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63-71 High Street, Hampton Hill, London, TW12 1NH

FLOOD RISK ASSESSMENT

12/11/2020
Version 3.0
RAB: 2520B

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1.0	16/10/2020		Christian Leigh
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Quality Control

Action	Signature	Date
Prepared	Freya Green	12/11/2020
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Contents

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1.0 Introduction

RAB Consultants has prepared this Flood Risk Assessment (FRA) in support of the proposed residential development at 63-71 High Street, Hampton Hill, London, TW12 1NH.

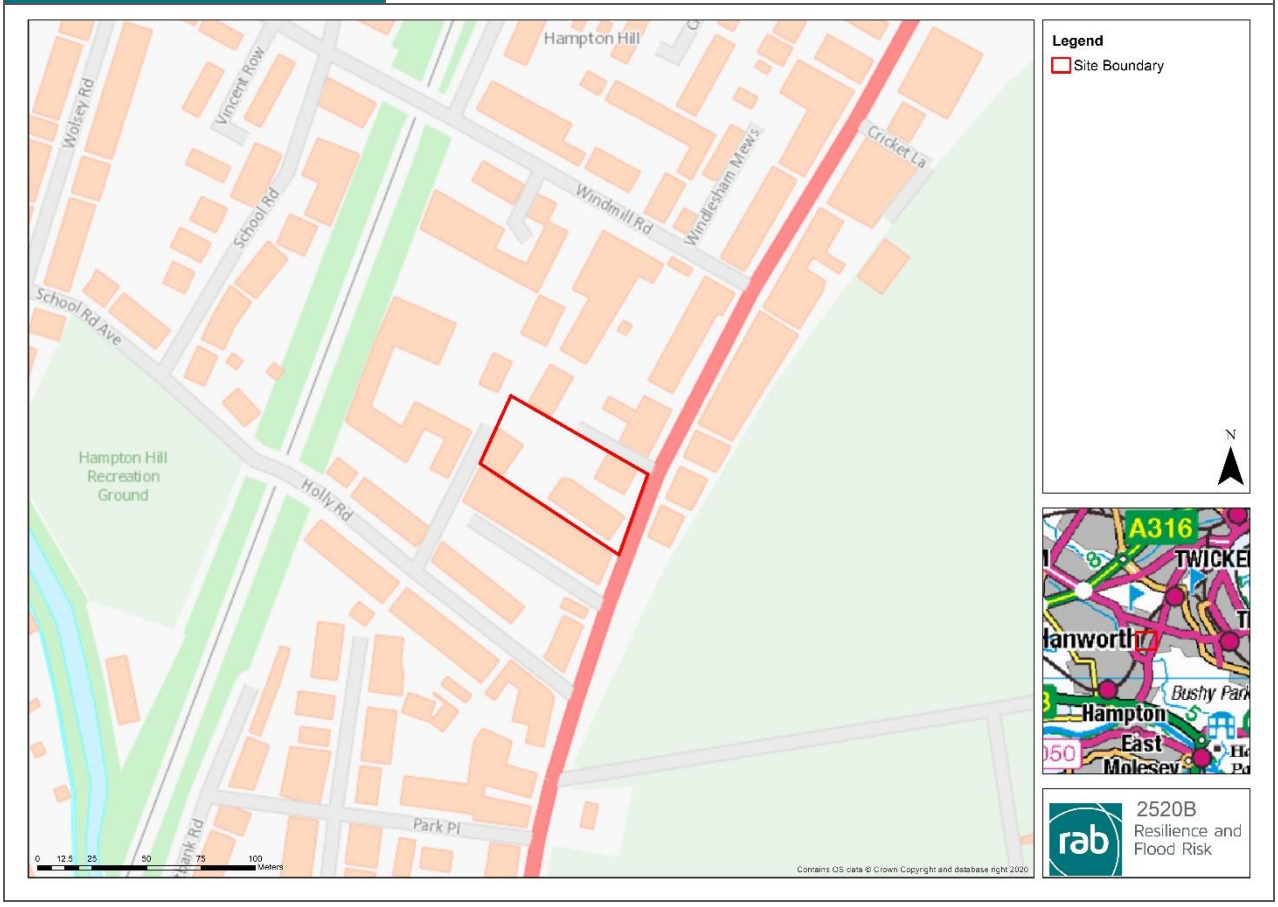
The development site is located in Flood Zone 1 according to the Environment Agency's Flood Map for Planning (Rivers and Sea). The site-specific FRA is required to ensure that the development is safe from flooding and will not increase the risk of flooding elsewhere.

2.0 Site details

2.1 Site location

TABLE 1: SITE LOCATION

Site address:	63-71 High Street, Hampton Hill, London, TW12 1NH
Site area:	Approximately 2,380m^2
Existing land use:	Mixed Use (Commercial, Residential)
OS NGR:	TQ 14256 70823
Local Planning Authority:	London Borough of Richmond upon Thames



2.2 Site description

The site is located west of High Street (Figure 1) and it is surrounded by mixed use buildings. The site is accessed via a gated entrance (Figure 1) and it includes three B1 office buildings. The associated paved area (Figure 2) is mostly impermeable, while the site slopes towards the west boundary suggesting that water runoff will flow naturally towards the west. The existing buildings appear to drain to an underground drainage network and runoff from the paved area seems to flow towards existing gullies. The final discharge point is a soakaway at the car park. The site is located approximately 250m north-east of the Longford River.

TABLE 2: SITE PHOTOGRAPHS

FIGURE 1: FRONT VIEW OF EXISTING BUILDING

FIGURE 2: REAR VIEW OF SITE

2.3 Development proposal

Permission is sought for the permitted development of an office to residential dwellings for the southern building. The north and west building will remain as existing.

3.0 Flood Risk

3.1 Sequential test

According to the Environment Agency's Flood Map for Planning the site lies in Flood Zone 1, which is described in the NPPF as land having a less than 1 in 1,000 annual probability of river or sea flooding (less than 0.1% AEP).

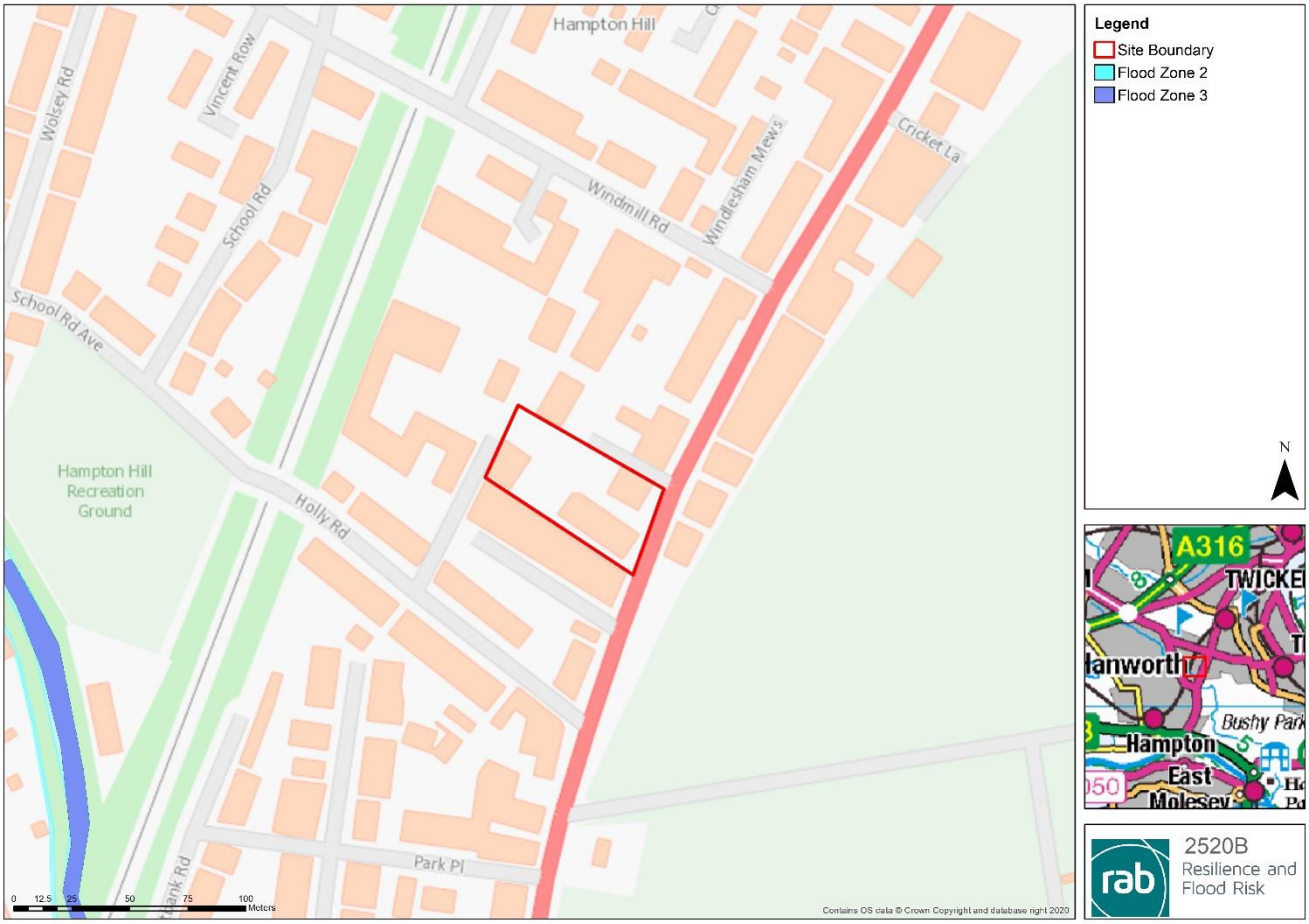


FIGURE 3: ENVIRONMENT AGENCY FLOOD MAP FOR PLANNING

The NPPF follows a sequential risk-based approach in determining the suitability of land for development in flood risk areas, with the intention of steering all new development to the lowest flood risk areas. NPPF Planning Practice Guidance (PPG) Table 2 confirms the 'Flood risk vulnerability classification' of a site, depending upon the proposed usage. This classification is subsequently applied to Table 3 'Flood risk vulnerability and flood zone compatibility' to determine whether:

- The proposed development is suitable for the flood zone in which it is located; and
- Whether an Exception Test is required for the proposed development

The proposed development is classed as 'more vulnerable' in accordance with NPPF PPG. The development is therefore appropriate for the Flood Zone.

3.2 Flooding history

The 2016 London Borough of Richmond upon Thames Strategic Flood Risk Assessment (SFRA) shows the site is not within an area that has suffered from historic fluvial or pluvial flooding.

3.3 Fluvial (Rivers)

The site is located approximately 250m north-east of the Longford River. According to the Environment Agency's Flood Map for Rivers or the Sea, the site is at very low risk with less than 0.1% AEP risk of fluvial flooding.

3.4 Flood defence breach or overtopping

3.4.1. Breach risk

The site is not protected by any formal defences, therefore is not at risk from a breach.

3.4.2. Overtopping risk

The site is not protected by any formal defences, therefore is not at risk from overtopping.

3.5 Coastal/tidal

The site is at a considerable distance from the sea and is not at risk of coastal or tidal flooding.

3.6 Pluvial (Surface water)

When the infiltration capacity of land or the drainage capacity of a local sewer network is exceeded, excess rainwater flows overland. This water will collect in topographic depressions and at obstructions, which can inundate development in low lying areas. The severity of the rainfall event, the degree of saturation of the soil before the event, the permeability of soils and geology, and the gradient of the surrounding land and it's use; all contribute to and affect the severity of overland flow.

The Environment Agency Flood Map for Surface Water (Figure 4), can be used to see the approximate areas that would experience surface water flooding from a range of AEPs, which is used to categorise the risk (Table 3). According to the 2011 London Borough of Richmond Upon Thames Surface Water Management Plan (SWMP) the site is within close proximity to the critical drainage area of Group8_006 which includes High Street.

The site and High Street are at very low risk from surface water flooding.

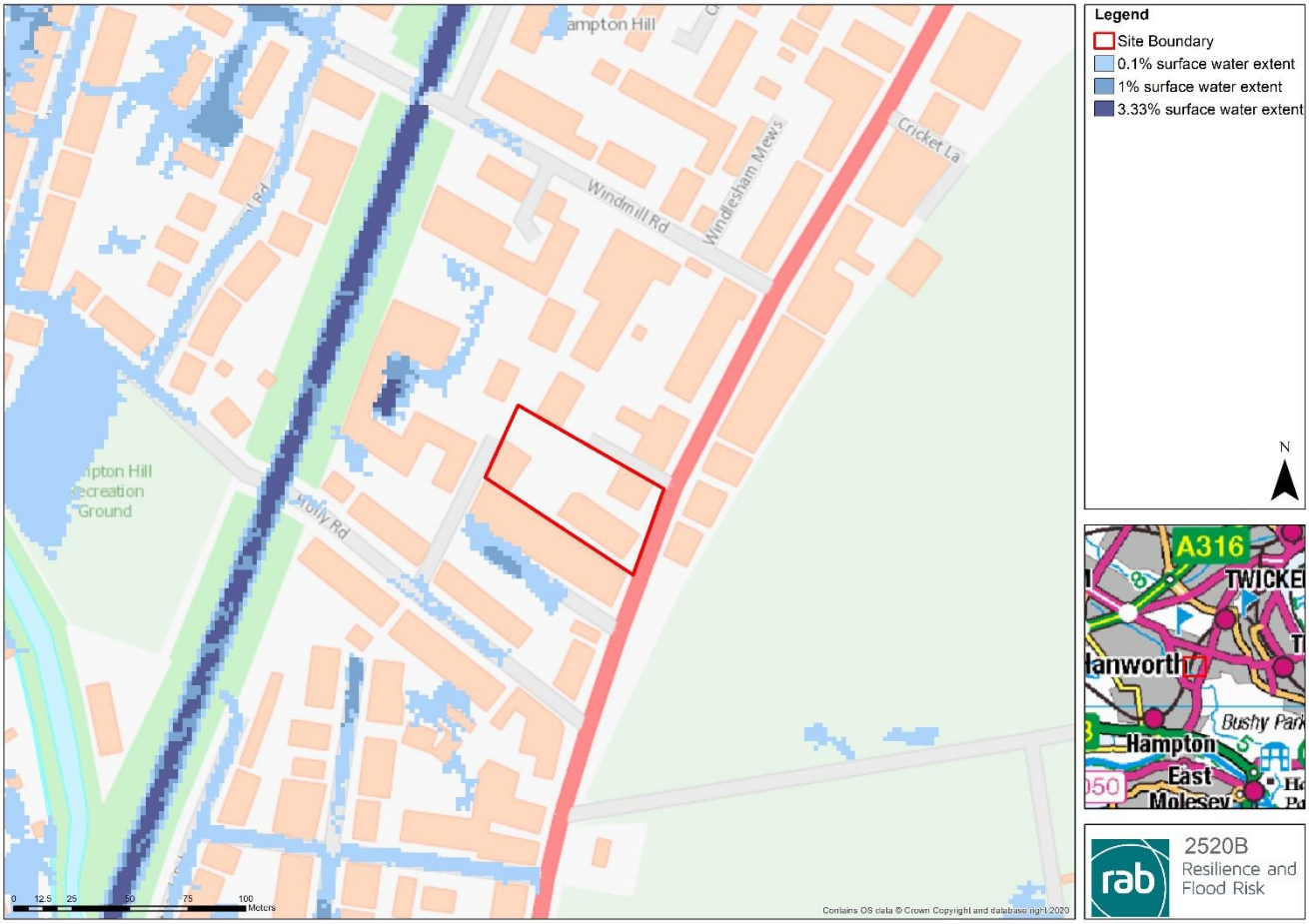


FIGURE 4: ENVIRONMENT AGENCY FLOOD RISK FROM SURFACE WATER

TABLE 3: ENVIRONMENT AGENCY SURFACE WATER RISK CATEGORIES

Surface Water Risk Category	Surface water flooding Annual Exceedance Probability
Very Low	< 0.1%
Low	Between 1% and 0.1% (1 in 100 years and 1 in 1000 years)
Medium	Between 1% and 3.3% (1 in 100 years and 1 in 30 years)
High	> 3.3% (1 in 30 years)

3.7 Artificial water bodies

Reservoir flooding can be extremely dangerous due to the speed and volume of the water that is released which may be with little or no warning. The site is identified at very low risk from the Environment Agency Reservoir Flood Map.

According to the Canal and River Trust there are four waterways within 10 miles of the site which include Grand Union Canal, London Docklands, Paddington Arm (Grand Union Canal) and Slough Arm (Grand Union Canal). The 2016 SFRA does not mention canals in the report.

3.8 Groundwater

Groundwater flooding is water originating from sub-surface permeable strata which emerges from the ground, either at a specific point or over a wide diffuse location and inundates low lying areas. A groundwater flood event results from a rise in groundwater level sufficient for the water table to intersect the ground surface and inundate low lying land.

British Geological Survey (BGS) records indicate that the proposed development site overlies bedrock composed of London Clay Formation - clay and silt. This is overlain (superficial deposits) by Taplow Gravel Member - sand and gravel. Sand and gravel are permeable therefore do not provide a barrier to rising groundwater.

Borehole TQ17SW162 located 300m south east of the site supports the above findings with a dominance of clay overlain by sand and ballast.

The Magic Maps Tool shows the site is not located within a bedrock aquifer but is located within a principle superficial drift aquifer. The site is located within a medium-high groundwater vulnerability area.

The 2016 SFRA shows there have been two groundwater flooding events located approximatly 630m north west of the site. The 2011 SWMP shows the first event was in 2003 and was due to basement flooding and the second event was in 2000 and was rising WL under home. The 2016 SFRA also shows the site is located within an area of susceptibility where there is a potential for groundwater flooding of property situated below ground level.

As there is a high degree of variability when considering groundwater flooding, using historic flooding is not a robust measure of the risk of flooding in future years.

3.9 Sewers

Thames Water who are responsible for the adopted surface and foul sewer networks within the Borough, maintain a DG5 register of sites affected by sewer flood incidents on a post code basis. According to the 2016 SFRA, the site postcode area TW12 1 has suffered 11-15 sewer flooding incidents due to failure or capacity issues.

The area has also suffered from a number of blocked gully incidents although it is unclear whether the site has been affected by these.

It is important to note that previous sewer flood incidents, or the lack thereof, do not indicate the current or future risk to the site. Upgrade work could have been carried out to alleviate any issues or conversely, in areas that have not experienced sewer flooding incidents, the local drainage infrastructure could deteriorate leading to future flooding.

4.0 Mitigation measures

4.1 Risk to buildings

4.1.1. Finished floor levels

In accordance with BS8533:2017 'Assessing and managing flood risk in development – code of practice', in order to afford a level of protection against flooding it is recommended that finished floor levels should be set at a nominal 300mm above either the 1% AEP of fluvial flooding or the 0.5% AEP of tidal flooding depending on which is greater (both including climate change).

The site is located outside of any fluvial risk and surface water risk. Industry best practice suggests setting ground finished floor levels 150mm above local ground level to offer a level of protection against infrastructure failure. The site is a change of use therefore, it is technically unfeasible to alter floor levels.

4.1.2. Flood resistance

Flood resistance is a strategy of temporary or permanent measures taken to reduce the amount of flood water that will enter buildings. It is not considered appropriate to adopt a flood resistance strategy given the assessed likelihood of flooding to the building.

4.1.3. Flood resilience

It is not considered appropriate to adopt a flood resilience strategy given the assessed likelihood of flooding to the building.

4.2 Risk to occupiers

4.2.1. Safe access/egress

The site is at very low risk from fluvial and surface water flooding therefore safe access/egress is achievable.

4.2.2. Flood warning and evacuation plan

The site falls outside a flood warning area and as such an evacuation plan is not applicable.

4.3 Risk to others

4.3.1. Floodplain compensation

The site is not shown to flood during the design fluvial event therefore, there will be no loss of floodplain storage as a result of development.

4.4 SuDS feasibility

The SuDS Manual (2015), discusses the SuDS approach to managing surface water runoff which is intended to mimic the natural catchment process as closely as is possible. The approach sets out the design objectives in respect of SuDS:

- Use of surface water runoff as a resource;
- Manage rainwater close to where it falls (at source);

- Manage runoff on the surface (above ground);
- Allow rainwater to soak into the ground (infiltration);
- Promote evapotranspiration;
- Slow and store runoff to mimic natural runoff rates and volumes;
- Reduce contamination of runoff through pollution prevention and by controlling the runoff at source; and
- Treat runoff to reduce the risk of urban contaminants causing environmental pollution.

Depending on the characteristics of the site and local requirements, these may be used in conjunction and to varying degrees. Table 4 presents the functions of the SuDS components (from which a management train can be created) and their feasibility in respect of the site.

TABLE 4: FEASIBILITY OF SUDS TECHNIQUES AT THE DEVELOPMENT SITE

Technique	Description	Feasibility Y / N / M (Maybe)
Good building design and rainwater harvesting	Components that capture rainwater and facilitate its use within the building or local environment.	**Maybe** – a rainwater harvesting tank could be incorporated into the final design.
Porous and pervious surface materials	Structural surfaces that allow water to penetrate, thus reducing the proportion of runoff that is conveyed to the drainage system (green roofs, pervious paving).	**Maybe** – porous and pervious surface materials could be incorporated in the car park.
Infiltration Systems	Components that facilitate the infiltration of water into the ground. These often include temporary storage zones to accommodate runoff volumes before slow release to the soil.	**No** – there are no external alterations therefore, infiltration systems are not viable.
Conveyance Systems	Components that convey flows to downstream storage systems (e.g. swales, watercourses).	**No** – there are no external alterations therefore, conveyance systems are not viable.
Storage Systems	Components that control the flows and, where possible, volumes of runoff being discharged from the site, by storing water and releasing it slowly (attenuation). These systems may also provide further treatment of the runoff (e.g. ponds, wetlands, and detention basins).	**No** – there are no external alterations therefore, storage systems are not viable.
Treatment Systems	Components that remove or facilitate the degradation of contaminants present in the runoff.	**Maybe** –treatment systems could be incorporated into the above SuDS features.

The London Borough of Richmond upon Thames states on their Sustainable Drainage Systems webpage that ‘The Council requires that SuDS are used in all development proposals.’ and ‘In all applications for

development, developers or applicants must include a statement outlining the proposed Sustainable Drainage System to be incorporated in the development, along with details for their long term management and maintenance.'. There are limited options for SuDS on site as the development proposals are change of use however, rainwater harvesting and permeable paving could be utilised to manage surface water runoff.

5.0 Conclusion

The proposed development at 63-71 High Street, Hampton Hill, London, TW12 1NH is located in Flood Zone 1, as defined in the NPPF. The proposal includes the change of use from offices to residential.

As the site is located in Flood Zone 1, the proposed development passes the Sequential Test in NPPF.

On the basis of the available information from the Environment Agency and London Borough of Richmond upon Thames, the site is at low risk from fluvial and surface water flooding although there have been historic sewer and groundwater incidents within the area.

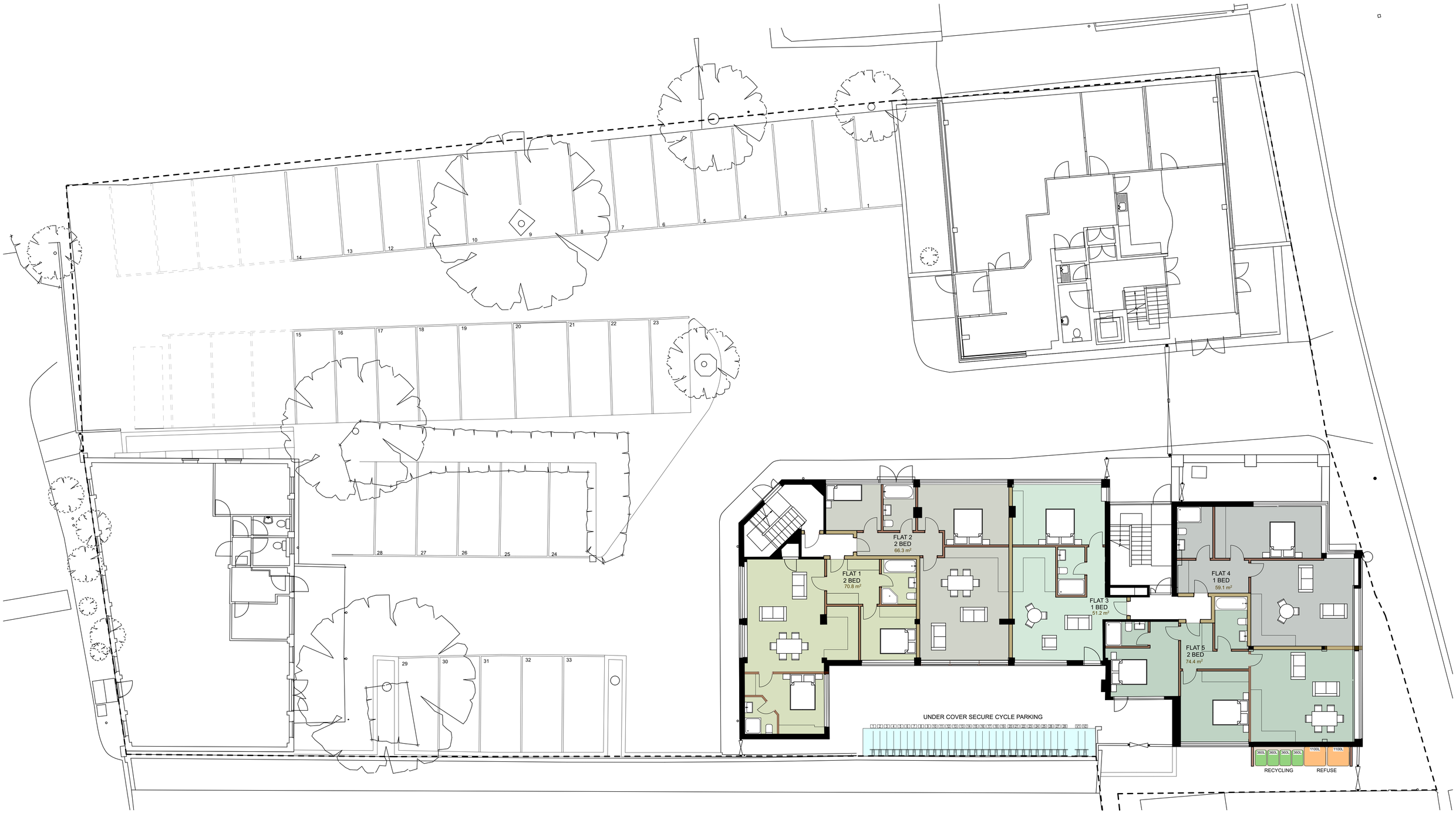
The scope of incorporating SuDS is limited, as the development is a change of use however, rainwater harvesting and permeable paving could be utilised.

It can be concluded that the proposed development can be deemed appropriate, provided that the recommendations in this report are adhered to, it will not increase the flood risk to other people.

6.0 Recommendations

- It is recommended that finished ground floor levels are set no lower than the existing level and 150mm above local ground level, if technically feasible.
- Development should incorporate SuDS in line with Local Policy and as outlined in Section 4.4 of this report.

Appendix A – Development Proposals



1 PROPOSED - GROUND FLOOR 1:100

NORTH

0 5 metres

ISSUE - FOR DISCUSSION

This drawing is not to be scaled. All dimensions to be checked on site before production or work begins on site.
Any discrepancies to be notified immediately to Charles Doe Architects. Do not reproduce this drawing without the prior consent of Charles Doe Architects.

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OFFICE AND RESIDENTIAL
63-71 HIGH STREET
HAMPTON HILL

Title: PROPOSED GROUND FLOOR PLANS
Scale: 1:100 @ A1
Date: AUGUST 2020
Project: 1452
Drawing No.: TP-201 / B

1 PROPOSED - FIRST FLOOR 1:100

NORTH

0 5 metres

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HAMPTON HILL

Title: PROPOSED FIRST FLOOR PLANS

Scale: 1:100 @ A1
Date: JULY 2020
Project: 1452
Drawing No.: TP-202

1 PROPOSED - SECOND FLOOR 1:100

NORTH

0 5 metres

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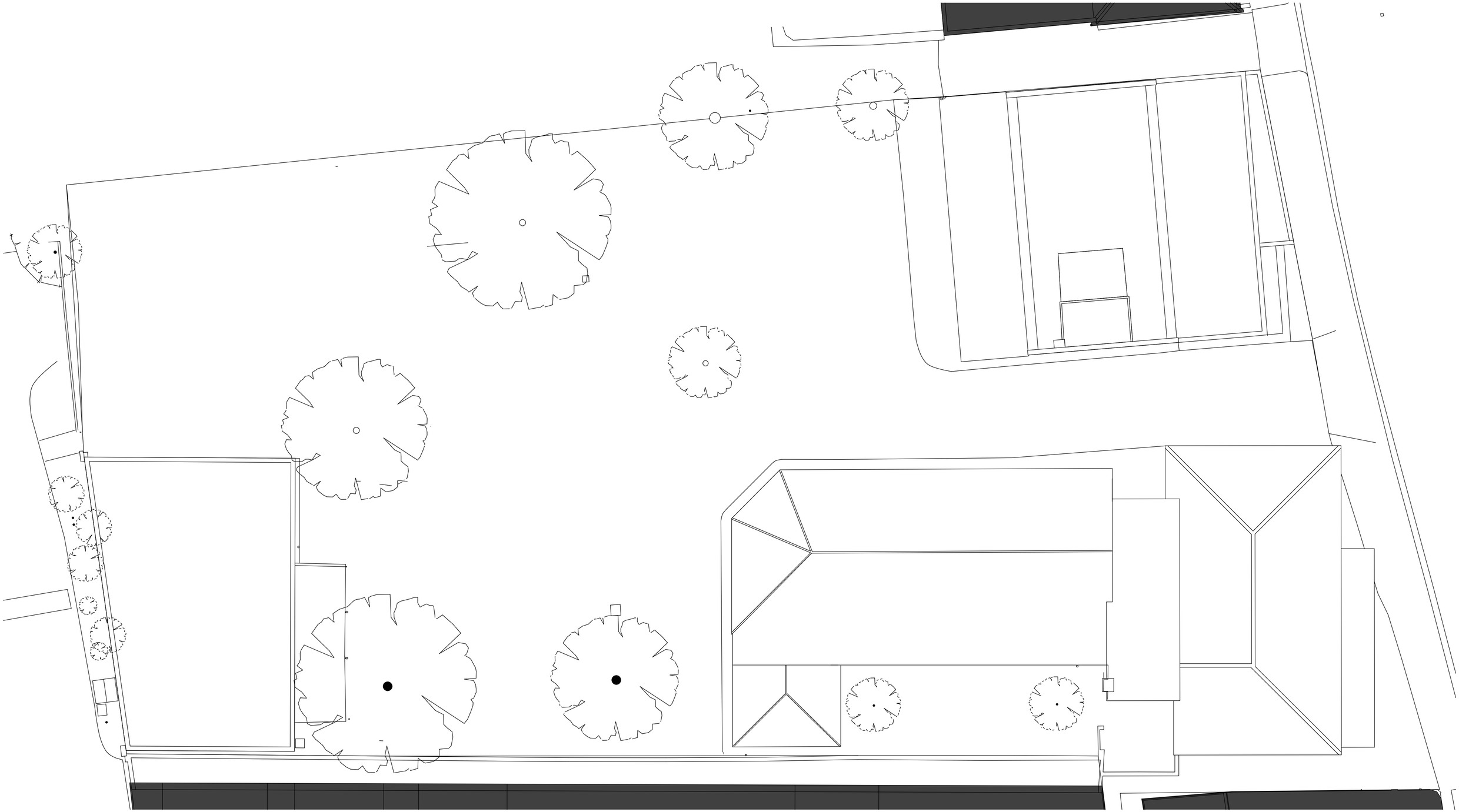
HAMPTON HILL

Title: PROPOSED SECOND FLOOR PLANS

Scale: 1:100 @ A1
Date: JULY 2020
Project: 1452
Drawing No.: TP-203



1 PROPOSED - ROOF PLAN 1:100

NORTH

0 5 metres

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Title: PROPOSED ROOF PLANS

Scale: 1:100 @ A1
Date: JULY 2020

Project: 1452
Drawing No.: TP-204

1 BLOCK B: PROPOSED - NORTH EAST ELEVATION 1:100

2 BLOCK B: PROPOSED - SOUTH EAST ELEVATION 1:100

3 BLOCK B: PROPOSED - NORTH WEST ELEVATION 1:100

4 BLOCK B: PROPOSED - SOUTH WEST ELEVATION 1:100

0 5 metres

ISSUE - FOR DISCUSSION

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HAMPTON HILL

Title: BLOCK B PROPOSED ELEVATIONS
Scale: 1:100 @ A1
Date: JULY 2020
Project: 1452
Drawing No.: TP-220