



FloodSmart

Site address	Edmanson's Close Tottenham N17 6XD
Site coordinates	533522, 190528
Report prepared for	Drapers' Almshouse Charity
Report reference	73492.01.01R1
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Report reviewer	Alan White Principal Consultant David South Senior Project Consultant

1. Executive summary

A review has been undertaken of national environmental data sets to assess the flood risk to the Site from all sources of flooding in accordance with The National Planning Policy Framework (NPPF) (2021) and National Planning Practice Guidance (NPPG) (2014). A site-specific flood risk assessment, to assess the flood risk to and from the development site, is provided within this concise interpretative report written by an experienced GeoSmart consultant. Baseline flood risk and residual risks that remain after the flood risk management and mitigation measures are implemented are summarised in the table below.

Site analysis

Source of Flood Risk	Baseline	After Mitigation
River (fluvial) and Sea (coastal/tidal)	Negligible	Negligible
Surface water (pluvial) flooding	Very Low to Medium*	Very Low
Groundwater flooding	Negligible	Negligible
Other flood risk factors present	No	N/A
Is any other further work recommended?	Yes	Yes (see below)

N/A = mitigation not required

*Medium flood risk associated with access road on the Site and with Very Low risk associated with the areas proposed for development

The site currently comprises almshouses and a 1970's block arranged as 61 residential units, together with an ancillary chapel and laundry building set within extensive grounds. The proposed development involves reworking the existing almshouses to provide 28 houses with six extended, demolitions of the 1970's block and new build accommodation comprising one new two storey house, two new two storey corner pavilions proving four apartments and a new build three storey block providing 16 apartments.

The flood risks from all sources have been assessed as part of this report and are as follows:

- According to the Environment Agency's (EA) Flood Map for Planning Purposes, the Site is located within a fluvial Flood Zone 1 (Low Probability).
- According to the EA's Risk of Flooding from Rivers and Sea (RoFRS) map, which considers the type, condition and crest height of flood defences, the Site has a Negligible risk of flooding from Rivers and the Sea.

- According to the EA's Risk of Flooding from Surface Water (pluvial) flood mapping, the areas proposed for development on the Site has a very low risk of pluvial flooding. Medium risk of pluvial flooding is associated with the access road on the Site.
- Groundwater Flood Risk screening data indicates there is a Negligible risk of groundwater flooding at the surface in the vicinity of the Site during a 1 in 100 year event.
- The risk of flooding from artificial (man-made) sources such as reservoirs, sewers and canals has been assessed:
 - The EA's Risk of Flooding from Reservoir map confirms the Site is not at risk of reservoir flooding.
 - Ordnance Survey (OS) data confirms there are no canals near to the Site.
 - A sewer flooding history search was undertaken using the Surface Water Management Plan (Haringey Council, 2011). This confirms no recorded incidences of sewer flooding at or within the vicinity of the Site.

The risk of flooding from artificial sources is considered to be negligible.

- The risk to the development has been assessed over its expected 100 year lifetime, including appropriate allowances for the impacts of climate change. More extreme weather events could increase the risk to the site from increased potential for surface water flooding. Site specific assessment indicates risk to the site will not increase significantly and appropriate mitigation measures are proposed.

In accordance with paragraphs 157, 164 and footnote 51 of the NPPF (2021), as the development proposals are comprised of additional buildings within Flood Zone 1 and the Site has not been allocated within the Councils Local Plan, the Sequential Test is not required.

Recommendations / Next steps

Recommendations for mitigation are provided below, based upon the proposed development and the flood risk identified at the Site:

- The regular maintenance of any drains and culverts surrounding/on the Site should be undertaken to reduce the flood risk.
- A surface water drainage strategy has been prepared separately (ref: 73492.02.01R1) to ensure surface water runoff can be managed effectively over the lifetime of the proposed development.

GeoSmart recommend the mitigation measures discussed within this report are considered as part of the proposed development where possible and evidence of this is provided to the Local Planning Authority as part of the planning application.

2. Introduction

Background and purpose

A site-specific flood risk assessment has been undertaken, to assess the flood risk to and from the development site. This assessment has been undertaken by firstly compiling information concerning the Site and the surrounding area. The information gathered was then used to construct a 'conceptual site model', including an understanding of the appropriateness of the development as defined in the NPPF (2021) and the source(s) of any flood risk present. Finally, a preliminary assessment of the steps that can be taken to manage any flood risk to the development was undertaken.

This report has been prepared with reference to the NPPF (2021) and NPPG (2014).

"The National Planning Policy Framework set out the Government's planning policies for England and how these are expected to be applied" (NPPF, 2021).

The NPPF (2021) and NPPG (2014) promote a sequential, risk based approach to the location of development. This also applies to locating a development within a Site which has a variable risk of flooding.

"This general approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. The aim should be to keep development out of medium and high risk flood areas (Flood Zones 2 and 3) and other areas affected by other sources of flooding where possible" (NPPG, 2014).

The purpose of this report is to provide clear and pragmatic advice regarding the nature and potential significance of flood hazards which may be present at the Site.

Report scope

In accordance with the requirements set out within NPPG 2014 (Paragraph: 030 Reference ID: 7-030-20140306), a thorough review of a commercially available flood risk report and EA supplied data indicating potential sources of flood risk to the Site from rivers and coastal sources, surface run-off (pluvial), groundwater and reservoirs, including historical flood information and modelled flood extent. Appropriate measures are recommended to manage and mitigate the flood risk to the property.

Information obtained from the EA and a review of the Haringey Council Strategic Flood Risk Assessment (SFRA) (JBA Consulting, 2015) and the Surface Water Management Plan (Haringey Council, 2011) are used to ascertain local flooding issues and, where appropriate, identify information to support a Sequential and/or Exception test required as part of the NPPF (2021).

The existing and future flood risks to and from the Site from all flood sources is assessed in line with current best practice using the best available data. The risk to the development has been assessed over its expected lifetime, including appropriate allowances for the impacts of climate change. Residual risks that remain after the flood risk management and mitigation measures are implemented, are considered with an explanation of how these risks can be managed to keep the users of the development safe over its lifetime.

An indication of whether the site will potentially increase flood risk elsewhere is provided, including where the proposed development increases the building footprint at the Site. A drainage strategy to control runoff can be commissioned separately if identified as a requirement within this report.

Report limitations

It is noted that the findings presented in this report are based on a desk study of information supplied by third parties. Whilst we assume that all information is representative of past and present conditions, we can offer no guarantee as to its validity and a proportionate programme of site investigations would be required to fully verify these findings.

The basemap used is the OS Street View 1:10,000 scale, however the Site boundary has been drawn using BlueSky aerial imagery to ensure the correct extent and proportion of the Site is analysed.

This report excludes consideration of potential hazards arising from any activities at the Site other than normal use and occupancy for the intended land uses. Hazards associated with any other activities have not been assessed and must be subject to a specific risk assessment by the parties responsible for those activities.

Datasets

The following table shows the sources of information that have been consulted as part of this report:

Table 1: Datasets consulted to obtain confirmation of sources of flooding and risk

Source of flooding	Datasets consulted			
	Commercial Flood Maps (Appendix B)	SFRA	Environment Agency	OS Data
Historical	X	X	X	
Fluvial/tidal	X	X	X	
Surface water (pluvial)	X	X	X	
Groundwater	X	X		
Sewer		X		
Culvert/bridges		X		X
Reservoir		X	X	

*The SFRA and local guidance has been used to inform this report as referenced in Section 6.

3. Site analysis



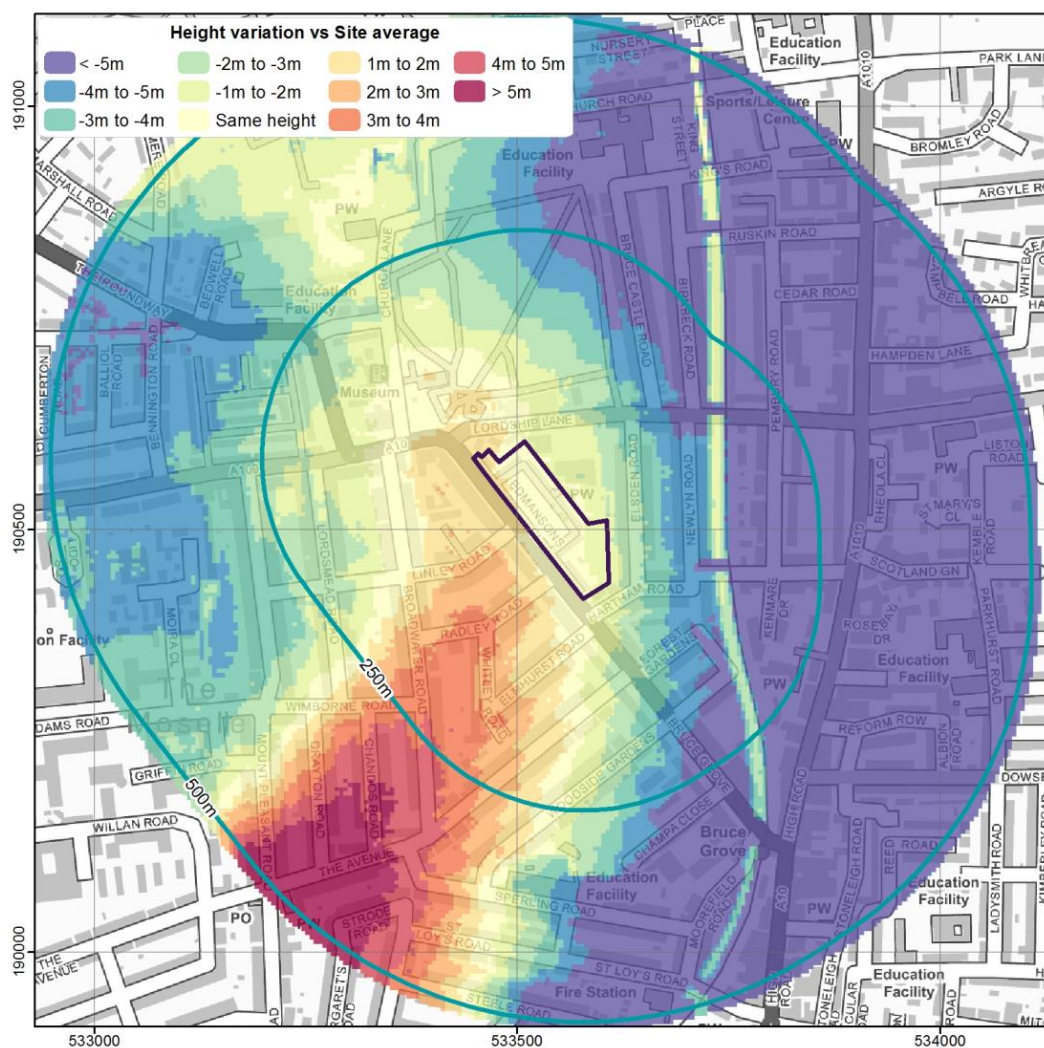
Site information

The Site is located in Tottenham in a setting of residential land use at National Grid Reference TQ 33522 90528. Site plans and drawings are provided in Appendix A.

According to OS data, using a 500 m buffer around the Site, the area is on a gentle slope (Figure 1). It is noted that to the north land falls to c. 15.53 m above Ordnance Datum (AOD). To the west land falls to 14.64 mAOD, to the east land falls to c.9.84 mAOD and to the south falls to 14.65 mAOD.

The general ground levels on the Site are between 17.99 and 19.50 mAOD with the Site falling gradually in a south-easterly direction. This is based on EA elevation data obtained for the Site to a 1 m resolution with a vertical accuracy of ± 150 mm (Appendix D).

Figure 1 Site Location and Relative Elevations



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Development

The site currently comprises almshouses and a 1970's block arranged as 61 residential units, together with an ancillary chapel and laundry building set within extensive grounds. The proposed development involves reworking the existing almshouses to provide 28 houses with six extended, demolitions of the 1970's block and new build accommodation comprising one new two storey house, two new two storey corner pavilions providing four apartments and a new build three storey block providing 16 apartments (Appendix A).

The effect of the overall development will result in an increase in number of occupants and/or users of the Site but will not result in the change of use, nature or times of occupation. According to Table 2 of the NPPG (2014), the vulnerability classification of the existing development is More Vulnerable and proposed development is More Vulnerable. The estimated lifespan of the development is 100 years.



Hydrological features

There are no mapped surface water features within 500 m of the Site (Figure 2).



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Proximity to relevant infrastructure:

There is no relevant infrastructure within 500 m of the Site.



Hydrogeological features

British Geological Survey (BGS) mapping indicates there is no underlying superficial geology or designated aquifer system recorded at the Site (BGS, 2022) (EA, 2022).

BGS mapping indicates the underlying bedrock geology consists of the London Clay Formation (BGS, 2022) and is classified as a Unproductive Strata (EA, 2022).

The southern half of the Site lies within an outer groundwater Source Protection Zone (SPZ II) (EA, 2022).

The nearest and most relevant boreholes (ref: TQ39SW119 and TQ39SW120) are located adjacent to the north of the Site on Lordship Lane and confirm the underlying geology at the Site to be London Clay Formation.

The hydrogeological characteristics suggest there is unlikely to be a shallow groundwater table beneath the site.

4. Flood risk to the development

Historical flood events

According to the EA's historical flood map no historical flood events have been recorded at the Site (EA, 2022). The purpose of historical flood data is to provide information on where and why flooding may have occurred in the past. The absence of any recorded events does not mean flooding has never occurred on Site or that flooding will never occur at the Site.

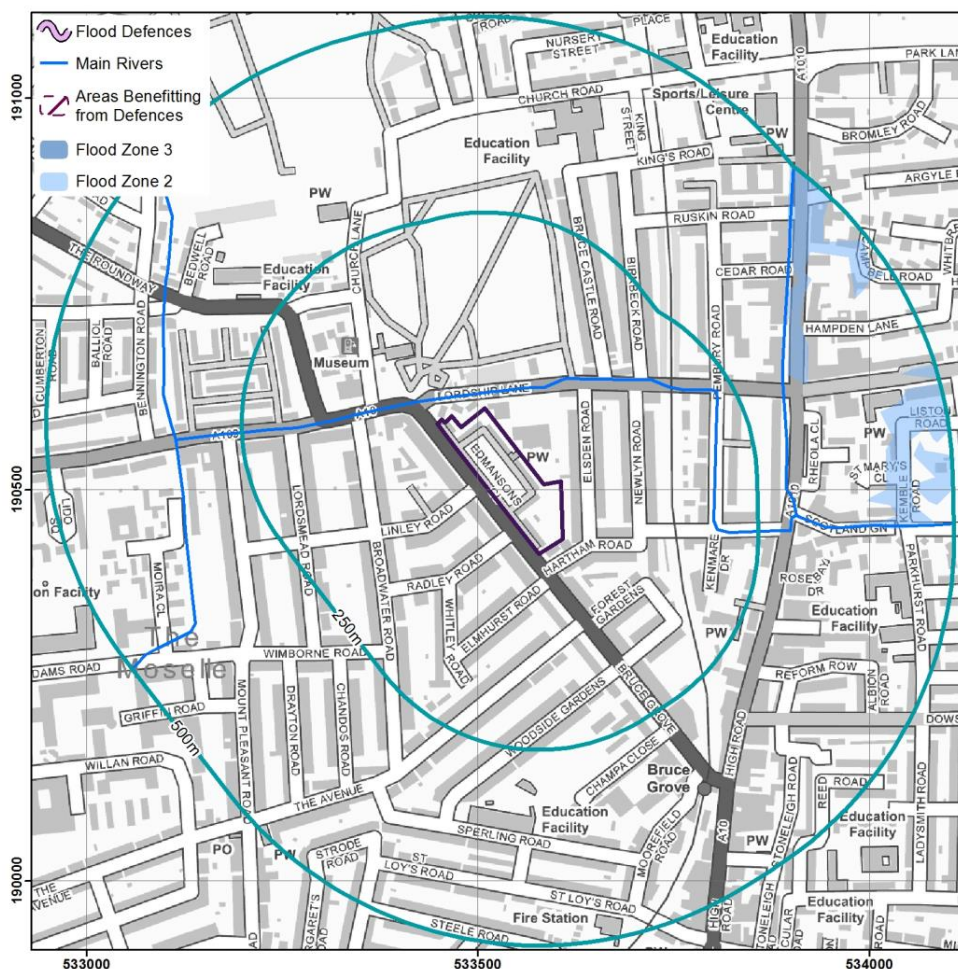
Rivers (fluvial) / Sea (coastal/tidal) flooding

The predominant risk at the Site is from flooding from rivers, termed as fluvial flooding. The Site is located in an inland location and the risk of flooding from coastal and tidal processes are therefore considered to be negligible.

River (fluvial) flooding occurs during times of heavy rainfall or snow melt when watercourses' capacity can be exceeded, over topping the banks and flood defences.

According to the EA's Flood Map for Planning Purposes (Figure 3), the Site is located within fluvial Flood Zone 1 and is therefore classified as having a Low probability of fluvial flooding.

Figure 3 EA Flood Map for Planning Purposes (EA, 2022)



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As defined in the NPPF (2021):

Guidance

Ignoring the presence of any defences, land located in a Flood Zone 1 is considered to have a Low probability of flooding, with less than a 1 in 1000 annual probability of fluvial or coastal flooding in any one year.

Development of all uses of land is appropriate in this zone (see glossary for terminology).

Flood defences

There are no flood defences within 500 m of the Site.

Guidance

Sites that are located close to flood defences are likely to be zones where rapid inundation will occur in the event of the flood defences being overtopped or breached. A Site located close to flood defences (within 250 m) may require a more detailed FRA subject to local topography.

Flood risk including the benefit of defences

The type and condition of existing flood defences influence the 'actual' risk of fluvial flooding to the Site, albeit the long-term residual risk of flooding (ignoring the defences) should be considered when proposing new development.

According to the EA's Risk of Flooding from Rivers and the Sea (RoFRS) mapping (Figure 4), which considers the crest height, standard of protection and condition of defences, the flood risk from Rivers and the Sea is Negligible.

Figure 4 Risk of Flooding from Rivers and Sea map (EA, 2022)



Surface water (pluvial) flooding

Surface water flooding occurs when intense rainfall exceeds the infiltration capacity of the ground and overwhelms the drainage systems. It can occur in most locations even at higher elevations and at significant distances from river and coastal floodplains.

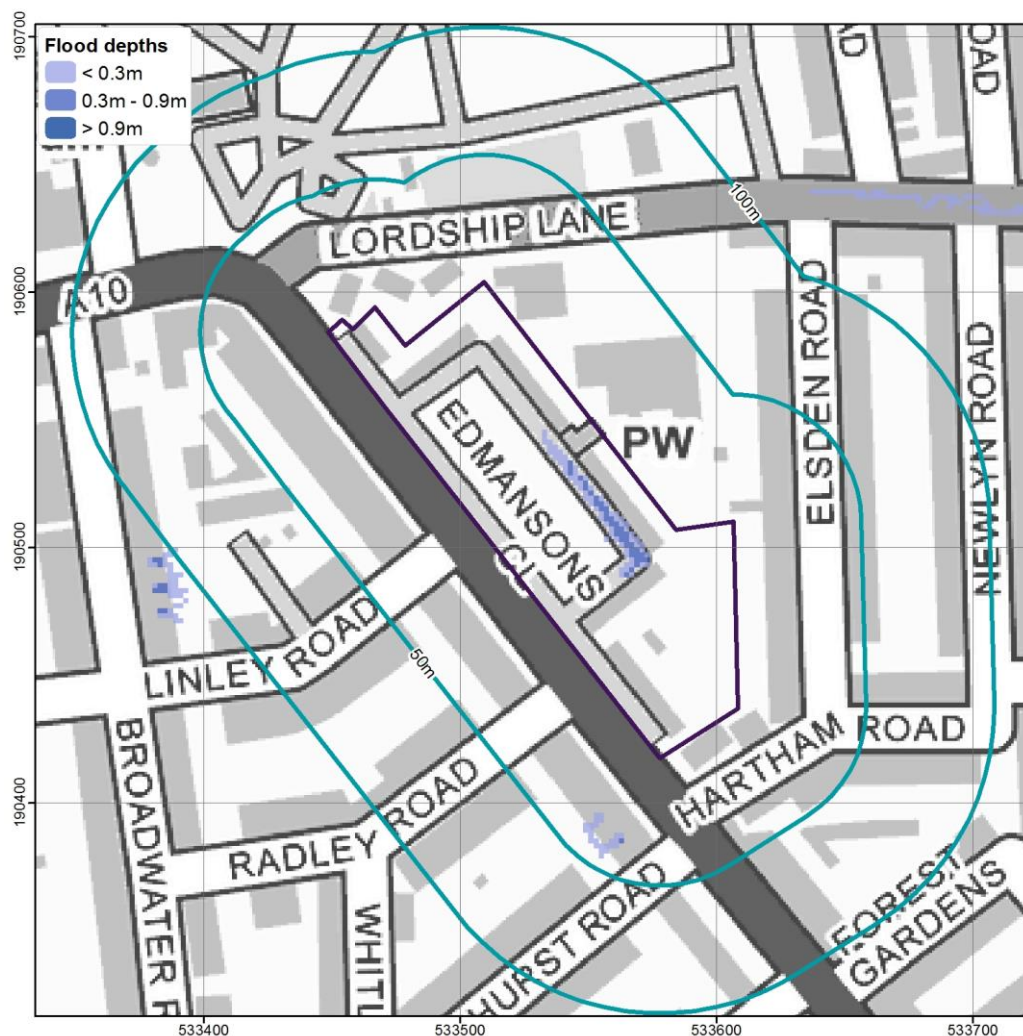
According to the EA's Risk of Flooding from Surface Water (pluvial) mapping, in the areas proposed for development, there is a Very Low risk of surface water flooding, however on Edmanson's Close there is a low to medium risk of pluvial flooding on the access road where flood depths could be up to 0.9 m.

Guidance

According to EA's surface water flood risk map the site is at:

- Very Low risk - chance of flooding of less than 1 in 1000 (0.1%).
- Low risk - chance of flooding of between a 1 in 1000 & 1 in 100 (0.1% and 1%).
- Medium risk - chance of flooding of between a 1 in 100 and 1 in 30 (1% and 3.3%).

Figure 5 EA Medium surface water flood risk map (EA, 2022)



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According to EA's surface water flood risk map the following advisory guidance applies to the site:

Flood Depth (m)

- 0.15 to 0.30 - Flooding would: typically exceed kerb height, likely exceed the level of a damp-proof course, cause property flooding in some areas
- 0.30 to 0.9 - Flooding is likely to exceed average property threshold levels and cause internal flooding. Resilience measures are typically effective up to a water depth of 0.60m above floor level.

Analysis of OS mapping, ground elevation data and the EA's pluvial flow route mapping in the 1 in 100 year event confirms the Site is not located on a potential overland flow route during a medium risk scenario.

Table 3.2 of the SWMP states there has not been a historical surface water flood event within 100 m of the Site (Haringey Council, 2011). Figure I of the SWMP and Figure 2.6 of the SFRA confirms the Site is not located within a Critical Drainage Area (CDA)¹ (Haringey Council, 2011: JBA Consulting, 2015).

Climate change may lead to an increase in rainfall intensity which affects river levels, land and urban drainage systems. Rainfall intensity for small and urban catchments may increase from 5 to 20% (central estimate) or 10% to 40% (Upper estimate) over the period to 2115 (EA, 2022). The increase in surface water flood risk is best represented by the 1 in 1000 year pluvial flood extent but according to the mapping this is unlikely to impact the areas proposed for development on the Site. During a 1 in 1000 year event, surface water flooding is constrained to the highway within Edmanson's Close.

¹ A Critical Drainage Area (CDA) is an area that has critical drainage problems and which has been notified to the local planning authority as such by the Environment Agency in line with the National Planning Policy Framework (NPPF, 2021). CDA's are specific to Flood Zone 1, defined as areas where runoff can and may have historically contributed to flooding downstream, although they are not necessarily areas where flooding problems may occur. Where a Site is located in Flood Zone 1 and within a CDA, a Flood Risk Assessment (FRA) is required and the Council may also request Sustainable Drainage Scheme (SuDS) features to be included within the proposed development.

Groundwater flooding

Groundwater flooding occurs when sub-surface water emerges from the ground at the surface or into Made Ground and structures. This may be as a result of persistent rainfall that recharges aquifers until they are full; or may be as a result of high river levels, or tides, driving water through near-surface deposits. Flooding may last a long time compared to surface water flooding, from weeks to months. Hence the amount of damage that is caused to property may be substantially higher.

Groundwater Flood Risk screening data (Figure 6) indicates there is a Negligible risk of groundwater flooding at surface in the vicinity from permeable bedrock during a 1 in 100 year event. Mapped classes combine likelihood, possible severity and the uncertainty associated with predicting the subsurface system. The map is a national scale screening tool to prompt site-specific assessment where the impact of groundwater flooding would have significant adverse consequences. Mapping limitations and a number of local factors may reduce groundwater flood risk to land and property even where it lies within mapped groundwater flood risk zones, which do not mean that groundwater floods will occur across the whole of the risk area.

Figure 6 GeoSmart GW5 Groundwater Flood Risk Map (GeoSmart, 2022)



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Contains British Geological Survey materials © NERC 2022

Table 3.4 of the SWMP illustrates there have been no recorded groundwater flood incidences within 20 m of the Site (Haringey Council, 2011).

Site specific assessment suggests that groundwater levels are unlikely to reach the surface at the Site.

On the basis of the site-specific assessment the groundwater flood risk is considered to be negligible.

Guidance

Negligible Risk - There will be a remote possibility that incidence of groundwater flooding could lead to damage to property or harm to other sensitive receptors at, or near, this location.

Climate change predictions suggest an increase in the frequency and intensity of extremes in groundwater levels. Rainfall recharge patterns will vary regionally resulting in changes to average groundwater levels. A rise in peak river levels will lead to a response of increased groundwater levels in adjacent aquifers subject to the predicted climate change increases in peak river level for the local catchment. Sea level rises of between 0.4m and 1m are predicted by 2100, leading to a rise in average groundwater levels in the adjacent coastal aquifer systems, and potential increases in water levels in the associated drainage systems. The 'backing up' of groundwater levels from both coast and tidal estuary locations may extend a significant distance inland and affect infrastructure previously constructed above average groundwater levels.

The impact of climate change on groundwater levels beneath the Site is linked to the variation in rainfall recharge which is uncertain.

Based on the available evidence the resulting increase to groundwater flood risk is not considered significant.

Flooding from Artificial Sources

Artificial sources of flood risk include waterbodies or watercourses that have been amended by means of human intervention rather than natural processes. Examples include reservoirs (and associated water supply infrastructure), docks, sewers and canals. The flooding mechanism associated with flood risk from artificial sources is primarily related to breach or failure of structures (reservoir, lake, sewer, canal, flood storage areas, etc.)

Sewer flooding

Table 3.5 of the SWMP has identified 0 incidences or modelled incidences of flooding as a result of surcharging sewers within the N17 6 postcode.

Guidance

Properties classified as “at risk” are those that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system either once or twice in the ten year reference period. Records held by the sewage utility company provide information relating to reported incidents, the absence of any records does not mean that the Site is not at risk of flooding.

Canal Failure

According to Ordnance Survey (OS) mapping, there are no canals within 500 m of the Site.

Water supply infrastructure

Water supply infrastructure is comprised of a piped network to distribute water to private houses or industrial, commercial or institution establishments and other usage points. In urban areas, this represents a particular risk of flooding due to the large amount of water supply infrastructure, its condition and the density of buildings. The risks of flooding to properties from burst water mains cannot be readily assessed.

If more information regarding the condition and history of the water supply infrastructure within the vicinity of the Site is required, then it is advisable to contact the local water supplier (Thames Water).

Culverts and bridges

Culverts and bridges havenot been identified within 500 m of the Site.

Reservoir flooding

According to the EA's Risk of Flooding from Reservoir mapping, the Site is not considered to be at risk of flooding from a breach in any nearby reservoirs.

Guidance

The risk of reservoir flooding is related to the failure of a large reservoir (holding over 25,000 m³ of water) and is based on the worst-case scenario. Reservoir flooding is extremely unlikely to occur (EA, 2022).

5. Flood risk from the development

Floodplain storage

As the development is located within Flood Zone 1, there would be no losses in floodplain storage as a result of the development. Therefore, compensation for any loss in flood plain storage will not be required.

Drainage and run-off

A surface water drainage strategy report has been prepared separately (ref: 73492.02.01R1) to ensure surface water can be managed effectively through the use of SuDS features, over the lifetime of the proposed development, including sufficient allowances for climate change.

6. Suitability of the proposed development

The information below outlines the suitability of proposed development in relation to national and local planning policy.

National policy and guidance

The aims of the national planning policies are achieved through application of the Sequential Test and in some cases the Exception Test.

Guidance

Sequential test: The aim of this test is to steer new development towards areas with the lowest risk of flooding (NPPF, 2021). Reasonably available sites located in Flood Zone 1 should be considered before those in Flood Zone 2 and only when there are no reasonably available sites in Flood Zones 1 and 2 should development in Flood Zone 3 be considered.

Exception test: In some cases, this may need to be applied once the Sequential Test has been considered. For the exception test to be passed it must be demonstrated that the development would provide wider sustainability benefits to the community that outweigh flood risk and a site-specific FRA must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

Suitability of the proposed development, and whether the Sequential and Exception Tests are required, is based on the Flood Zone the Site is located within and the flood risk vulnerability classification of the existing and proposed development. Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

This report has been produced to assess all development types, prior to any development. The vulnerability classification and Flood Zones are compared within Table 6 overleaf (Table 3 of the NPPG (2014)).

As the Site is located within Flood Zone 1, all types of development listed within the Table overleaf are acceptable according to National Policy.

Table 6: Flood risk vulnerability and flood zone 'compatibility' (taken from NPPG, 2014)

Flood risk vulnerability classification		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood Zone	Zone 1 – low probability	✓	✓	✓	✓	✓
	Zone 2 – medium probability	✓	✓	Exception test required	✓	✓
	Zone 3a - high probability	Exception test required	✓	X	Exception test required	✓
	Zone 3b – functional flood plain	Exception test required	✓	X	X	X

Local policy and guidance

For this report, several documents have been consulted for local policy and guidance and relevant information is outlined below:

Haringey Council Strategic Flood Risk Assessment (JBA Consulting, 2015):

- *The River Moselle flows through Tottenham; this was once a direct tributary of the River Lee. Since the River Moselle was culverted the channel now artificially flows into Pymmes Brook before flows join the River Lee. There is a small area of the River Moselle designated as Flood Zone 2 & 3. This is located at the Lordship Recreation Grounds.*
- *Surface water runoff is the source of flood risk that potentially has the greatest effect in Haringey and is the flooding most likely to be experienced.*
- *All development sites should include sustainable drainage systems that seek to mimic the green field response of the site up to a minimum of the 1 in 100 year event for critical duration*

Guidance

Strategic Flood Risk Assessments are carried out by local authorities, in consultation with the Environment Agency, to assess the flood risk to the area from all sources both now and in the future due to climate change. They are used to inform planning decisions to ensure inappropriate development is avoided (NPPF, 2021).

7. Resilience and mitigation

Based on the flood risk identified at the Site, the national and local policies and guidance and proposed development, the mitigation measures outlined within this section of the report are likely to help protect the development from flooding.

Sea (coastal/tidal) flood mitigation measures

As the Site is not identified as being at risk of flooding from the sea, mitigation measures are not required.

Rivers (fluvial) flood mitigation measures

As the Site is not identified as being at risk of flooding from fluvial sources, mitigation measures are not required.

Surface water (pluvial) flood mitigation measures

A surface water drainage strategy has been prepared separately (ref: 73492.02R1) to ensure surface water runoff can be managed effectively over the lifetime of the proposed development.

Groundwater flood mitigation measures

As the Site is not identified as being at risk of groundwater flooding, mitigation measures are not required.

Reservoir flood mitigation measures

The Site is not a risk of flooding from reservoirs; therefore, mitigation measures are not required.

Other flood risk mitigation measures

As the Site is not identified as at risk from other sources, mitigation measures are not required.

8. Conclusions and recommendations

Table 9: Risk ratings following implementation and subsequent maintenance of mitigation measures

Source of Flood Risk	Baseline	After Mitigation
River (fluvial) and Sea (coastal/tidal)	Negligible	Negligible
Surface water (pluvial) flooding	Very Low to Medium*	Very Low
Groundwater flooding	Negligible	Negligible
Other flood risk factors present	No	N/A

*Medium flood risk associated with access road on the Site and with Very Low risk associated with the areas proposed for development

The table below provides a summary of where the responses to key questions are discussed in this report. Providing the recommended mitigation measures are put in place it is likely that flood risk to this Site will be reduced to an acceptable level.

Table 10: Summary of responses to key questions in the report

Key sources of flood risks identified	Surface Water (see Section 4).
Are standard mitigation measures likely to provide protection from flooding to/from the Site?	Yes (see Section 7).
Is any further work recommended?	
Recommendations for mitigation are provided below, based upon the proposed development and the flood risk identified at the Site: • The regular maintenance of any drains and culverts surrounding/on the Site should be undertaken to reduce the flood risk. • A surface water drainage strategy has been prepared separately (ref: 73492.02R1) to ensure surface water runoff can be managed effectively over the lifetime of the proposed development. GeoSmart recommend the mitigation measures discussed within this report are considered as part of the proposed development where possible and evidence of this is provided to the Local Planning Authority as part of the planning application.	

9. References and glossary

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Glossary

General terms

BGS	British Geological Survey
EA	Environment Agency
GeoSmart groundwater flood risk model	GeoSmart's national groundwater flood risk model takes advantage of all the available data and provides a preliminary indication of groundwater flood risk on a 50m grid covering England and Wales. The model indicates the risk of the water table coming within 1 m of the ground surface for an indicative 1 in 200 year return period scenario.
Dry-Island	An area considered at low risk of flooding (e.g. In a Flood Zone 1) that is entirely surrounded by areas at higher risk of flooding (e.g. Flood Zone 2 and 3)
Flood resilience	Flood resilience or wet-proofing accepts that water will enter the building, but through careful design will minimise damage and allow the re-occupancy of the building quickly. Mitigation measures that reduce the damage to a property caused by flooding can include water entry strategies, raising electrical sockets off the floor, hard flooring.
Flood resistance	Flood resistance, or dry-proofing, stops water entering a building. Mitigation measures that prevent or reduce the likelihood of water entering a property can include raising flood levels or installation of sandbags.
Flood Zone 1	This zone has less than a 0.1% annual probability of river flooding
Flood Zone 2	This zone has between 0.1 and 1% annual probability of river flooding and between 0.1% and 0.5 % annual probability sea flooding
Flood Zone 3	This zone has more than a 1% annual probability of river flooding and 0.5% annual probability of sea flooding
Functional Flood Plain	An area of land where water has to flow or be stored in times of flood.
Hydrologic model	A computer model that simulates surface run-off or fluvial flow. The typical accuracy of hydrologic models such as this is $\pm 0.25\text{m}$ for estimating flood levels at particular locations.
OS	Ordnance Survey
Residual Flood Risk	The flood risk remaining after taking mitigating actions.
SFRA	Strategic Flood Risk Assessment. This is a brief flood risk assessment provided by the local council
SuDS	A Sustainable drainage system (SuDS) is designed to replicate, as closely as possible, the natural drainage from the Site (before development) to ensure that the flood risk downstream of the Site does not increase as a result of the land being developed. SuDS also significantly improve the quality of water leaving the Site and can also improve the amenity and biodiversity that a site has to offer. There are a range of SuDS options available to provide effective surface water management that intercept and store excess run-off. Sites over 1 Ha will usually require a sustainable drainage assessment if planning permission is required. The current proposal is that from April 2014 for more than a single dwelling the drainage system will require approval from the SuDS Approval Board (SABs).

Aquifer Types

Principal aquifer	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.
Secondary A aquifer	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.
Secondary B aquifer	Predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.
Secondary undifferentiated	Has been assigned in cases where it has not been possible to attribute either category A or B to a rock type due to the variable characteristics of the rock type.
Unproductive Strata	These are rock layers or drift deposits with low permeability that has negligible significance for water supply or river base flow.

NPPF (2022) terms

Exception test	Applied once the sequential test has been passed. For the exception test to be passed it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk and a site-specific FRA must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.
Sequential test	Aims to steer new development to areas with the lowest probability of flooding.
Essential infrastructure	Essential infrastructure includes essential transport infrastructure, essential utility infrastructure and wind turbines.
Water compatible	Water compatible land uses include flood control infrastructure, water-based recreation and lifeguard/coastal stations.
Less vulnerable	Less vulnerable land uses include police/ambulance/fire stations which are not required to be operational during flooding and buildings used for shops/financial/professional/other services.
More vulnerable	More vulnerable land uses include hospitals, residential institutions, buildings used for dwelling houses/student halls/drinking establishments/hotels and sites used for holiday or short-let caravans and camping.
Highly vulnerable	Highly vulnerable land uses include police/ambulance/fire stations which are required to be operational during flooding, basement dwellings and caravans/mobile homes/park homes intended for permanent residential use.

Data Sources

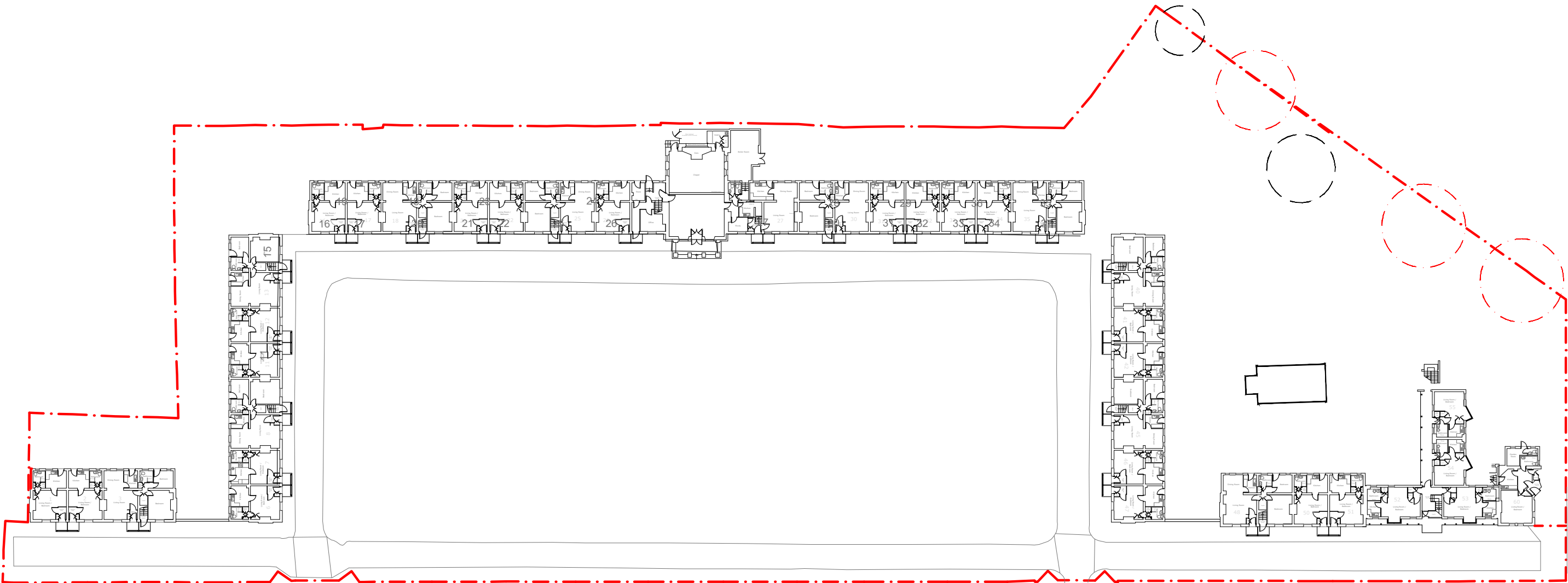
Aerial Photography	Contains Ordnance Survey data © Crown copyright and database right 2022 BlueSky copyright and database rights 2022
Flood Risk (Flood Zone/RoFRS/Historic Flooding/Pluvial/Surface Water Features/Reservoir/ Flood Alert & Warning)	Environment Agency copyright and database rights 2022 Ordnance Survey data © Crown copyright and database right 2022
Flood Risk (Groundwater)	GeoSmart, BGS & OS GW5 (v2.3) Map (GeoSmart, 2022) Contains British Geological Survey materials © NERC 2022 Ordnance Survey data © Crown copyright and database right 2022
Location Plan	Contains Ordnance Survey data © Crown copyright and database right 2022
Topographic Data	OS LiDAR/EA Contains Ordnance Survey data © Crown copyright and database right 2022 Environment Agency copyright and database rights 2022

Appendices

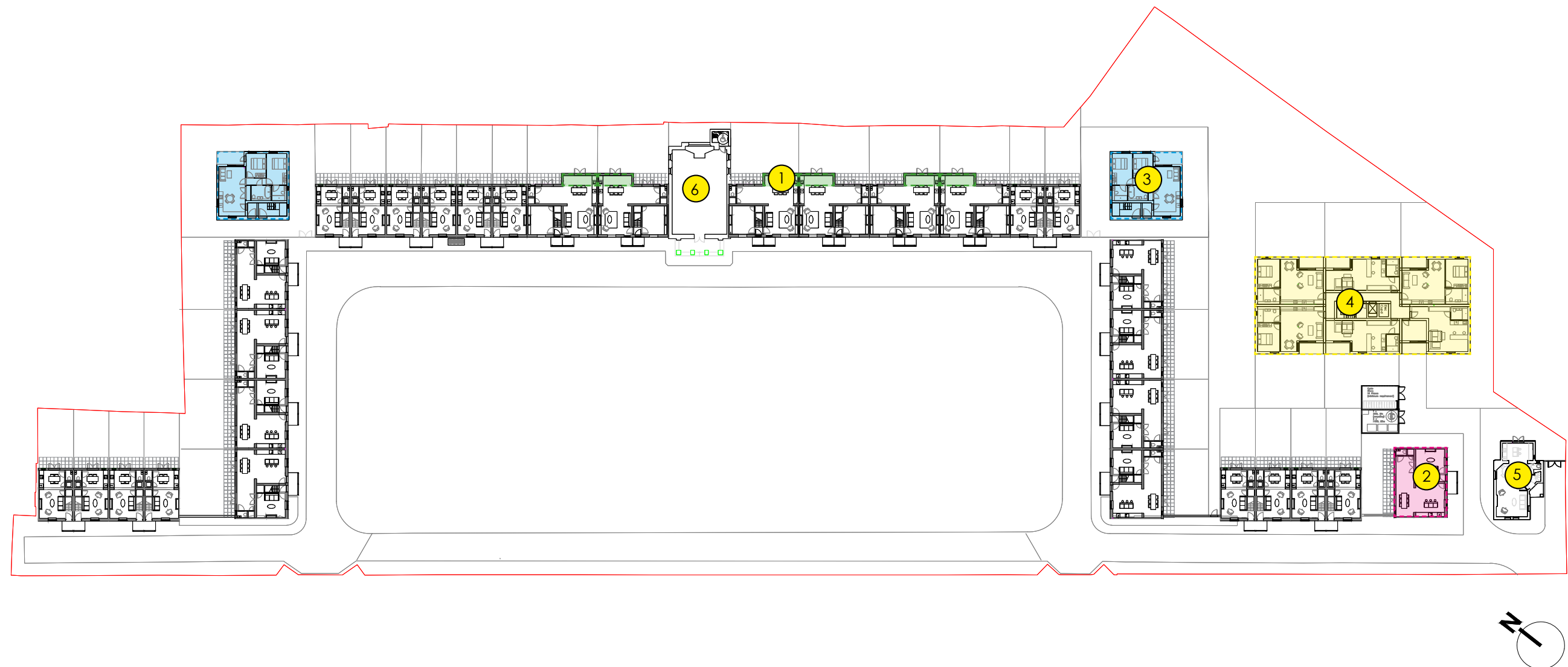
Appendix A

Site plans

EXISTING LAYOUT



3.0 SITE LAYOUT - NEW PROPOSALS JANUARY 2022



KEY - NEW DEVELOPMENT

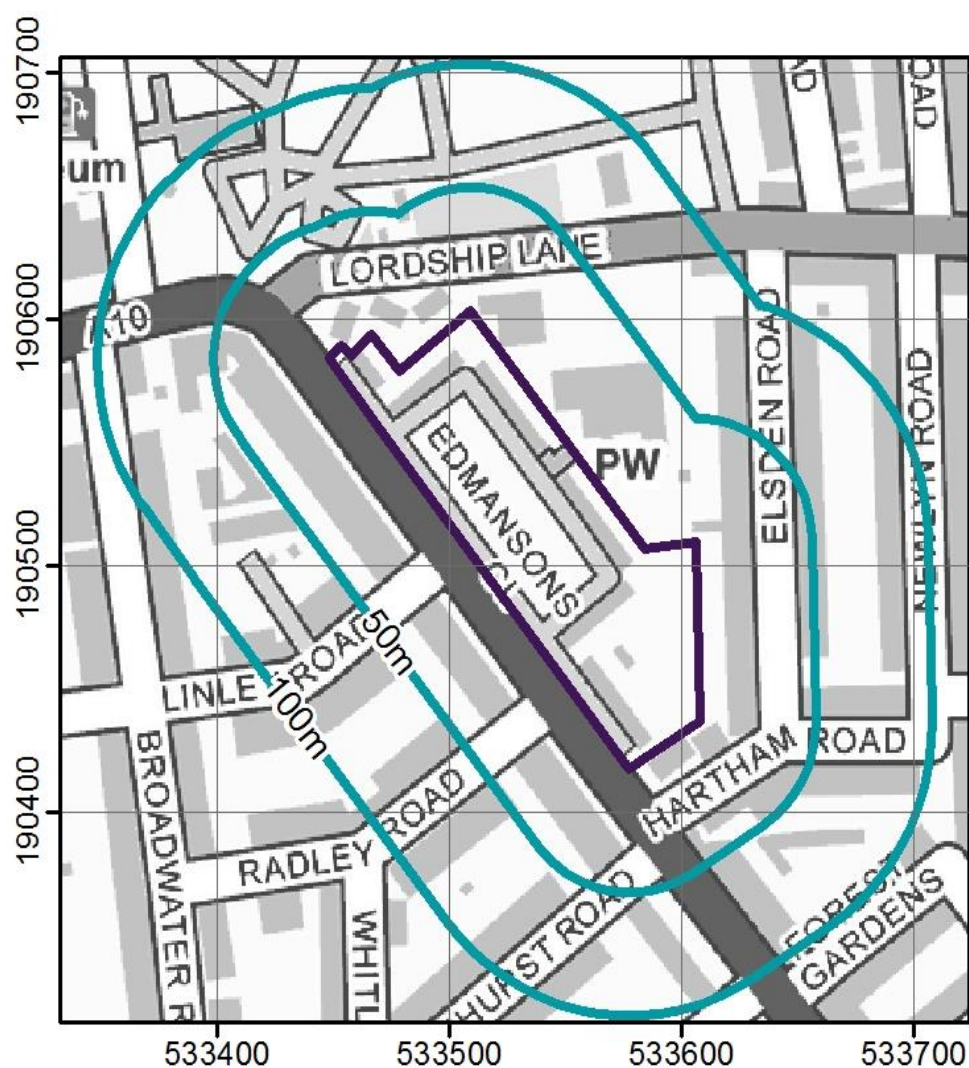
- REAR EXTENSIONS - 2 BED HOUSES
- 3 BED MEWS HOUSE
- 2 BED APARTMENTS
- STUDIOS AND 1 BED APARTMENTS

- ① Extended almshouses
- ② New build family house
- ③ New build apartments
- ④ New build apartments
- ⑤ Family house within the gatehouse
- ⑥ Chapel remains as a community resource (later Mezzanine removed)

Appendix B

Commercial flood mapping

Site Location Plan (OS, 2022)



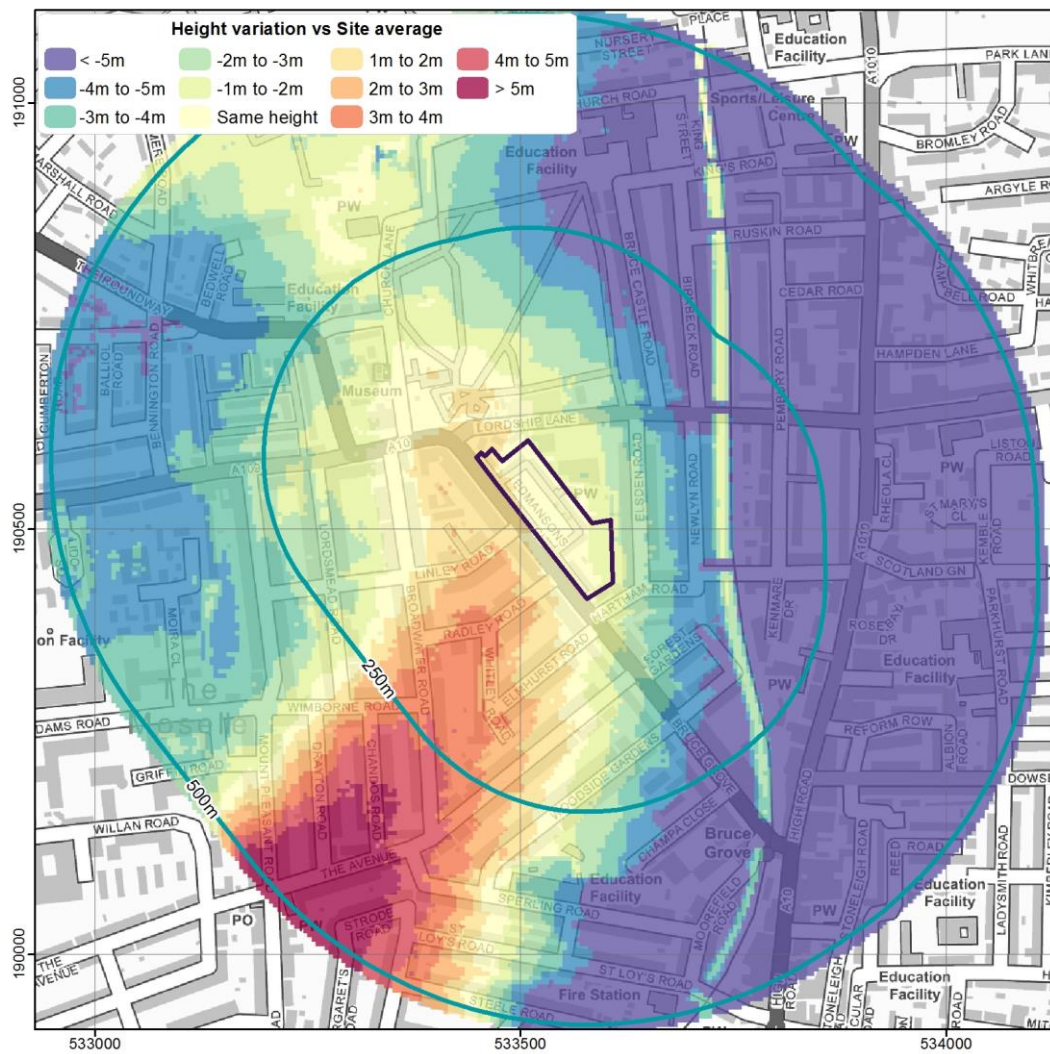
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Aerial Photograph (BlueSky, 2022)



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GeoSmart DTM5 (5m) map (EA, 2022)



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Ordnance Survey Surface Water Feature Vector Map (OS, 2022)



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Environment Agency Historic Flood Map (EA, 2022)



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Ref: 73492.01.01R1

Environment Agency's Flood Risk from Rivers and Sea map (EA, 2022)



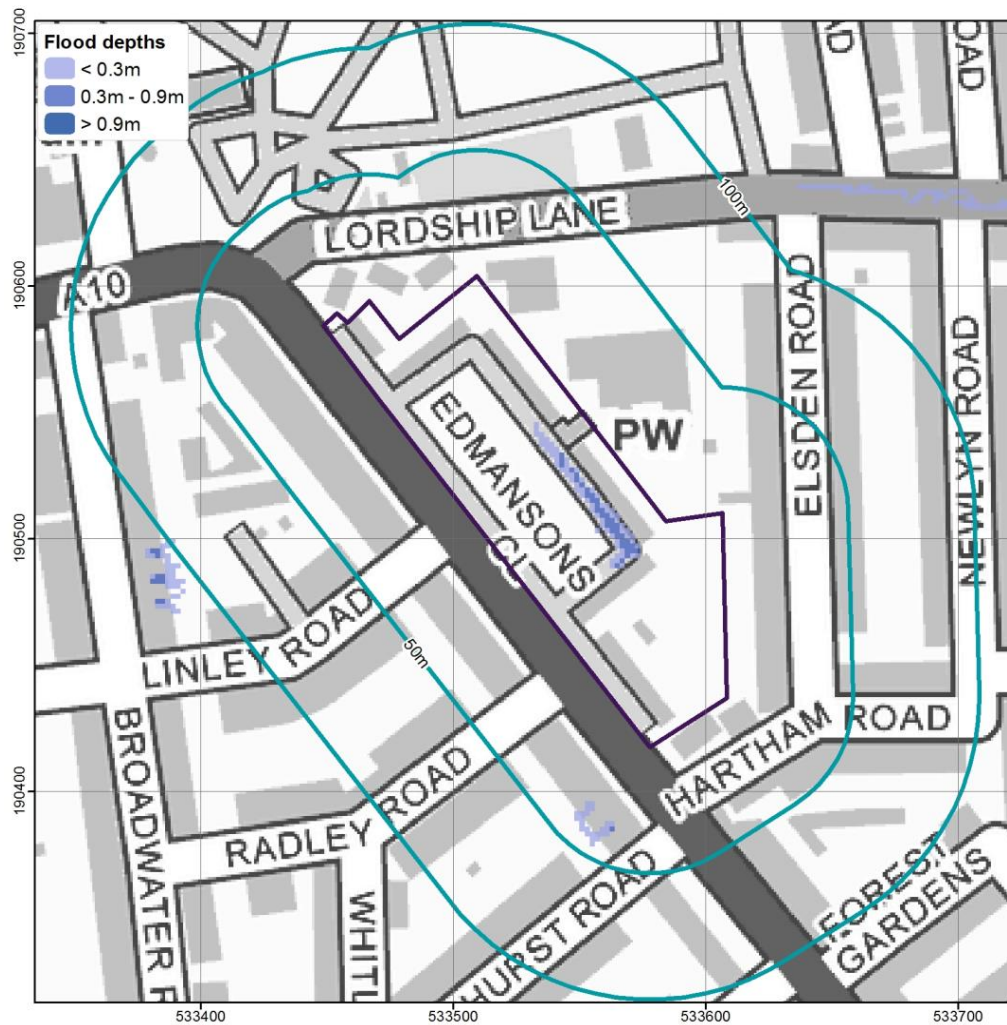
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GeoSmart Groundwater Flood Risk (GW5, v2.3) Map (GeoSmart, 2022)



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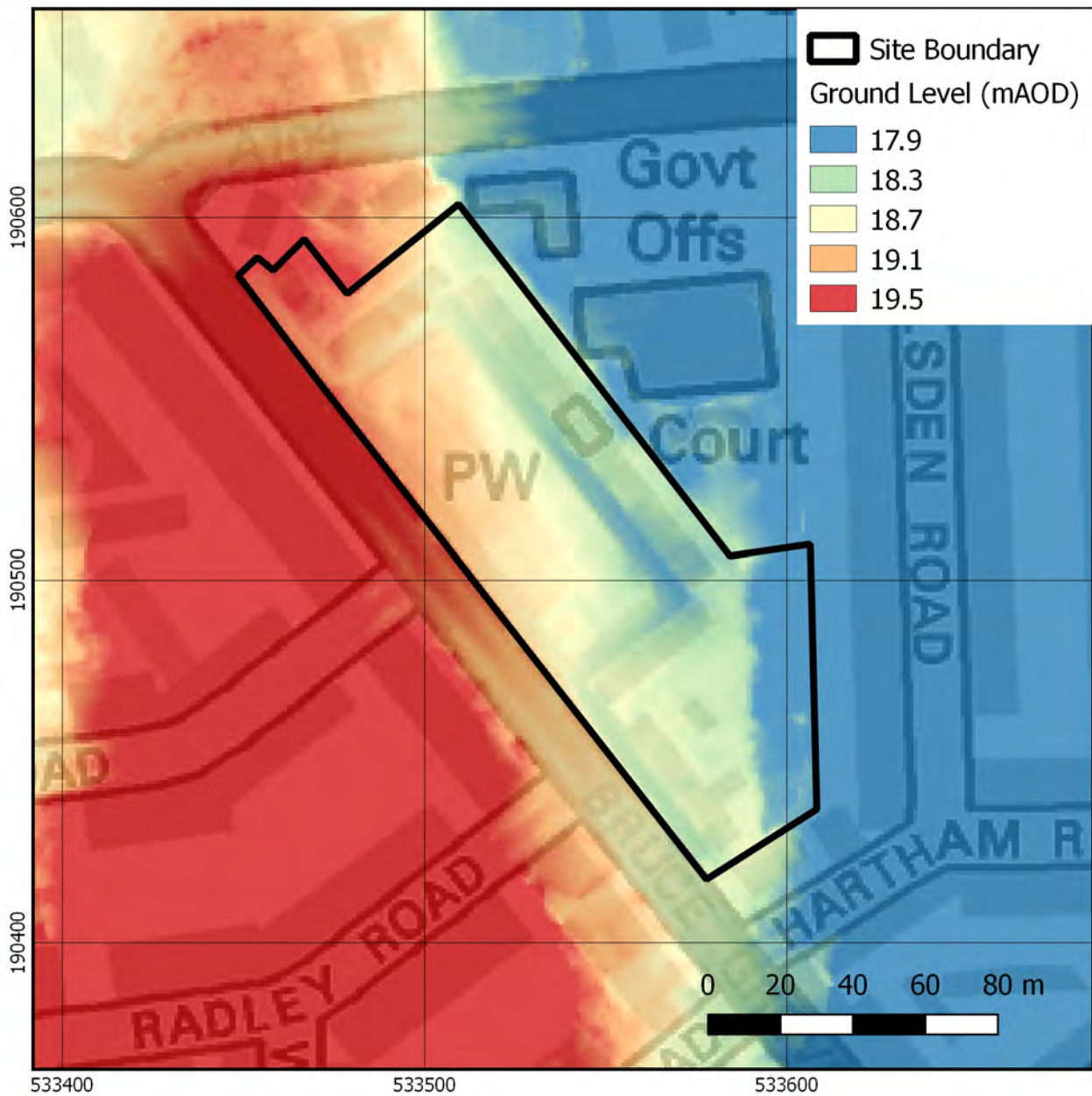
EA Risk of Flooding Surface Water (pluvial) Depth map 1 in 100 year (EA, 2022)



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Appendix C

Environment Agency LiDAR Ground Elevation Data



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The Property Ombudsman scheme

Milford House

43-55 Milford Street

Salisbury

Wiltshire SP1 2BP

Tel: 01722 333306

Fax: 01722 332296

Email: admin@tpos.co.uk

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- Normally deal with it fully and provide a final response, in writing, within 20 working days of receipt.
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- Provide a final response, in writing, at the latest within 40 working days of receipt.
- Liaise, at your request, with anyone acting formally on your behalf.

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We will co-operate fully with the Ombudsman during an investigation and comply with his final decision. Complaints should be sent to:

Alan White

Operations Manager

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Suite 9-11, 1st Floor,

Old Bank Buildings,

Bellstone, Shrewsbury, SY1 1HU

Tel: 01743 298 100

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