (Figure 7) indicates that the proposed development is not affected in this event. The adjacent road network could experience depths of less than 300mm in this event.
- 5.9 The EA Surface Water Flood Depth Map for the Low Risk Scenario (Figure 8) indicates that the proposed development may experience flood levels of less than 300mm in this event. Some small areas of ponding on the adjacent road network could experience depths of 300mm to 900mm. A Low Risk Scenario has a 0.1% to 1% annual risk of occurring.

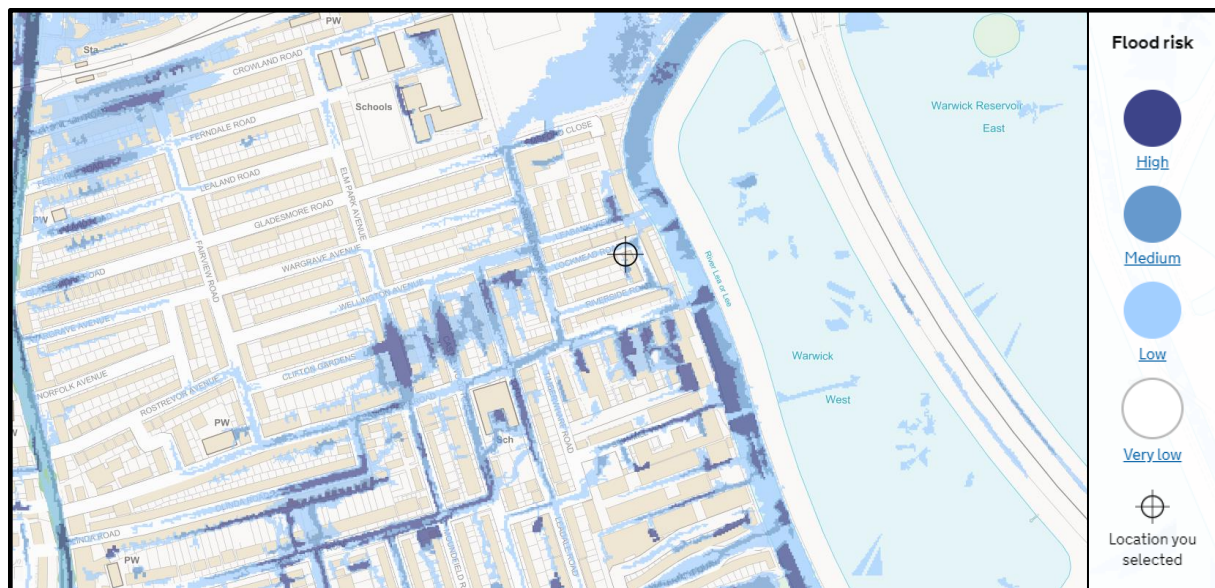


Figure 5 EA Surface Water Flood Risk Map. (Source: EA)

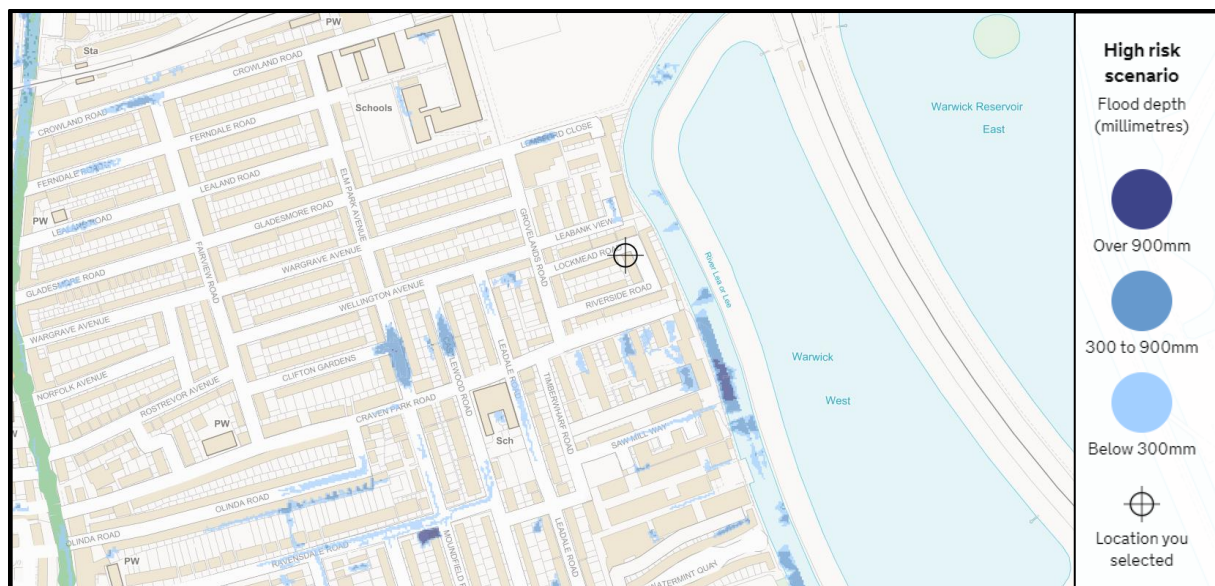


Figure 6 Surface Water Depths for a High Risk Scenario. (Source: EA)

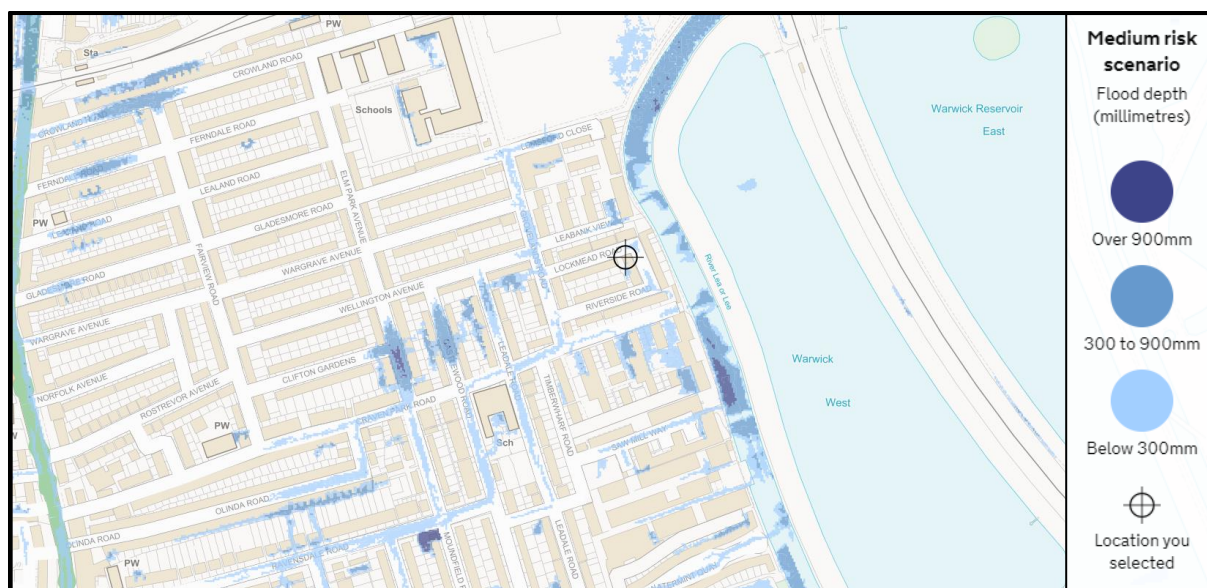


Figure 7 Surface Water Depths for a Medium Risk Scenario. (Source: EA)

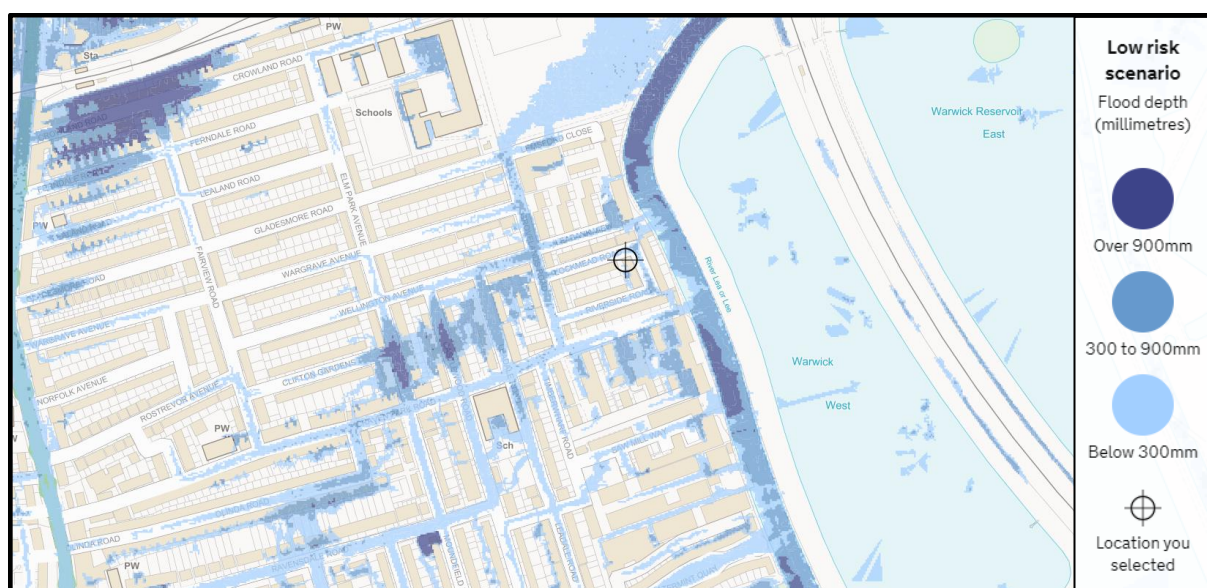


Figure 8 Surface Water Depths for a Low Risk Scenario. (Source: EA)

- 5.10 A review of the EA Risk of Flooding from Surface Water (RoFSW) dataset indicates that the proposed development site would mostly remain unaffected for the 1:1000 year event, with the northern boundary experiencing depths of up to 0.15m in this event (Figure 9). It is noted that this could partially affect the proposed lightwell. As such, it is recommended that a perimeter wall be constructed around the lightwell to a height of 0.3m mitigate surface water flooding of these areas in the extreme 1:1000 year event.
- 5.11 The proposed development site is not shown to be located within the vicinity of a recorded surface water flooding incident based on Figure 5 of the Haringey SWMP (2011) – see Appendix II of this report.
- 5.12 As such, the risk of flooding from surface water could be considered **low**.

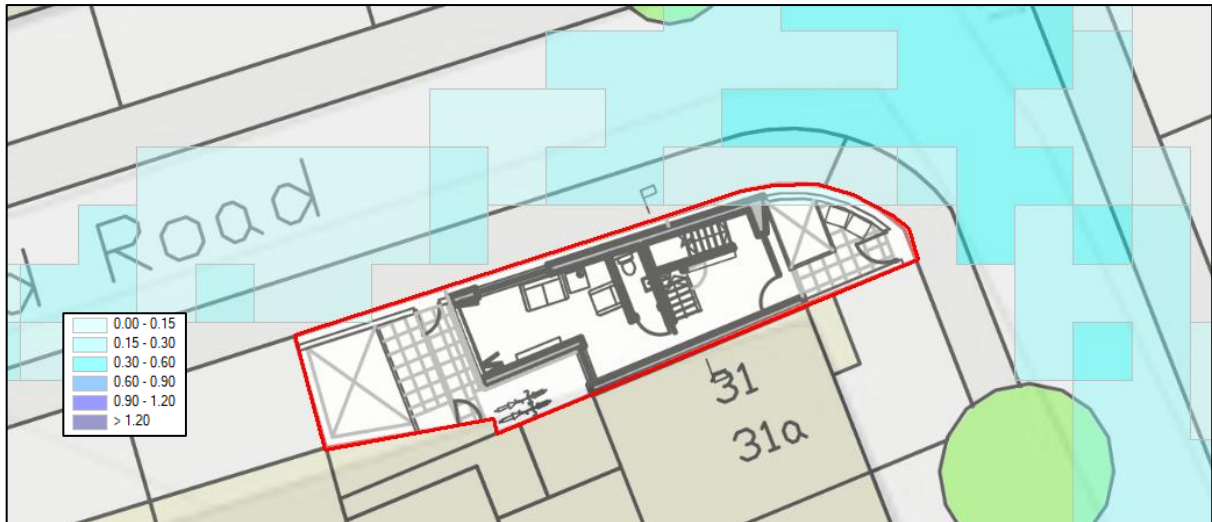


Figure 9 Risk of Flooding from Surface Water (RoFSW) 1:1000 year depths (Sources: EA, OS)

Groundwater

- 5.13 The proposed development site is not located within an area with increased potential for elevated groundwater according to Figure 10 of the Haringey SWMP (2011) as shown here in Figure 10 below.
- 5.14 Furthermore, Figure 10 also indicates that the nearest recorded incident of groundwater flooding was located approximately 1.2km south of the proposed development site, in Hackney. The closest recorded incidents of groundwater flooding in Haringey were located approximately 2.2km northwest of the proposed development site.

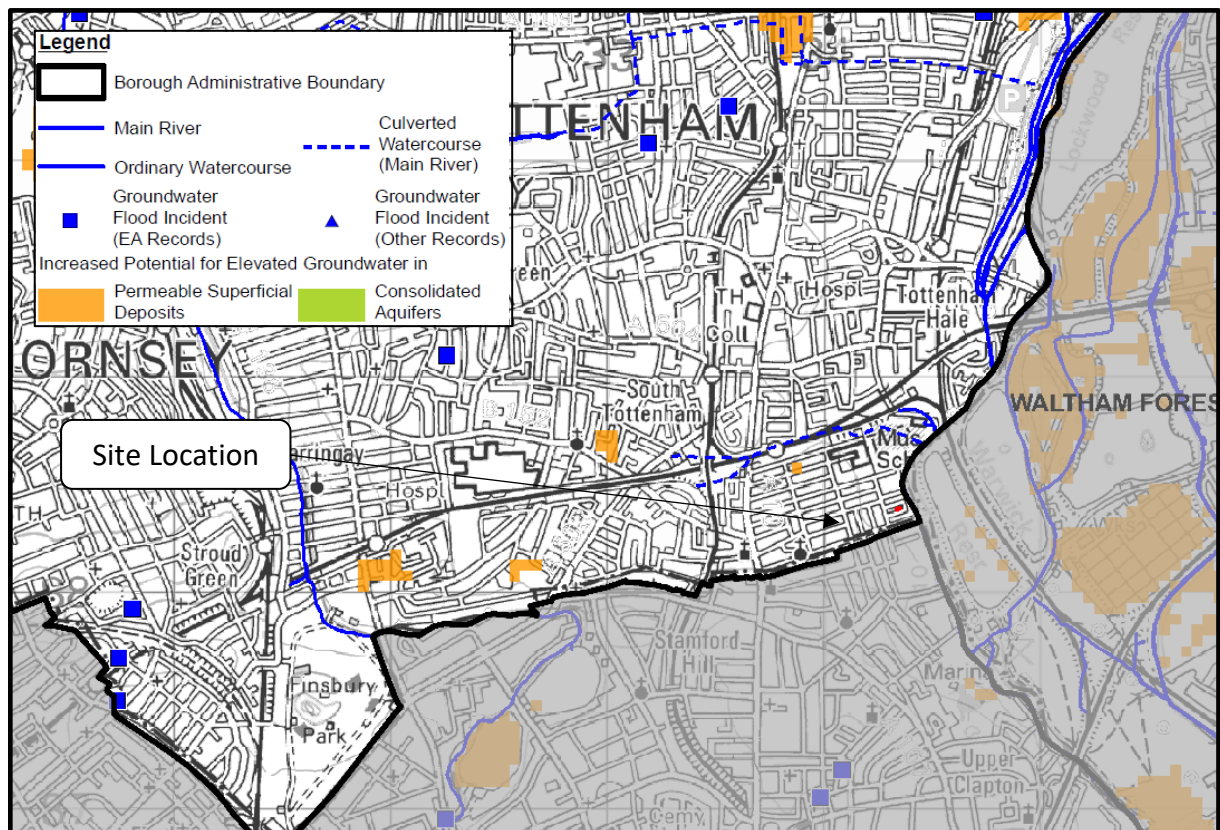


Figure 10 Areas of increased potential for elevated groundwater and recorded groundwater flooding incidents (Source: Haringey SWMP, 2011)

- 5.15 As such, the risk of flooding from groundwater sources could be considered **relatively low**.
- 5.16 As per the requirements of Haringey, a Basement Impact Assessment (BIA) has been produced by Ammro Consulting (Ref 18.0282). It is understood that Haringey Council have asked that this be updated. The client has advised that Ammro Consulting are updating the BIA.

Sewer

- 5.17 The proposed development site is located in a postcode area (N15 6) that had not experienced any sewer flooding incidents (that had been recorded as of June 2010) based on Figure 9 of the Haringey SWMP (Figure 11 in this report).
- 5.18 However, it is noted that the nearby N15 4 postal area had experienced 21-50 incidents, while the nearby N16 5 and N16 6 postal areas (in Hackney) had experienced 101 and between 51 and 100 incidents, respectively, with a localised incident recorded in the latter, approximately 230m southwest of the proposed development site.

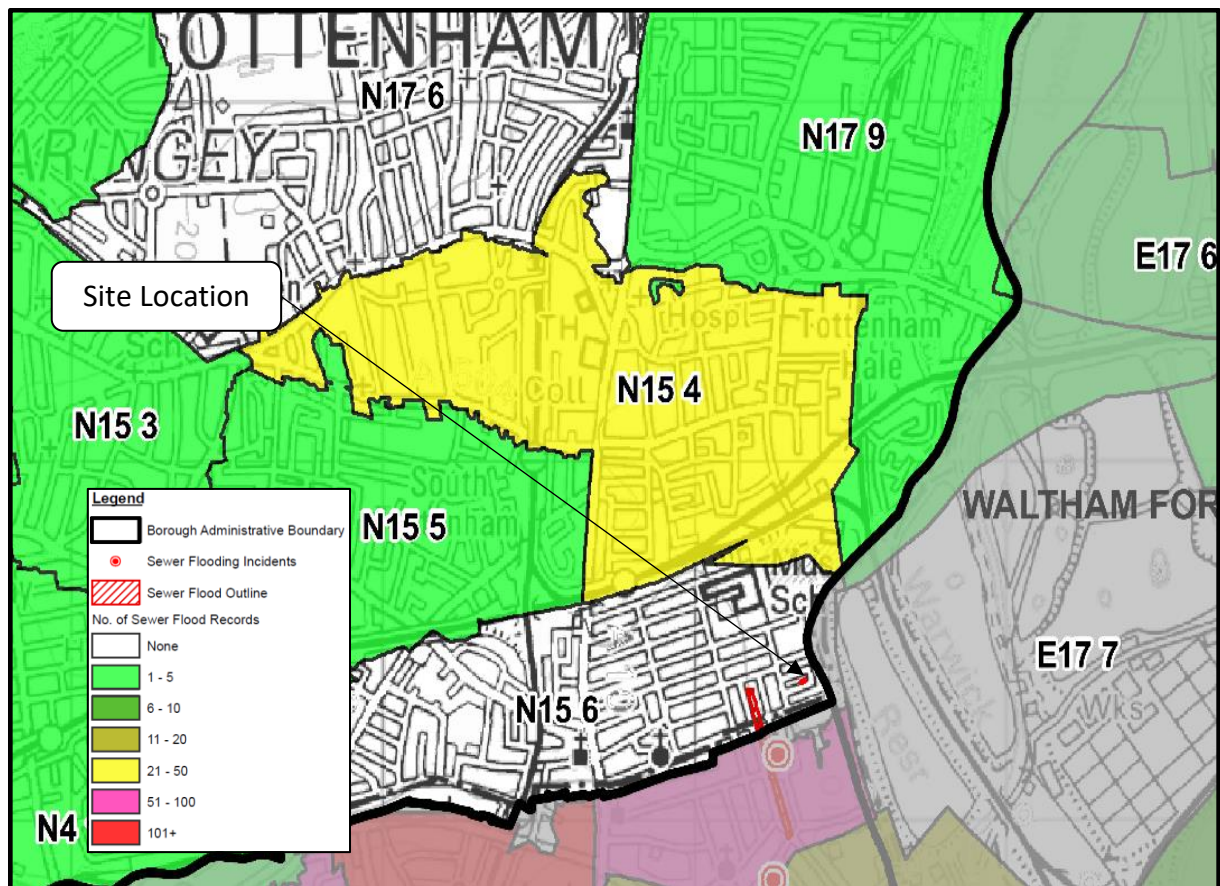


Figure 11 Recorded Incidents of Sewer Flooding. (Source: Haringey SWMP, based on Thames Water DG5 Register)

- 5.19 Nevertheless, no records could be found in the SWMP to indicate that the proposed development site itself had flooded from sewer sources, previously.
- 5.20 As such, the risk of flooding from this source could be considered **relatively low to moderate**.
- 5.21 Any new sewer connection from the site should be agreed with the local sewer provider and fitted with non-return valves to mitigate the risk of flooding from sewer sources.

Surface Water Drainage Strategy

- 5.22 The site is currently a brownfield site. It is understood that planning permission was recently approved for the construction of a 1 bed end terrace property at the site (Haringey Ref HGY/2015/1638). It is understood that the developer is now submitting a new application at the site to construct a 2 bed end terrace dwelling with a basement level. As a result of the additional bedroom, the internal layout has changed slightly compared to the previously approved application. No bedrooms will be at basement level or ground floor, however.
- 5.23 The addition of a basement level with lightwells should not have a significant impact on the surface water drainage regime of the site compared to that previously approved.
- 5.24 From a review of the Haringey planning portal, no surface water drainage conditions were attached to the previous planning permission for the new dwelling at the site. As such, and given that the basement level should not have a significant impact on the runoff regime of the site compared to that previously approved, the proposal could discharge via the previously proposed/ approved surface water drainage strategy.

Records of Historical Flooding

- 5.25 The site is located outside of the EA recorded flood outline from the 1947 fluvial event caused by channel capacity exceedance of the River Lea (Figure 12).
- 5.26 Furthermore, the site is not located within close proximity of any recorded pluvial and groundwater flooding incidents as mapped in the Haringey SWMP (Appendix II of this report).
- 5.27 As of June 2010, the proposed development site is located in a postcode area (N15 6) that had not experienced any sewer flooding incidents (that had been recorded) based on Figure 9 of the Haringey SWMP (Figure 11 in this report).
- 5.28 However, it is noted that the nearby N15 4 postal area had experienced 21-50 incidents, while the nearby N16 5 and N16 6 postal areas (in Hackney) had experienced 101 and between 51 and 100 incidents, respectively, with a localised incident recorded in the latter, approximately 230m southwest of the proposed development site.

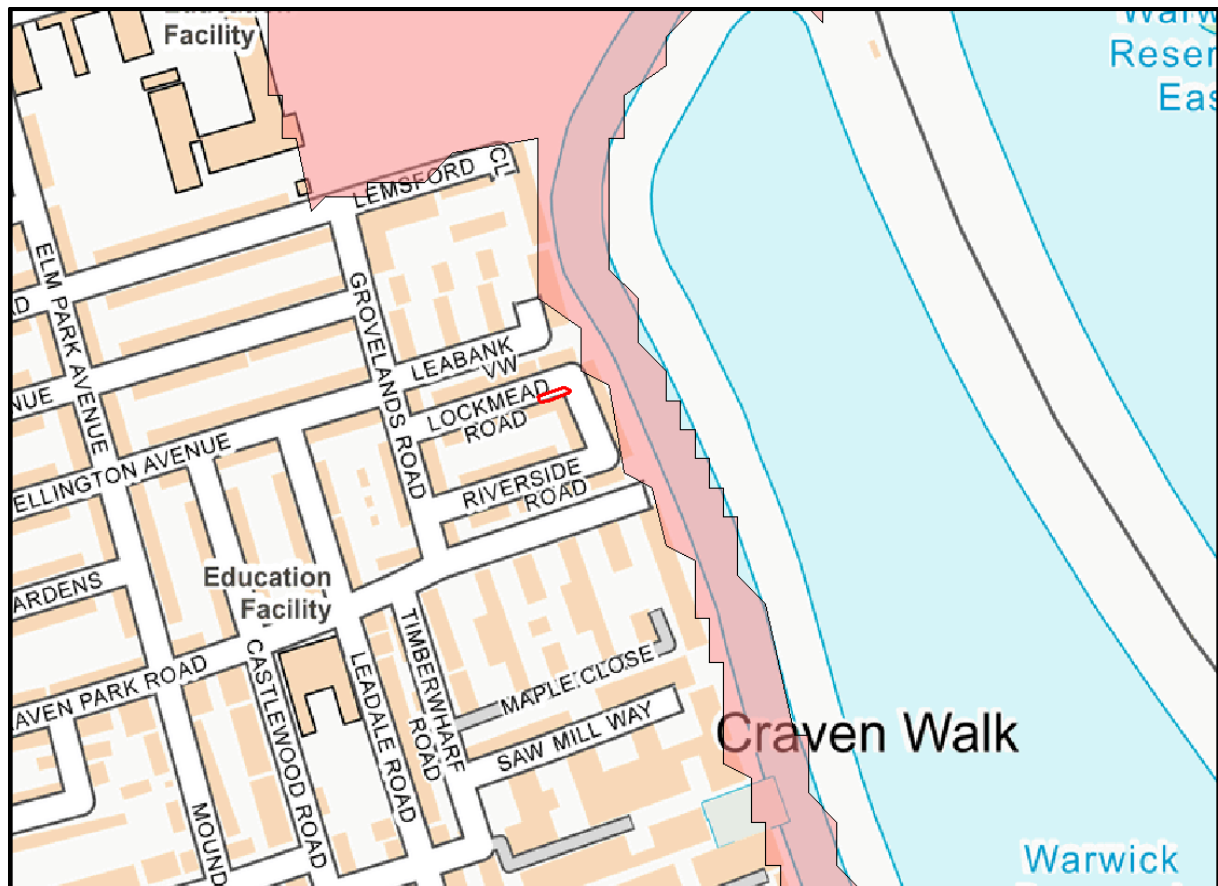


Figure 12 Historic Fluvial Flooding shown as pink outline (Sources: EA, OS)

6. Probability of Flooding

Flood Zones

- 6.1 According to the EA Flood Map for Planning, the site is located within Flood Zone 1 (low risk of flooding).
- 6.2 The EA Flood Map for Planning has been produced in part using a relatively coarse, national scale flood modelling strategy, and in part by detailed modelling. For reference, the definition of the NPPF flood risk zones is included below.

Zone	Description
1	Low Probability. This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).
2	Medium Probability. This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% – 0.1%) in any year.
3a	High Probability. This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
3b	The Functional Floodplain. This zone comprises land where water has to flow or be stored in times of flood. SFRA's should identify this Flood Zone (land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme (0.1%) flood, or at another probability to be agreed between the LPA and the EA, including water conveyance routes).

Table 4 Definition of the NPPF Flood Zones. (Source: EA)

Climate Change on Site

- 6.3 In February 2016 the EA updated their climate change allowance guidance. Based on this guidance revision, Highly Vulnerable developments in Flood Zone 1 should consider a central allowance for climate which equates to a 25% allowance in the Thames basin district.
- 6.4 No site-specific Product 4 data had been provided by the EA at the time of writing.
- 6.5 However, Ambiental have been previously provided with Products 5, 6 and 7 from the River Lee (Lea) 2014 modelling study. This product 6 data included modelled flood extents for the 1:100 year +CC (20%) defended event. This is provided in Figure 13 below. It can be seen that due to the presence of the defences along the River Lea, the 1:100 year +CC (20%) would remain in-channel and thus the site would remain unaffected.
- 6.6 It is acknowledged that this does not indicate the 1:100 year +CC (25%) event as required by the latest guidance. However, given the distance and elevation distance between the site and the modelled 1:100 year +CC (20%) extent, even with a 25% allowance on the 1:100 year event the site may still remain unaffected.



Figure 13 EA modelled 1:100 year +CC (20%) flood extent shown as green outline (Sources: EA, OS)

7. Residual Risks

Identification of Residual Risks

7.1 Residual risks are those remaining after applying the sequential approach to the location of development and taking mitigating actions. Examples of residual flood risk include:

- the failure of flood management infrastructure such as a breach of a raised flood defence, blockage of a surface water conveyance system, overtopping of an upstream storage area, or failure of a pumped drainage system;
- failure of a reservoir;
- a severe flood event that exceeds a flood management design standard, such as a flood that overtops a raised flood defence, or an intense rainfall event which the drainage system cannot cope with.

Defence Breach

7.2 The proposed development site is located in Flood Zone 1 and is not located in an area benefitting from the presence of defences according to the EA Flood Map for Planning.

7.3 As such, the residual risk of flooding from defence breach could be considered negligible.

Reservoir Failure

7.4 The EA Risk from Reservoir Map demonstrates the site to be in an area with the potential of reservoir flooding. It notes that the proposed development site is at risk of flooding from failure of the following reservoirs:

- William Girling – Enfield
- West Warwick – Waltham Forest
- Lockwood – Waltham Forest
- King George V – Enfield
- East Warwick – Waltham Forest

7.5 All of the above reservoirs are owned by Thames Water Ltd.

7.6 In the unlikely event that a reservoir dam fails, a large volume of water would escape at once with little or no warning. The EA modelling predicts that floodwater on site could be between 0.3m and 2m deep, and greater than 2m deep in places (Figure 14).

7.7 According to the EA, there has been no loss of life in the UK from reservoir flooding since 1925. All large reservoirs must be inspected and supervised by reservoir panel engineers as detailed by the enforcement authority for the Reservoirs Act 1975 in England. The EA are responsible to ensure that reservoirs are inspected regularly and to ensure that essential safety work is carried out. 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.

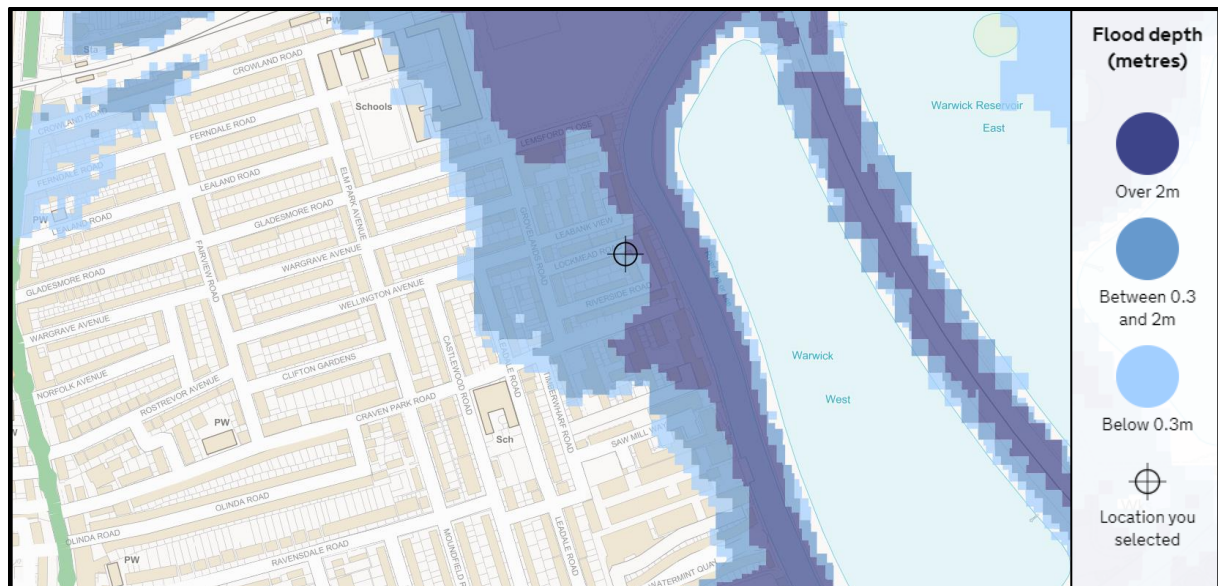


Figure 14 Flood Risk from Reservoirs (Source: EA)

7.8 The Haringey SFRA does state the following with regard to basements in areas of mapped flood risk:

“Basement dwellings may be feasible with the proviso that there is internal access to an upper ground floor level and no sleeping accommodation is located within the basement level.”

7.9 Plans provided by the client indicate that there will be internal access from the proposed basement (which will be used as a kitchen, dining room, toilet and study) to the upper floors of the proposed dwelling. As such, in the event of failure of the nearby reservoirs, emergency safe refuge could be sought on site by using the internal access to reach the first floor.

Drainage Exceedance

7.10 In the event of drainage exceedance, overland flows would be dictated by external topography. Where possible, external levels should be designed to fall away from ground floor thresholds and basement lightwells to mitigate against overland flows in exceedance events.

8. Flood Risk Management Measures

Flood Risks

- 8.1 The site is currently a brownfield site. It is understood that planning permission was recently approved for the construction of a 1 bed end terrace property at the site (Haringey Ref HGY/2015/1638). It is understood that the developer is now submitting a new application at the site to construct a 2 bed end terrace dwelling with a basement level. As a result of the additional bedroom, the internal layout has changed slightly compared to the previously approved application. No bedrooms will be at basement or ground floor level.
- 8.2 The proposed development site is located in Flood Zone 1 (low risk from fluvial/ tidal sources) based on the EA Flood Map for Planning. The site is also at a 'low' risk of surface water flooding as defined by the EA online maps.
- 8.3 As such, the dominant source of flooding to the proposed development site is residual risk from reservoir failure. The EA online reservoir flood modelling predicts that floodwater on site could be between 0.3m and 2m deep, and greater than 2m deep in places following a failure in the nearby reservoirs.
- 8.4 The Haringey SFRA does however state the following with regard to basements in areas of mapped flood risk:
- "Basement dwellings may be feasible with the proviso that there is internal access to an upper ground floor level and no sleeping accommodation is located within the basement level."*
- 8.5 Plans provided by the client indicate that there will be internal access from the proposed basement (which will be used as a kitchen, dining room, toilet and study) to the upper floors of the proposed dwelling. As such, in the event of failure of the nearby reservoirs, emergency safe refuge could be sought on site by using the internal access to reach the first floor.
- 8.6 As such, the following mitigation measures are recommended:
- No bedrooms to be located at the basement or ground floor;
 - Internal access to be maintained from the basement floor to the first floor;
 - Basement to be of flood proof construction to mitigate against the ingress of groundwater;
 - Perimeter wall around lightwells to a height of 0.2m where possible to offer mitigation against pluvial floodwater entering the lightwell areas.

Flood Warning Service

- 8.7 Given that the site resides within Flood Zone 1, the site is not located within an EA Flood Warning or Alert Area. As such, it is the responsibility of the residents to monitor weather warnings and ensure they are aware and prepared against the potential risks of flooding.
- 8.8 During periods of bad weather, site users should monitor local weather reports and sign up for the Met Office UK weather warnings. Warnings can be monitored through an Apple/Android app, Twitter or directly via emails. Further information can be found at <https://www.metoffice.gov.uk/>.

Flood Evacuation Plan

8.9 The EA Risk of Flooding from Reservoirs mapping indicates that following a breach of the nearby reservoirs, the site could experience depths of between 0.3m and 2m, and greater than 2m in places. These depths are based on ground levels and as a result, depths could be greater in the proposed basement.

8.10 The Haringey SFRA does however state the following with regard to basements in areas of mapped flood risk:

“Basement dwellings may be feasible with the proviso that there is internal access to an upper ground floor level and no sleeping accommodation is located within the basement level.”

8.11 Plans provided by the client indicate that there will be internal access from the proposed basement (which will be used as a kitchen, dining room, toilet and study) to the upper floors of the proposed dwelling. As such, in the event of failure of the nearby reservoirs, emergency safe refuge could be sought on site by using the internal access to reach the first floor.

9. Off Site Impacts

Flood Water Displacement

- 9.1 The proposed development site is located in Flood Zone 1 according to the EA Flood Map for Planning. Furthermore, the site is shown to be outside the 1:100 year pluvial flood extent as modelled by the EA.
- 9.2 As such, there should be no increase in flood risk elsewhere as a result of displacement.

Generation of Runoff

- 9.3 The site is currently a brownfield site. It is understood that planning permission was recently approved for the construction of a 1 bed end terrace property at the site (Haringey Ref HGY/2015/1638). It is understood that the developer is now submitting a new application at the site to construct a 2 bed end terrace dwelling with a basement level. As a result of the additional bedroom, the internal layout has changed slightly compared to the previously approved application. No bedrooms will be at basement level or ground floor, however.
- 9.4 The addition of a basement level with lightwells should not have a significant impact on the surface water drainage regime of the site compared to that previously approved.
- 9.5 From a review of the Haringey planning portal, no surface water drainage conditions were attached to the previous planning permission for the new dwelling at the site. As such, and given that the basement level should not have a significant impact on the runoff regime of the site compared to that previously approved, the proposal could discharge via the previously proposed/ approved strategy.

10. Conclusion

10.1 Ambiental Environmental Assessment has been appointed by Mr Gluck to undertake a National Planning Policy Framework (NPPF) compliant Flood Risk Assessment (FRA) for the proposed development at 31a Riverside Road, Haringey, London, N15 6DA.

10.2 The site is currently a brownfield site. It is understood that planning permission was recently approved for the construction of a 1 bed end terrace property at the site (Haringey Ref HGY/2015/1638). It is understood that the developer is now submitting a new application at the site to construct a 2 bed end terrace dwelling with a basement level. As a result of the additional bedroom, the internal layout has changed slightly compared to the previously approved application. No bedrooms will be at basement level or ground floor, however.

10.3 With reference to the Environment Agency (EA) Flood Map for Planning, the proposed development is located within Flood Zone 1. However, the site is located within the EA modelled maximum flood extent following reservoir failure and therefore requires an FRA under the NPPF. Furthermore, the Haringey Strategic Flood Risk Assessment (SFRA, 2013) states that:

“Basement development within the RIM [Reservoir Inundation Model] outline should include an assessment of a breach in the reservoir that could affect the proposed development within their FRA. On the basis of the results from the FRA, consideration should be given to the flood risk from reservoir breach and the appropriate response (i.e. emergency plan or flood resistant design).”

10.4 The EA Risk of Flooding from Reservoirs mapping indicates that following a breach of the nearby reservoirs, the site could experience depths of between 0.3m and 2m, and greater than 2m in places. These depths are based on ground levels and as a result, depths could be greater in the proposed basement.

10.5 The Haringey SFRA does however state the following with regard to basements in areas of mapped flood risk:

“Basement dwellings may be feasible with the proviso that there is internal access to an upper ground floor level and no sleeping accommodation is located within the basement level.”

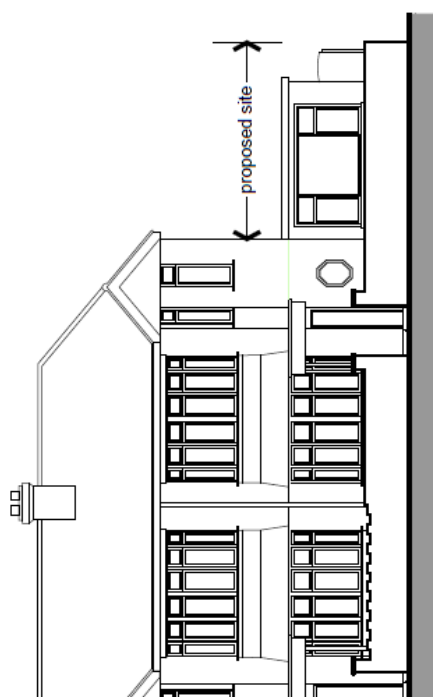
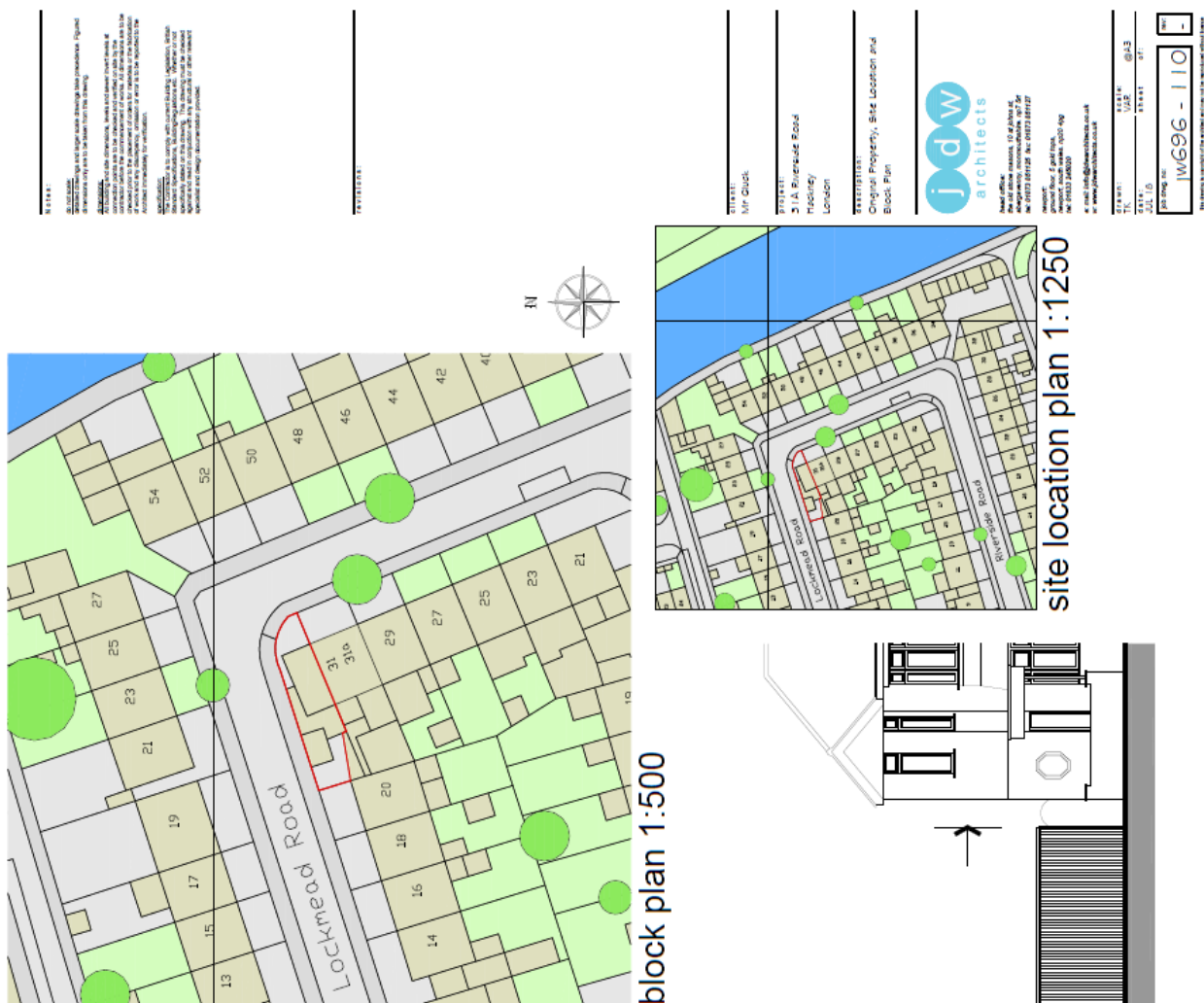
10.6 Plans provided by the client indicate that there will be internal access from the proposed basement (which will be used as a kitchen, dining room, toilet and study) to the upper floors of the proposed dwelling. As such, in the event of failure of the nearby reservoirs, emergency safe refuge could be sought on site by using the internal access to reach the first floor.

10.7 As such, and given that:

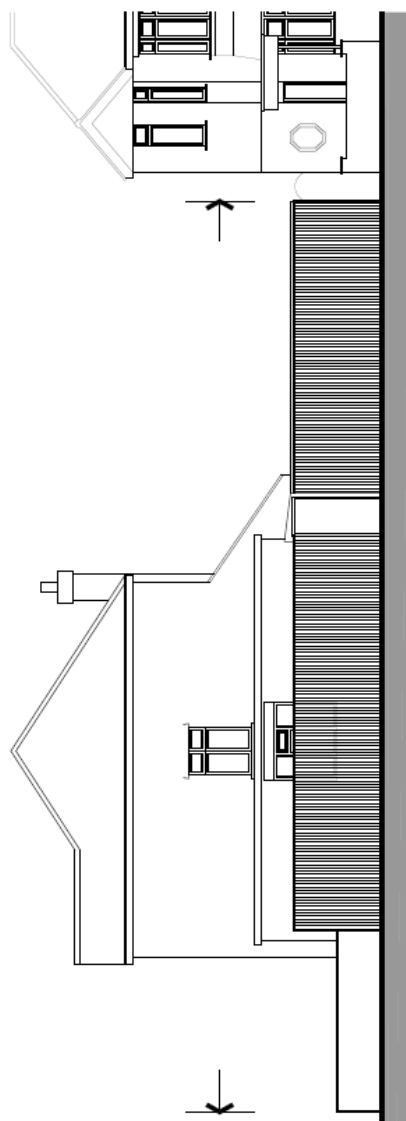
- Planning permission has already been granted for the construction of the end terrace dwelling, and the latest application seeks to add a basement level and additional bedroom to the proposed development;
- No bedrooms will be located at basement or ground floor;
- Internal access will be maintained from the basement to the first floor to allow emergency refuge a reservoir breach event,

following the guidelines contained within the NPPF, the proposed development could be considered suitable assuming appropriate mitigation (including adequate warning procedures) can be maintained for the lifetime of the development.

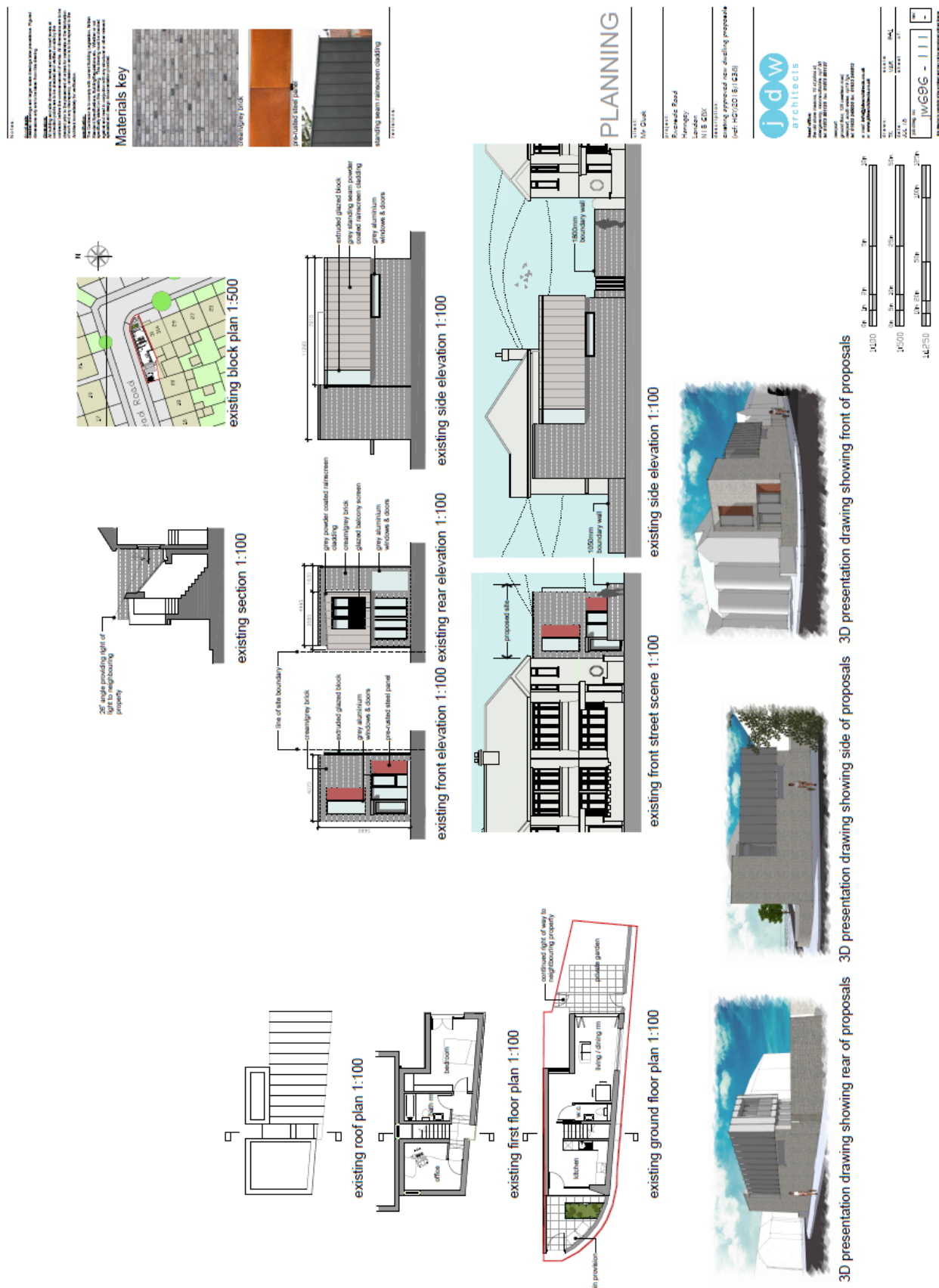
Appendix I - Site Plans

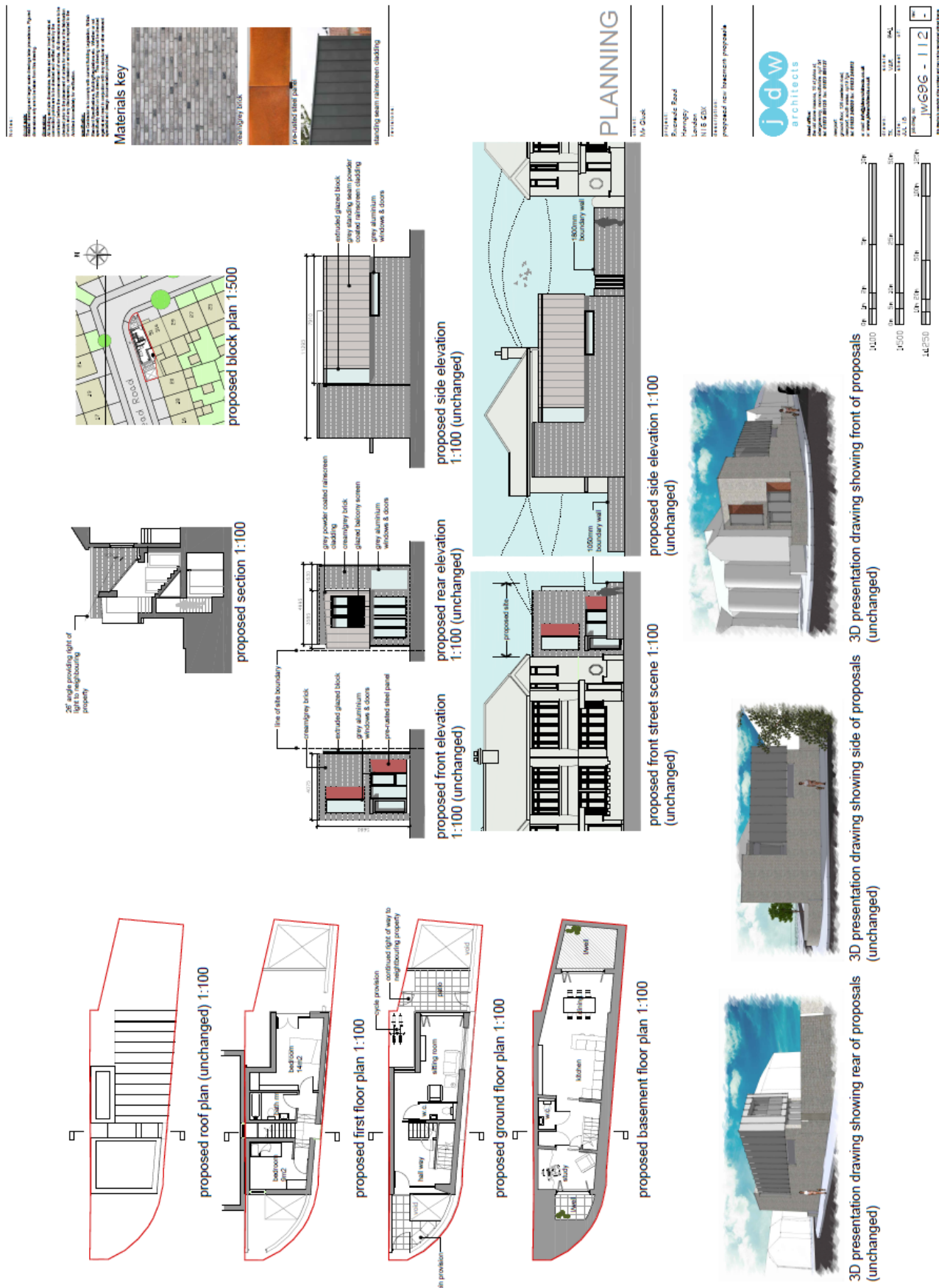


historic front street scene 1:100



historic side elevation 1:100





Appendix II - Supplementary Information

