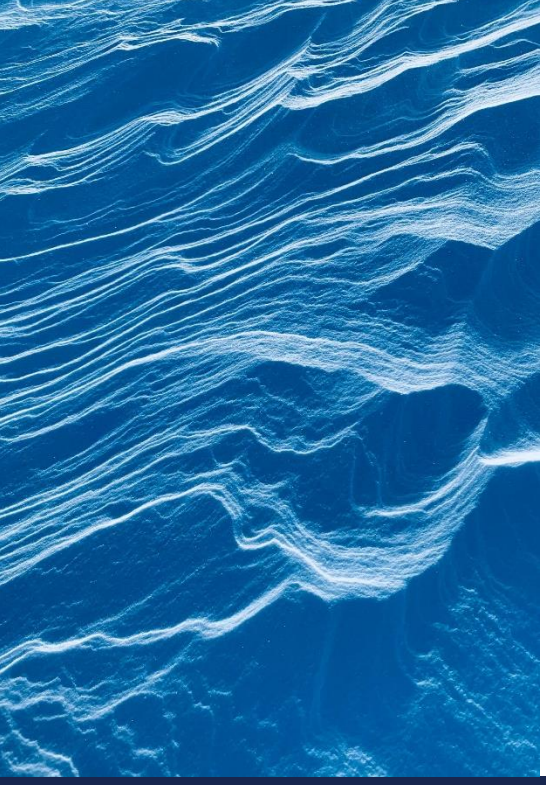

Surface Water Drainage Strategy

AEG02751_Independence House

Site Address: 84 Lower Mortlake Road,
Richmond,
TW9 2HS

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Flood risk, water and environment

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

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Flood risk, water and environment

Document Issue Record

Project: Surface Water Drainage Strategy (SWDS)

Prepared for: Wimshurst Pelleriti

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Site Location: 84 Lower Mortlake Road, Richmond, TW9 2HS

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Flood risk, water and environment

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Summary

Development Description	Existing	Proposed
Development Type	Brownfield site containing office units	Conversion of existing building to provide residential units
Ground Floor Level	According to the topographic survey, the building occupies most of the site area, with ground floor levels at approximately 6.7mAOD.	No changes to the existing levels are proposed.
Flood Risk Assessment	N/A[1]	N/A[1]
Impermeable Site Area	Approximately 830m^2	No change. All works are internal.
Management Measures	**Summary**	
Drainage Strategy	The proposed development plans indicate the use of a biosolar green/blue roof system at the top roof level and a normal green/blue roof systems at Level 3 roof level.	
Existing Runoff Rates (+CC)	13.0 l/s – 1 in 2 year event; 31.2 l/s – 1 in 30 year event; 40.1 l/s – 1 in 100 year event;	
Infiltration Rates	The building occupies almost the entire redline site boundary and infiltration SuDS would not be viable.	
Proposed Discharge Method	Use of specialist green/blue roof flow controls. Preliminary calculations indicate that the proposed development would achieve a 50% reduction in runoff rates post-development, in line with Mayor of London SPG 3.4.8 and London Borough of Richmond SuDS requirements.	
Pollution Control	Runoff generated on the green/blue roof areas would be treated above the adequate quality standards. To be confirmed by the designated green/blue roof manufacturer.	

[1] not required for this assessment. [2] data not available.

1. Introduction

1.1. Aegaea were commissioned by Wimshurst Pelleriti to undertake a Surface Water Drainage Strategy (SWDS) to facilitate a planning application for the change of use from office to residential for the building at 84 Lower Mortlake Road, Richmond, TW9 2HS. This SWDS has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF), the associated Planning Practice Guidance and London Plan SI 13 - Sustainable Drainage.

Site Overview

1.2. The site of the proposed development is 84 Lower Mortlake Road, Richmond, TW9 2HS.

Figure 1: Site Location (Source: Client)

1.3. The existing site consists of a building providing office units. The proposed development is for the full conversion of the existing office units to residential units. The proposed site redline

boundary is approximately 830m^2 and impermeable. All proposed works are internal. A full set of development proposals can be found in Appendix A of this report.

1.4. According to the topographic survey, the building occupies most of the site area, with ground floor levels at approximately 6.7mAOD.

1.5. According to the British Geological Survey (BGS) online data, the site is underlain by Till, Kempton Park Gravel Member - sand and gravel superficial deposits, and London Clay Formation - clay and silt bedrock geology.

1.6. The existing building encompasses approximately the entire site area, therefore infiltration SuDS would not be viable for the site. Furthermore, no works are proposed outside the building.

1.7. The site is currently developed and therefore drainage infrastructure should be present. A CCTV drain survey should be undertaken prior to detailed design stage to determine the location, type and structural condition of the existing drains and inform if their reuse would be practical post-development.

1.8. London Borough of Richmond is the Local Planning Authority (LPA) for the site, and also the designated Lead Local Flood Authority (LLFA).

2. Planning Policy

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

National Planning Policy Framework (NPPF)

2.2. The National Planning Policy Framework[1] (NPPF) (DLUHC, 2021) which includes UK Government policy on development and flood risk states:

> *"159. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.*
>
> *167. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:*
>
> *a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*
>
> *b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;*
>
> *c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*

[1] https://www.gov.uk/guidance/national-planning-policy-framework, **last updated July 2021**

d) any residual risk can be safely managed; and

e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

168. Applications for some minor development and changes of use should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments set out in footnote 55. "

2.3. Footnote 55 of the NPPF states:

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

2.4. Flood Zones in England are defined as follows:

Table 1: Flood Zone Definitions

Flood Zone	Definition
Zone 1 Low Probability	Land having less than 1 in 1,000 annual probability of river or sea flooding (all land outside Zones 2 and 3).
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.
Zone 3b The Functional Floodplain	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise:

Flood Zone	Definition
	land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

2.5. An FRA should be appropriate to the scale, nature, and location of the development. It should identify and assess the risk from all sources of flooding to and from the development and demonstrate how any flood risks will be managed over the lifetime of the development.

2.6. An assessment of hydrological impacts should be undertaken, including to surface water runoff and impacts to drainage networks in order to demonstrate how flood risk to others will be managed following development and taking climate change into account.

2.7. The Planning Practice Guidance, which was substantially revised in March 2015 in relation to drainage, requires that sustainable drainage systems (SuDS) should be considered and included where practicable, in line with Defra Technical Standards[2].

The London Plan

2.8. The London Plan prepared by the Greater London Authority in 2021 sets out the policies for development in the region.

2.9. Policy SI 13 Sustainable drainage outlines the requirements for new development within the region. It states:

2 Technical Standards Accessed Online
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf

- A. Lead Local Flood Authorities should identify - through their Local Flood Risk Management Strategies and Surface Water Management Plans - areas where there are particular surface water management issues and aim to reduce these risks. Increases in surface water run-off outside these areas also need to be identified and addressed. –

B. Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:

1. rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)

2. rainwater infiltration to ground at or close to source

3. rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)

4. rainwater discharge direct to a watercourse (unless not appropriate)

5. controlled rainwater discharge to a surface water sewer or drain

6. controlled rainwater discharge to a combined sewer. –

C. Development proposals for impermeable surfacing should normally be resisted unless they can be shown to be unavoidable, including on small surfaces such as front gardens and driveways. –

D. Drainage should be designed and implemented in ways that promote multiple benefits including increased water use efficiency, improved water quality, and enhanced biodiversity, urban greening, amenity and recreation.

2.10. Policy SI 12 Flood risk management outlines the requirements for new development within the region. It states:

- A. Current and expected flood risk from all sources (as defined in paragraph 9.2.12) across London should be managed in a sustainable and cost-effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers.

B. Development Plans should use the Mayor's Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Local Flood Risk Management Strategies, where necessary, to identify areas where particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Boroughs should cooperate and jointly address cross-boundary flood risk issues including with authorities outside London.

C. Development proposals should ensure that flood risk is minimised and mitigated, and that residual risk is addressed. This should include, where possible, making space for water and aiming for development to be set back from the banks of watercourses.

D. Developments Plans and development proposals should contribute to the delivery of the measures set out in Thames Estuary 2100 Plan. The Mayor will work with the Environment Agency and relevant local planning authorities, including authorities outside London, to safeguard an appropriate location for a new Thames Barrier.

E. Development proposals for utility services should be designed to remain operational under flood conditions and buildings should be designed for quick recovery following a flood.

F. Development proposals adjacent to flood defences will be required to protect the integrity of flood defences and allow access for future maintenance and upgrading. Unless exceptional circumstances are demonstrated for not doing so, development proposals should be set back from flood defences to allow for any foreseeable future maintenance and upgrades in a sustainable and cost-effective way.

G. Natural flood management methods should be employed in development proposals due to their multiple benefits including increasing flood storage and creating recreational areas and habitat.

Local Plan

2.11. The Local Plan prepared by the Local Planning Authority, Richmond Council, sets out the policies for development in the local area.

2.12. Policy LP 21 Flood Risk and Sustainable Drainage outlines the requirements for new development within the area. It states:

All developments should avoid, or minimise, contributing to all sources of flooding, including fluvial, tidal, surface water, groundwater and flooding from sewers, taking account of climate change and without increasing flood risk elsewhere. Development will be guided to areas of lower risk by applying the 'Sequential Test' as set out in national policy guidance, and where necessary, the 'Exception Test' will be applied. Unacceptable developments and land uses will be refused in line with national policy and guidance, the Council's Strategic Flood Risk Assessment (SFRA) and as outlined in the table below. In Flood Zones 2 and 3, all proposals on sites of 10 dwellings or more or 1000sqm of non-residential development or more, or on any other proposal where safe access/egress cannot be achieved, a Flood Emergency Plan must be submitted. Where a Flood Risk Assessment is required, on-site attenuation to alleviate fluvial and/or surface water flooding over and above the Environment Agency's floodplain compensation is required where feasible.

2.13. Policy LP 21 Flood Risk and Sustainable Drainage outlines the requirements for new development within the area. It states:

The Council will require the use of Sustainable Drainage Systems (SuDS) in all development proposals. Applicants will have to demonstrate that their proposal complies with the following: - A reduction in surface water discharge to greenfield run-off rates wherever feasible. - Where greenfield run-off rates are not feasible, this will need to be demonstrated by the applicant, and in such instances, the minimum requirement is to achieve at least a 50% attenuation of the site's surface water runoff at peak times based on the levels existing prior to the development.

Sequential and Exception Tests

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

Sequential Test

2.15. Paragraph 168 of the NPPF states that applications for some minor development and changes of use should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments.

2.16. The overall aim of the Sequential Test is to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. This means avoiding, so far as possible, development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding. Given the site is already located at the lowest flood risk (in Flood Zone 1 and at 'low' risk of surface water flooding), the Sequential Test should not be applicable in this instance.

Exception Test

2.17. The Exception Test is applied to sites based on the Flood Zone and the nature of the development. As the proposed development consists of an extension it would be classed as 'More Vulnerable' in line with government development use classes.

2.18. The Flood Risk Vulnerability Classification table[3] provided below in Table 2 shows which vulnerabilities are appropriate in each Flood Zone.

2.19. The proposed development sits wholly within Flood Zone 1 and the proposed change of use is to 'More Vulnerable'. Table 2 shows Flood Zone 1 is an appropriate location for 'More Vulnerable' uses without the need for an Exception Test.

Table 2: Flood Risk Vulnerability Classification

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

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

Documents and Online Mapping

2.20. Local Governments and Lead Local Flood Authorities provide documents which contain data and policies on flood risk and new development in their areas. These documents are introduced and briefly summarised below. For the purposes of this SWDS, these documents have been reviewed for relevant information and any relevant data is discussed within the appropriate sub heading of this report.

2.21. The following sources of information have been reviewed for this assessment:

- National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities, 2021)
- Planning Practice Guidance - Flood Risk and Coastal Change (Department for Levelling Up, Housing and Communities, 2022)
- Geoindex Onshore (British Geological Survey, 2022)
- The London Plan (Greater London Authority, 2021)

3. Sources of Flood Risk

Tidal & Fluvial

3.1. Flooding from watercourses arises when flows exceed the capacity of the channel, or where a restrictive structure is encountered, resulting in water overtopping the banks into the floodplain.

3.2. Tidal flooding occurs when a high tide and high winds combine to elevate sea levels. An area behind coastal flood defences can still flood if waves overtop the defences or break through them. Tidal flooding can also occur a long way from the coast by raising river levels. Water may overtop the riverbank or river defences when tide levels are high.

3.3. The EA Flood Map for planning shows that the site is located wholly within Flood Zone 1. Flood Zone 1 is land classified as having less than 1 in 1,000 annual probability of river or sea flooding.

3.4. Overall, the risk of flooding from tidal and fluvial sources is considered to be low.

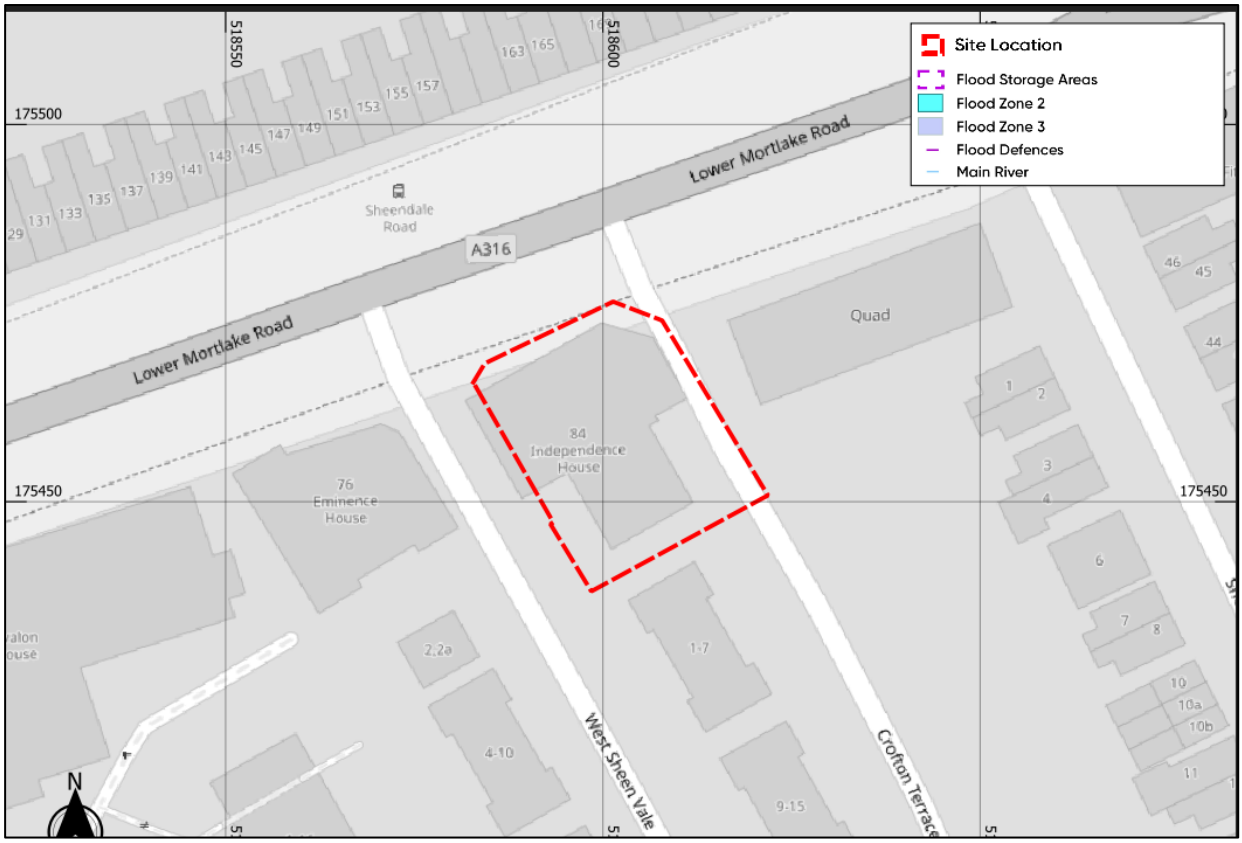


Figure 2: Environment Agency Flood Map for Planning

Canals

3.5. The Canal and River Trust (CRT) generally maintains canal levels using reservoirs, feeders, and boreholes and manages water levels by transferring it within the canal system.

3.6. The risk of flooding to this site from canals is considered to be low.

Pluvial

3.7. Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.

3.8. It is noted that the site is located within a Critical Drainage Area.

3.9. The EA online 'Flood Risk from Surface Water' Map indicates (Figure 3) that the majority of the site is located within a 'very low' risk of flooding area. There is a small area of 'low' flood risk to the south of the existing dwelling. Annual surface water flood risk is labelled by the EA as:

- 'High Risk'; >3.3% AEP (annual probability greater than 1 in 30).
- 'Medium Risk'; 1.1% to 3.3% AEP (annual probability between 1 in 100 and 1 in 30).
- 'Low Risk'; 0.1% to 1% AEP (annual probability between 1 in 1000 and 1 in 100).
- 'Very Low Risk'; <0.1% AEP (annual probability less than 1 in 1000).

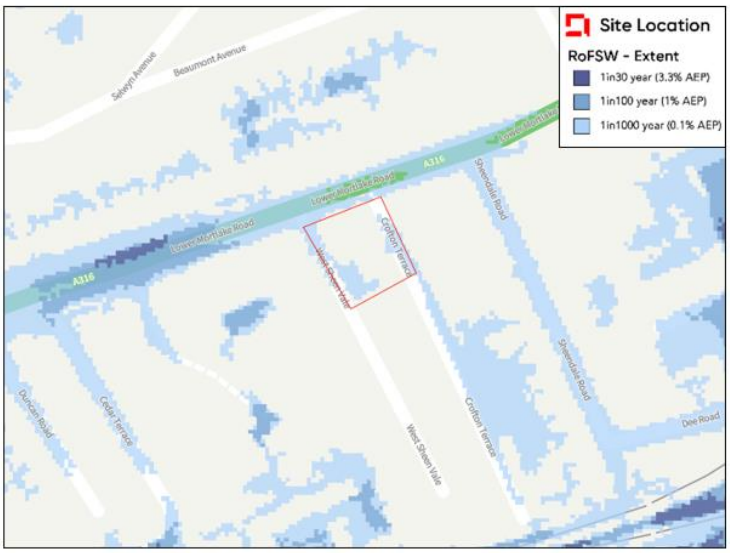


Figure 3: EA Surface Water Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

3.10. Given the site is not located within an area of 'high' or 'medium' surface water flood risk, no flood depths have been recorded on site, during the modelled 1 in 30 year (3.3% AEP) scenario or the 1 in 100 (1% AEP) scenario.

3.11. The EA Surface Water Depth map for the modelled 'Low' risk event (equivalent to the 1 in 1000 year event) shows most of the site to remain unaffected by flooding (Figure 4). The small area to the west of the existing building may experience flooding with flood depths between 300mm to 900mm.

3.12. Overall, the risk of flooding to the site can be considered to be low.

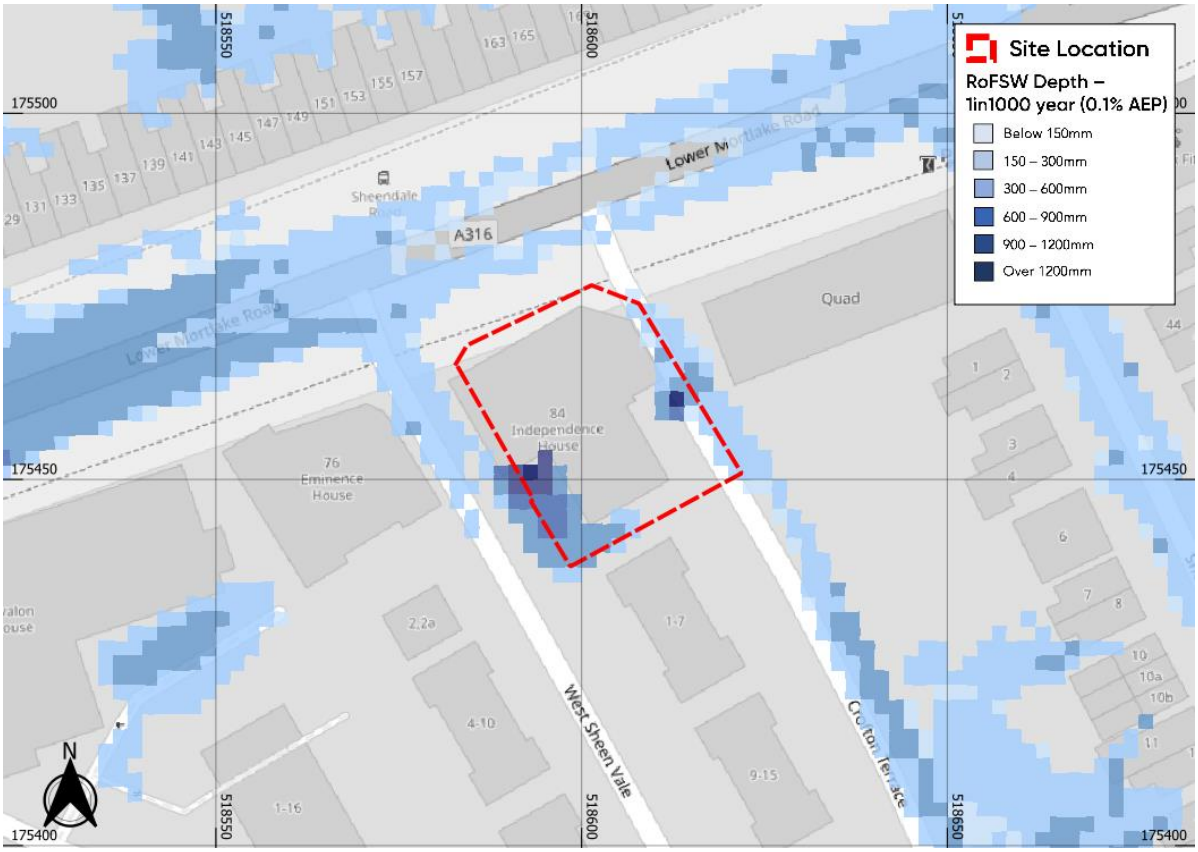


Figure 4: EA Surface Water Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Reservoirs

3.13. Flooding can occur from large waterbodies or reservoirs if they are impounded above the surrounding ground levels or are used to retain floodwater. Although unlikely, reservoirs and large waterbodies could overtop or breach leading to rapid inundation of the downstream floodplain.

3.14. According to the EA's Flood Risk from Reservoirs mapping the site is outside flood extents in the event of reservoir flooding (Figure 5).

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

3.15. The site has not been flagged as being at risk of flooding following a reservoir failure.

Groundwater

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

3.17. The SFRA presents the EA's Areas Susceptible to Groundwater Flooding mapping, which assesses the future risk of groundwater flooding. This mapping consists of 1km grid squares and shows the proportion of each which is at risk of groundwater flooding. The site is within a 1km cell of which 75% or more at risk of groundwater flooding in the future. The SFRA confirms the

risk is from superficial deposits as opposed to the water table, due to the impermeable bedrock in the area.

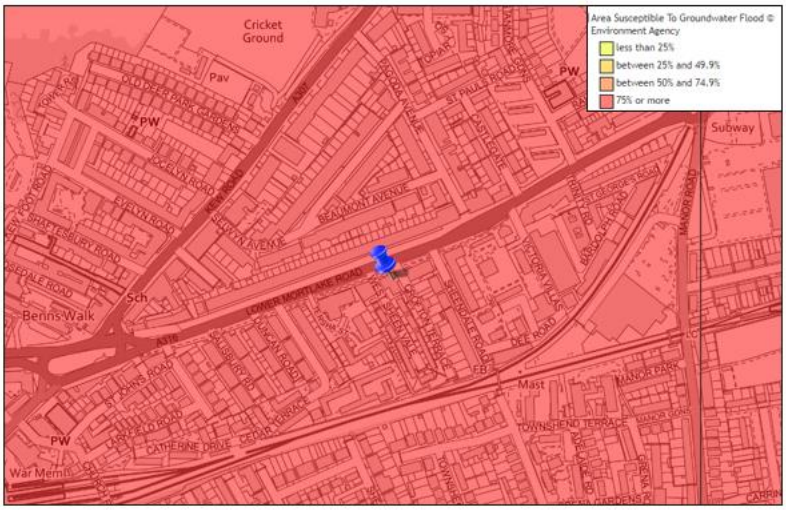


Figure 6: Area Susceptible to Groundwater Flood © Environment Agency (Richmond SFRA)

Sewers

3.18. Foul or surface water sewers can be a cause of flooding if the drainage network becomes overwhelmed either by blockage or due to local development beyond the designed capabilities of the drainage system.

3.19. The SFRA provides mapping of historical sewer flood incident records. No historical sewer surcharging incidents have been recorded in the vicinity of the site. Thames Water have stated that the site is located in an area where 1-10 incidents have been reported.

3.20. The development is therefore considered to be at low risk of flooding from sewers. However, it is recommended that non-return valves are fitted to any new sewer connections to minimise the risk of internal sewer flooding.

Figure 6: Area Susceptible to Groundwater Flood © Environment Agency (Richmond SFRA)

4. Surface Water Drainage Strategy

4.1. In accordance with the SuDS management train approach, the use of various SuDS measures to reduce and control surface water flows have been considered in detail for the development.

4.2. The management of surface water has been considered in respect to the SuDS hierarchy below, as detailed in the CIRIA 753 The SuDS Manual (section 3.2.3).

Table 1: SuDS Drainage Hierarchy

SuDS Drainage Hierarchy				
			Suitability	**Comment**
	1.	**Store rainwater for later use**	✓	Water butts or specialist rainwater harvesting systems could be provided, with rainwater reused either in gardening or grey water use activities.
	2.	**Use infiltration techniques, such as porous surfaces in non-clay areas**	x	The building covers the entire site redline boundary and infiltration SuDS would not be a viable option for the proposed development.
	3.	**Attenuate rainwater in ponds or open water features for gradual release**	x	The building covers approximately the entire site redline boundary and open SuDS features would not be a viable option for the proposed development.
	4.	**Attenuate rainwater by storing in tanks or sealed water features for gradual release**	✓	It is proposed to attenuate runoff at roof levels (top & 3rd level) within green roof structures.
	5.	**Discharge rainwater direct to a watercourse**	x	No nearby ditches or watercourses.
	6.	**Discharge rainwater to a surface water sewer/drain**	✓	A connection to the surface water sewer would be preferable over a connection to the combined or foul sewers, if available.
	7.	**Discharge rainwater to Combined/Foul Sewer**		The site is developed and drainage infrastructure should be present. A CCTV survey should be conducted prior to the detailed design stage to determine the type, location and structural integrity of the existing drainage network.

4.3. On review of the SuDS drainage hierarchy, it is proposed to utilise Green/Blue Roof systems to manage runoff post-development.

4.4. Other SuDS features, such as ponds or channels would not be feasible due to small ground level site areas where such elements could be provided.

4.5. Rainwater harvesting (RWH) systems should be considered at the detailed design stage by a specialist. Small RWH devices, such as water butts, should be provided where possible and runoff reused in gardening or grey water use activities.

4.6. For the purposes of this study, the BauderBLUE STORMcell System (see indicative section in Figure 5) is proposed for the development. Other blue roof systems from other manufacturers should be assessed by the client prior to construction. The final designated product should be as close as possible to the outfall discharge rates of the BauderBLUE STORMcell System, stated as being as low as 0.07l/s (page 9/16 https://www.bauder.co.uk/technical-centre/downloads/system-brochures/blue-roof-systems.pdf).

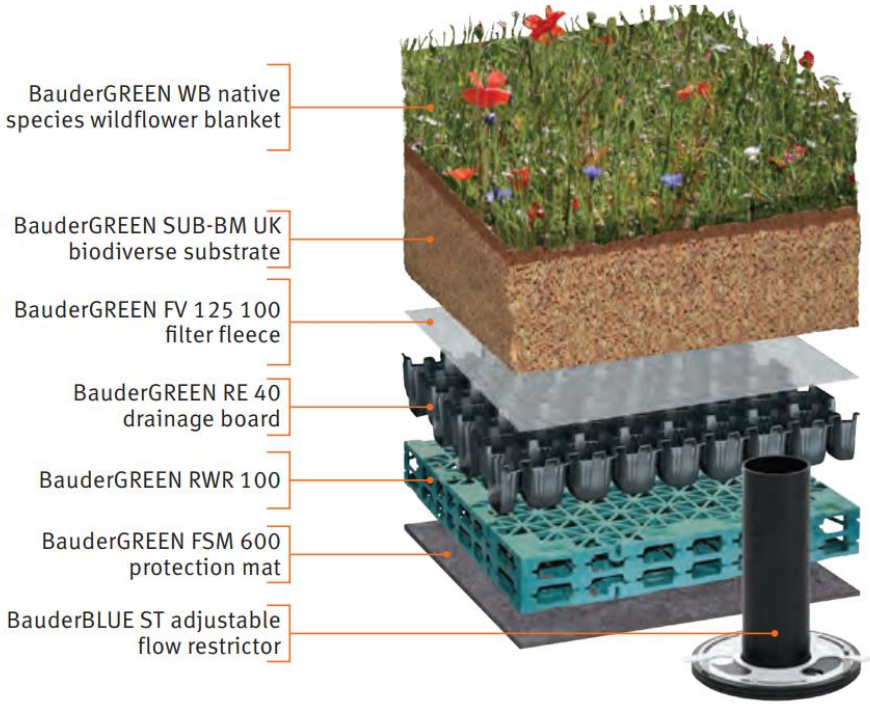


Figure 2: Bauder Green/Blue Roof System Section (Source: Bauder Blue Roof Design Guide)

4.7. The proposed development would provide photovoltaic (PV) panels at the top roof level, therefore a biosolar green/blue roof system should be provided to suit the client's requirements.

4.8. See proposed drainage layout in Appendix C.

Existing Surface Water Drainage Arrangement and Runoff Rates

4.9. The existing site consist mainly of a building and associated hadstanding. The total existing impermeable area is approximately 830m^2 (0.083ha).

4.10. InfoDrainage Software (v2023.0) was used to calculate the existing runoff rates across multiple return periods for the impermeable site area of 830m^2. The outflow rates during the 1 in 1, 1 in 30 and 1 in 100 year storm events are 13.0l/s, 31.2 l/s and 40.1l/s respectively. Detailed results and simulation criteria used can be found in Appendix B.

Proposed Runoff Rates

4.11. The proposed development would not increase the impermeable site area of approximately 830m^2.

4.12. The proposed drainage scheme is for use of green/blue roof systems at the 3rd and top roof levels, with total catchment areas of approximately 460m^2 (160m^2 and 300m^2 respectively).

4.13. For the purposes of this study, given that the green/blue roof system would be provided on an existing building and additional weights at roof level could pose a structural risk, a maximum water depth of 0.1m/m^2 (100kg/m^2) was assumed in calculations. **A specialist structural engineer should determine the maximum additional weight the building can withstand at the roof levels, prior to commencement of any construction works.**

4.14. For the proposed catchment areas of 460m^2 and maximum water depth of 0.1m, the total outfall rate would be 0.5l/s – 0.3 l/s from the top roof biosolar green/blue roof system and 0.2 l/s from the 3rd level green/blue roof system, during the 1 in 100 year + 40% climate change storm event. During the 1 in 30 year + 40%CC storm event, the outflow rate from the proposed SuDS systems would be 0.4 l/s, and 0.2 l/s during the 1 in 2 year + 40%CC storm event.

4.15. The catchment area of 460m^2 is approximately 55% of the existing impermeable area (460/830*100). As such, 370m^2 would drain as existing, with outfall rates during the 1 in 1, 1 in 30 and 1 in 100 year storm events of 5.85 l/s, 14 l/s and 18 l/s respectively.

4.16. As such, the total offsite runoff rate post-development during the 1 in 1, 1 in 30 and 1 in 100 year storm events (+40%CC) would be 6.05 l/s, 14.4 l/s, and 18.5 l/s respectively. A 50% runoff rate reduction would be achieved post-development during all major rainfall events.

InfoDrainage Results

4.17. Preliminary calculations for the design storm event of 1 in 100 year + 40%CC show that approximately 20.7m^3 is required to be provided in the proposed top roof green/blue roof system with outflows limited to 0.3l/s, and approximately 10m^3 in the 3rd level roof green/blue roof system with outflow limited to 0.2l/s.

4.18. According to the proposed site plans, the top roof level attenuation area would be approximately 223.5m^2, and provided with a 0.1m deep attenuation crate (0.95 porosity) would provide 10.7m^3 of attenuation storage.

4.19. The full calculation outputs per SuDS structure for a range of storm events can be found in Appendix B of this report.

Designing for Exceedance

4.20. Periods of exceedance occur when the rate of surface water runoff exceeds the drainage system capacity. Conveyance within the subbase cannot, generally, be economically or sustainably constructed to the scale required for the most extreme rainfall events. This may result, on occasion, in the surface water runoff exceeding the capacity of the attenuation system.

4.21. In situations where extreme rainfall intensity exceeds inlet capacities, or for extreme storm events exceeding the design flood event considered for drainage design, the proposed site levels should direct surface water to the soft landscaped areas within the site and public roads, and away from any existing or proposed building thresholds and neighbouring private properties.

Water Quality

4.22. Runoff from the roofs is largely considered to be uncontaminated. The proposed green roof element of the SuDS system is considered adequate to treat runoff to the quality level required for offsite discharge to the sewers.

4.23. The water quality standards achieved by the Green/Blue Roof System to be provided by the designated manufacturer prior to commencement of construction works.

Maintenance

4.24. All onsite SuDS and drainage systems will be privately maintained. A long-term maintenance regime should be agreed with the site owners before adoption.

4.25. The property owner will be responsible for the management and maintenance of SuDS devices.

4.26. The maintenance regime of the proposed Green/Blue Roof SuDS system to be provided by the manufacturer of the system and a maintenance schedule agreed with the site owner prior to commencement of construction works.

5. Conclusions

5.1. Aegaea were commissioned by Wimshurst Pelleriti to undertake a Surface Water Drainage Strategy (SWDS) to facilitate a planning application for the change of use from office to residential for the building at 84 Lower Mortlake Road, Richmond, TW9 2HS. This SWDS has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF), the associated Planning Practice Guidance and London Plan SI 13 - Sustainable Drainage.

5.2. The existing site consists of a building providing office units. The proposed development is for the full conversion of the existing office units to residential units. The proposed site redline boundary is approximately 830m^2 and impermeable. All proposed works are internal.

5.3. According to the topographic survey, the building occupies most of the site area, with ground floor levels at approximately 6.7mAOD.

5.4. According to the British Geological Survey (BGS) online data, the site is underlain by Till, Kempton Park Gravel Member - sand and gravel superficial deposits, and London Clay Formation - clay and silt bedrock geology. The existing building encompasses approximately the entire site area, therefore infiltration SuDS would not be viable for the site.

5.5. The site is currently developed and therefore drainage infrastructure should be present. A CCTV drain survey should be undertaken prior to detailed design stage to determine the location, type and structural condition of the existing drains and inform if their reuse would be practical post-development.

5.6. The proposed drainage scheme is for use of green/blue roof systems at the 3rd and top roof levels, with total catchment areas of approximately 460m^2 (160m^2 and 300m^2 respectively).

5.7. InfoDrainage Software (v2023.0) was used to calculate the existing runoff rates across multiple return periods for the impermeable site area of 830m2. The outflow rates during the 1 in 1, 1 in 30 and 1 in 100 year storm events are 13.0l/s, 31.2 l/s and 40.1l/s respectively.

5.8. The total offsite runoff rate post-development during the 1 in 1, 1 in 30 and 1 in 100 year storm events (+40%CC) would be 6.05 l/s, 14.4 l/s, and 18.5 l/s respectively. A 50% runoff rate reduction would be achieved post-development during all major rainfall events.

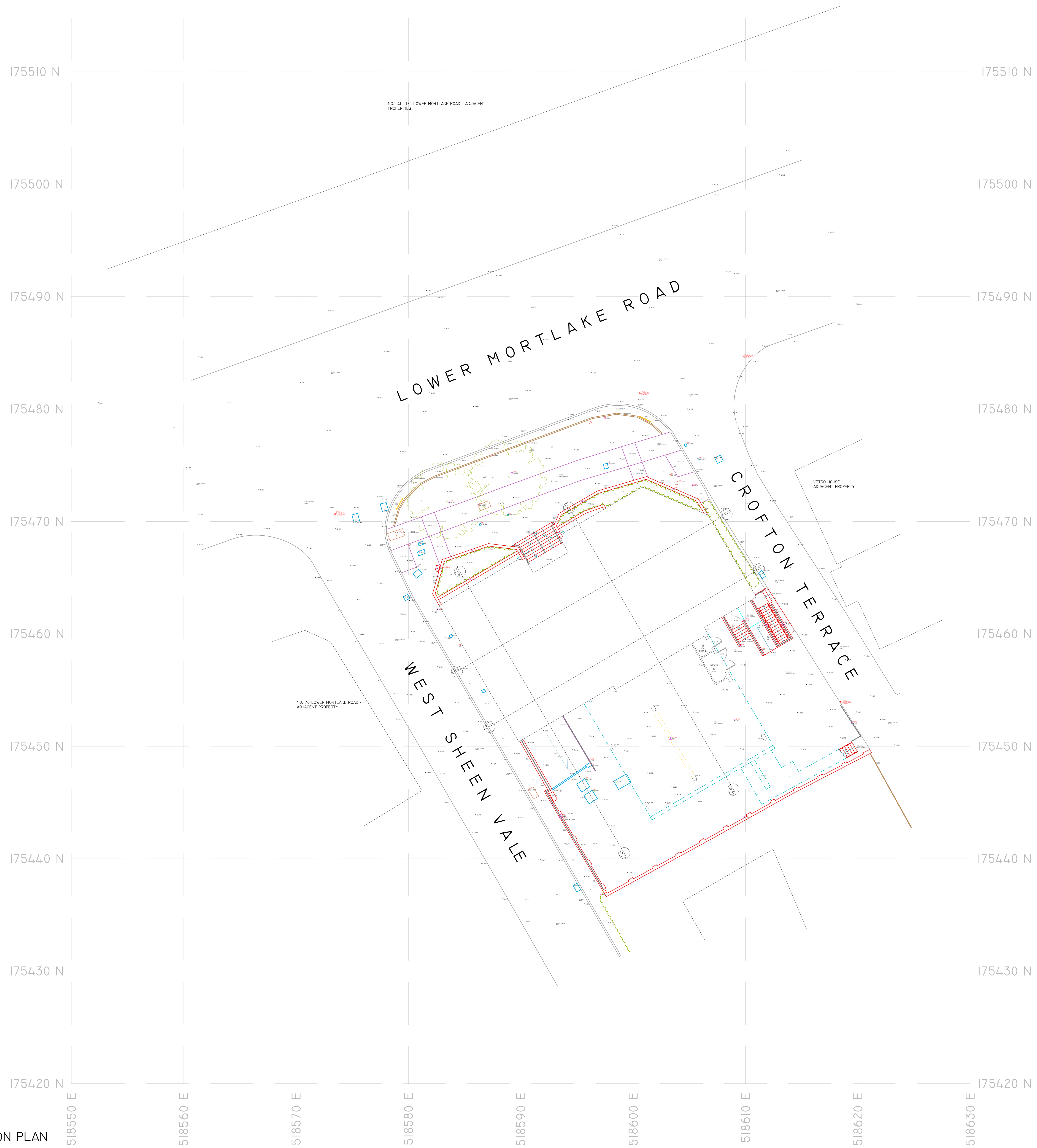
5.9. For the purposes of this study, given that the green/blue roof system would be provided on an existing building and additional weights at roof level could pose a structural risk, a maximum water depth of 0.1m/m^2 (100kg/m^2) was assumed in calculations. A specialist structural engineer

should determine the maximum additional weight the building can withstand at the roof levels, prior to commencement of any construction works.

5.10. Rainwater harvesting (RWH) systems should be considered at the detailed design stage by a specialist. Small RWH devices, such as water butts, should be provided where possible and runoff reused in gardening or grey water use activities.

5.11. The proposed green roof element of the SuDS system is considered adequate to treat runoff to the quality level required for offsite discharge to the sewers. The water quality standards achieved by the Green/Blue Roof System to be provided by the designated manufacturer prior to commencement of construction works.

Appendix A - Development Proposals



SITE LOCATION PLAN

1:200 SCALE

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS AND DRAWINGS ISSUED. FOR DISCREPANCIES OR OMISSIONS CONTACT MOBILE CAD SURVEYING SOLUTIONS LTD PRIOR TO WORK COMMENCING. THE CONTRACTOR IS TO CHECK AND VERIFY ALL BUILDING AND SITE DIMENSIONS AND LEVELS BEFORE WORK COMMENCES.

DO NOT SCALE THIS DRAWING - CHECK ALL DIMENSIONS ON SITE

NOTE:
AREAS DRAWN INDICATIVELY NOTED AND INDICATED BY GREY DASHED LINE AS LINE BELOW

LEVEL DATUM & ORIENTATION

N

LEVELS & DRAWING ORIENTATION CO-ORDIATED TO WORLD CO-ORDINATES USING GPS EQUIPMENT (SPECTRA SP60). PERMANENT STATIONS LOCATED IN POSITIONS INDICATED ON PLAN AS FOLLOWS:-

STN 01-	E-518618.4531,	N-175453.908,	HT - 6.570M
STN 02-	E-518600.582,	N-175481.388,	HT - 6.652M
STN 03-	E-518609.758,	N-175484.662,	HT - 6.601M
STN 04-	E-518573.473,	N-175470.664,	HT - 6.540M

ABBREVIATIONS & LEGEND:

LEVELS & HEIGHTS
CL - COVER LEVEL
IL - INVERT LEVEL
L - LEVEL
HT - HEIGHT
STN - SURVEY STATION
BM - BEAM
CE - CEILING
J - JOISTS
RA - RAFTERS
E - EAVES
FR - FLAT ROOF
P - PARAPET
F - FENCE
U/S - UNDERSIDE OF
R - RIDGE
SL - SLAB
SF - SOFFIT
T - TREE
THR - THRESHOLD
To - TOP OF
W - WALL
HH - HEAD HEIGHT
OH - OPENING HEIGHT
SH - SILL HEIGHT

GENERAL NOTES
AB - ADVERTISING BOARD
AC - AIR CONDITIONING UNIT
AHU - AIR HANDLING UNIT
AP - INTRUDER ALARM PANEL
B - BOLLARD
BA - BARRIER
BE - BENCH
BS - BUS STOP
BLR - BOILER
BXO - BOXING OUT
CAH - CEILING ACCESS HATCH
CHY - CHIMNEY
CPD - CUPBOARD
DB - DOG WASTE BIN
DW - DWARF WALL
DK - DROP KERB
EDB - ELECTRICAL DISTRIBUTION BOARD
EG - EXTRACT GRILLE
EM - ELECTRIC METER
FB - FUSE BOX
FP - FIREPLACE
FU - FLUE
FAP - FIRE ALARM PANEL
GR - GRASS
GU - GUARDING
GM - GAS METER
HWC - HOT WATER CYLINDER
LAH - LOFT ACCESS HATCH
LB - LITTER BIN
LP - LAMP POST
PC - PELICAN CROSSING
PS - PAVING SLABS
PL - PAVEMENT LIGHT
PLT - PLANTING
PB - POST BOX
RG - RAILING
RS - ROAD SIGN
SB - SPEED BUMP
SG - SIGNAGE
SN - STREET NAME SIGN
SWR - SHOWER
SHV - SHELVING
TB - TELEPHONE BOX
TL - TRAFFIC LIGHT
TM - TICKET MACHINE
TP - TELEGRAPH POLE
VE - VEGETATION
W - WATER
WD - WARDROBE
WH - WATER HEATER
ZC - ZEBRA CROSSING

SERVICES
BT - BRITISH TELECOMS
CATV - CABLE TELEVISION
ER - EARTHING ROD
ES - ELECTRICAL SUPPLY
FH - FIRE HYDRANT
GAS - GAS SUPPLY
PO - POST OFFICE TELEPHONE
SV - STOP VALVE
TSSU - TRAFFIC LIGHT SIGNALS

DRAINAGE
DC - DRAINAGE CHANNEL
G - GULLY
I/C - INSPECTION CHAMBER
M/H - MANHOLE
RE - RODDING EYE
RWP - RAIN WATER PIPE
UTL - UNABLE TO LIFT
S+VP - SOIL & VENT PIPE
ST - STOP TAP
WM - WATER METER

TYPICAL DRAWING SYMBOLS
SPOT LEVEL × 96.256
SPOT HEIGHT ToW 99.034
SURVEY STATION STN 01 E: 515743.694 N: 232193.251 HT: 95.142
MANHOLE / INSPECTION CHAMBER I/C CL=96.256 IL=94.824
SURVEY HEIGHT H=2.704
WINDOW TAG WINDOW 015 HH=1.962 OH=0.747 SH=1.215
DOOR TAG DOOR 009 OH=1.820
RADIATOR TAG RADIATOR 005 TH=0.238 RH=0.538 BH=0.200

TOPOGRAPHICAL SYMBOLS
OVERHEAD ELECTRICAL — ELEC —
OVERHEAD TELEPHONE — TELE —
FENCE LINE
VEGETATION OUTLINE
SINGLE GATE
DOUBLE GATE
TREE
CONTOURS 92.000M

REV	DATE	AMENDMENTS

Mobile CAD Surveying office & on site...™

WWW.MOBILECADSURVEYING.CO.UK
SURVEYS@MOBCAD.CO.UK
PONTEFRACT HEAD OFFICE: UNIT 11, 2 HARROPWELL LANE, PONTEFRACT, WEST YORKSHIRE, WF8 1QY, 01977 525 076
LONDON OFFICE: KEMP HOUSE, 152 - 160 CITY ROAD, LONDON, EC2V 2NX, 020 3198 1197

PROJECT: MEASURED BUILDING SURVEY
ADDRESS: INDEPENDENCE HOUSE, 84 LOWER MORTLAKE ROAD, RICHMOND, TW9 2HS
DWG NO.: 2664 - 01
DWG TITLE: SITE LOCATION PLAN
DWG DATE: NOVEMBER 2019
DWG SIZE: SCALE AS SHOWN @ A1
DRAWN: JH | CHECKED: JM | ISSUE -

0 5m 10m 15m 20m

N

DRAFT

Revision	Date	Description
A	16/08/23	Draft Issue

project
Independance House

drawing title
Proposed Site Plan

drawing number	revision
WPA-0810-0100	A
scale @ A3	**first issue date**
1 : 500	09/04/17

drawing purpose
SKETCH

WIMSHURST
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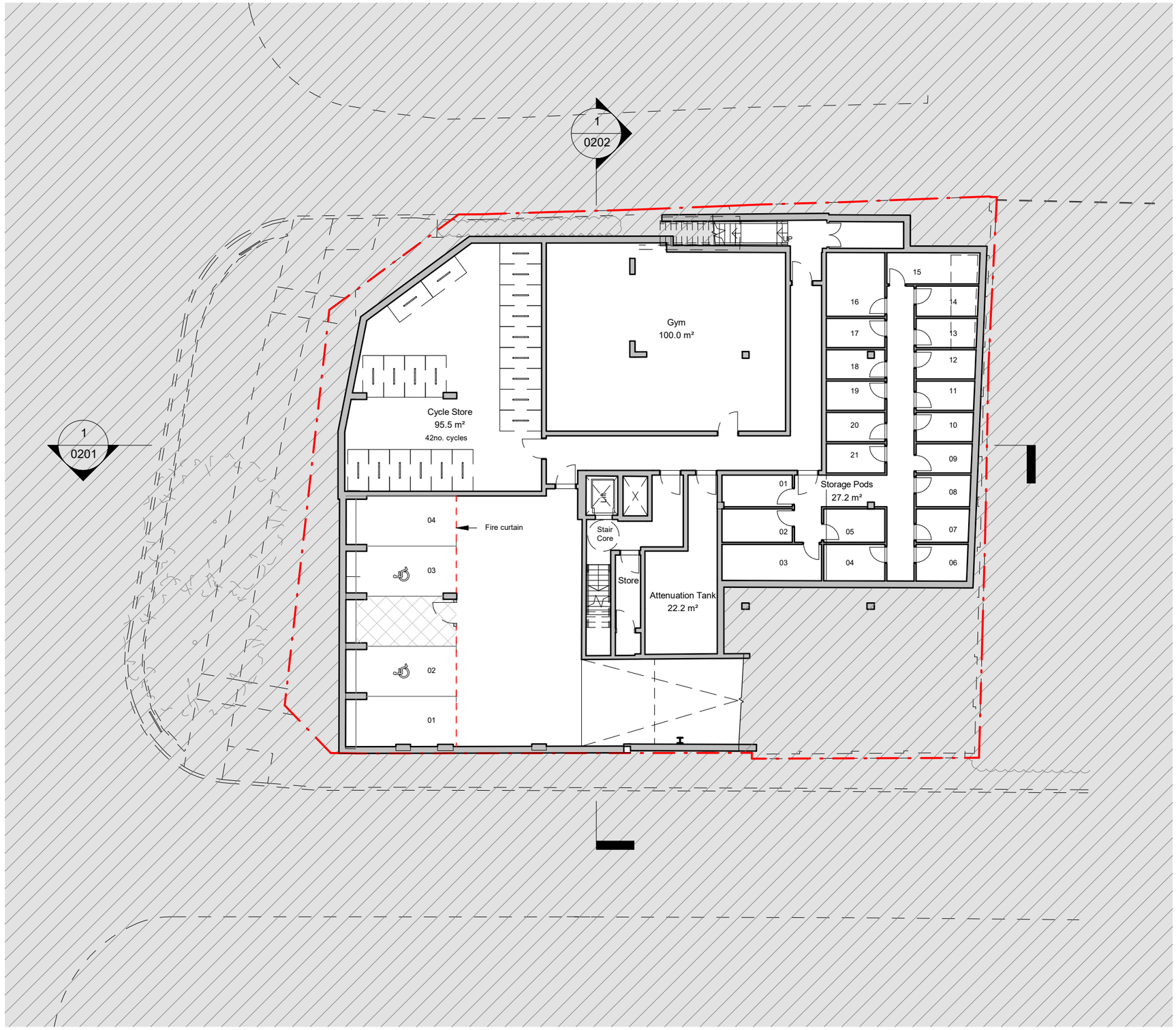

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DRAFT

Revision	Date	Description
A	16/08/23	Draft Issue

project
Independance House

drawing title
Proposed Basement

drawing number: WPA-0810-0108
revision: A

scale @ A3: 1 : 200
first issue date: 13/11/2020

drawing purpose
SKETCH

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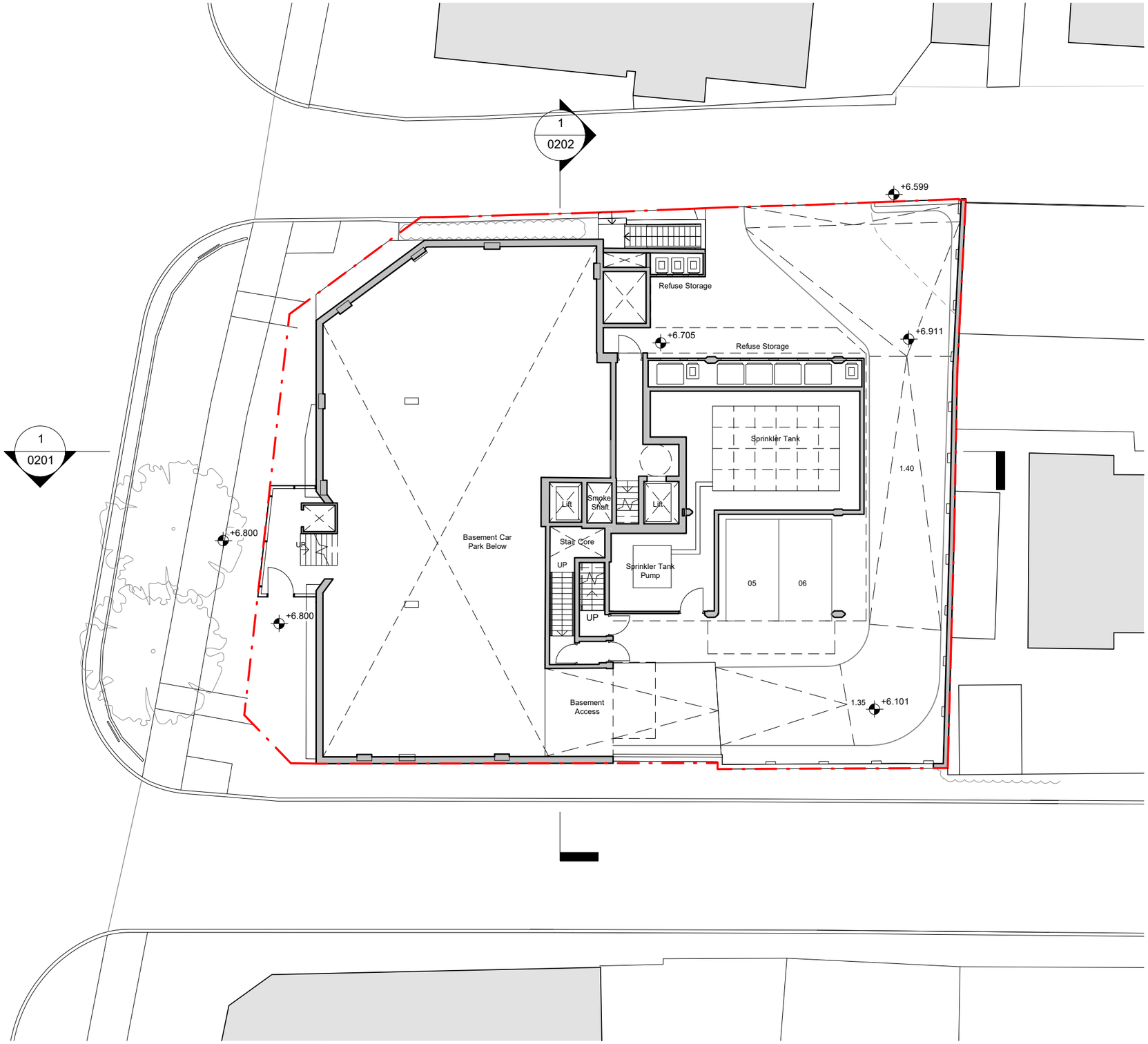

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DRAFT

Revision	Date	Description
A	16/08/23	Draft Issue

project
Independance House

drawing title
Proposed Street Level

drawing number	revision
WPA-0810-0109	A
scale @ A3	**first issue date**
1 : 200	13/11/2020

drawing purpose
SKETCH

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0 1m 5m

N

DRAFT

Revision	Date	Description
A	16/08/23	Draft Issue

project
Independance House

drawing title
Proposed Ground Floor Plan

drawing number
WPA-0810-0110

revision
A

scale @ A3
1 : 200

first issue date
13/11/2020

drawing purpose
SKETCH

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0 1m 5m

N

DRAFT

Revision	Date	Description
A	16/08/23	Draft Issue

project
Independance House

drawing title
Proposed Level 1 & 2 Plan

drawing number: WPA-0810-0111
revision: A
scale @ A3: 1 : 200
first issue date: 13/11/2020
drawing purpose: SKETCH

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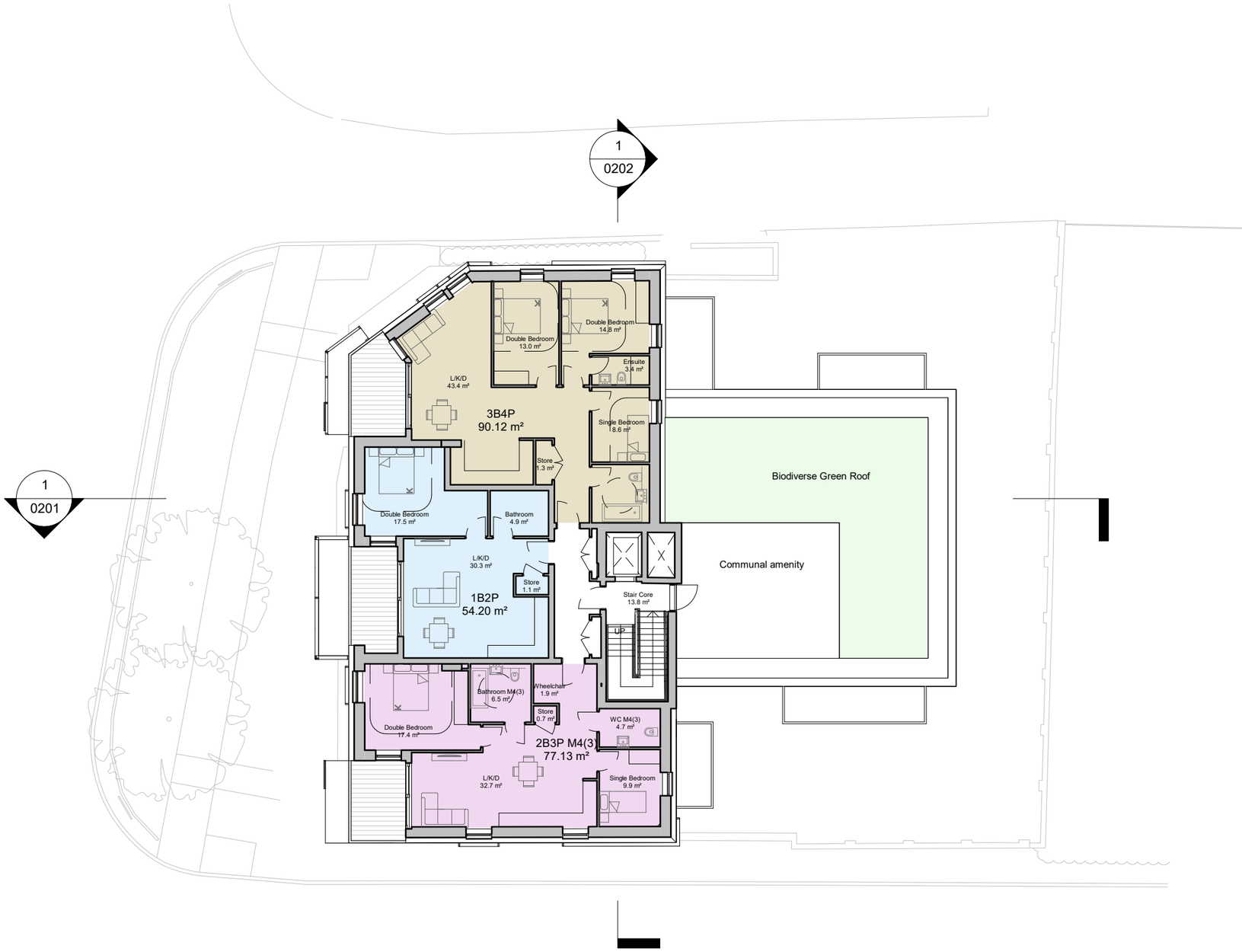

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DRAFT

Revision	Date	Description
A	16/08/23	Draft Issue

project
Independance House

drawing title
Proposed Level 3 Plan

drawing number
WPA-0810-0113

revision
A

scale @ A3
1 : 200

first issue date
13/11/2020

drawing purpose
SKETCH

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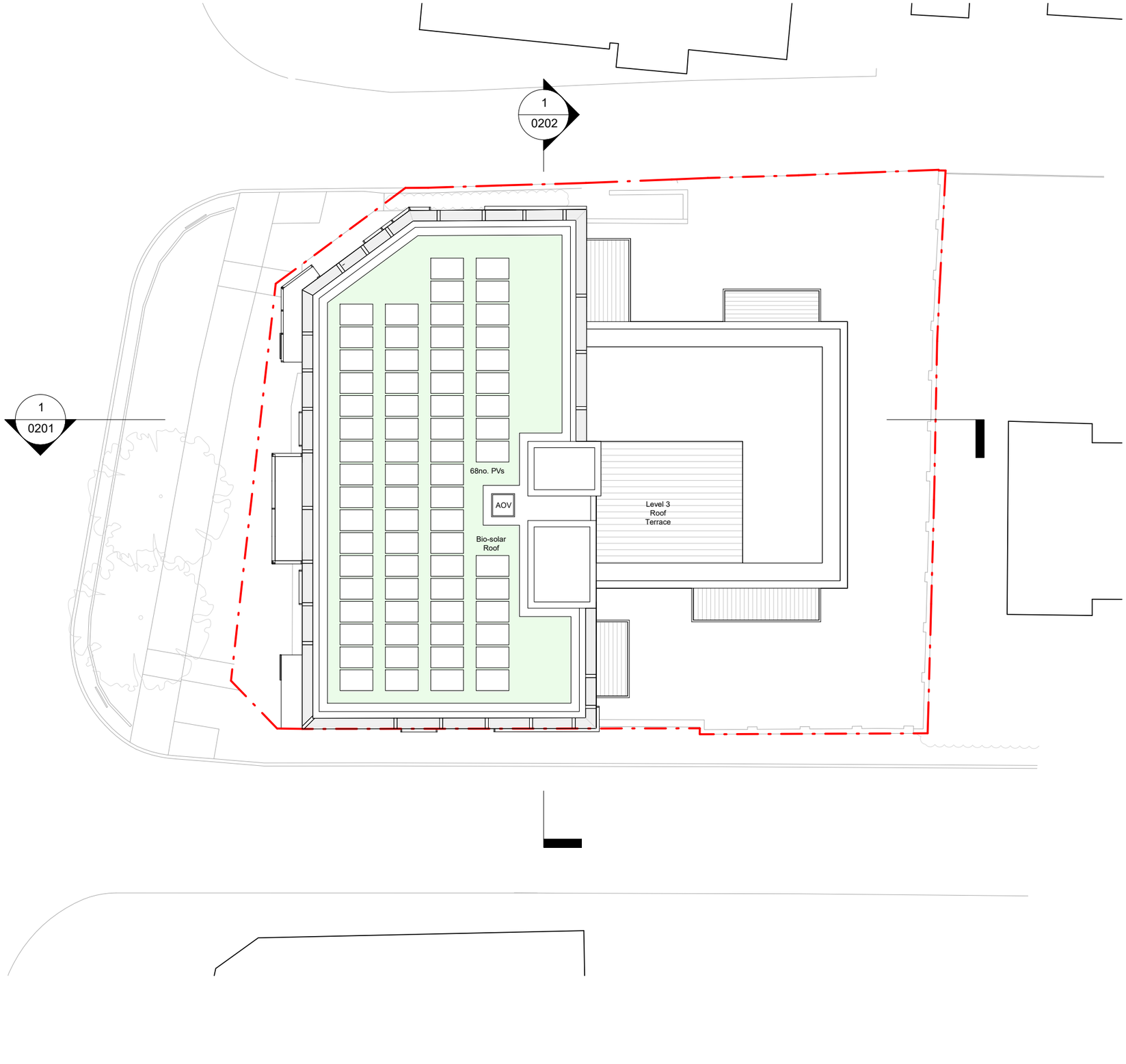

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0 1m 5m

DRAFT

Revision	Date	Description
A	16/08/23	Draft Issue

project
Independance House

drawing title
Proposed Roof Plan

drawing number	revision
WPA-0810-0114	A
scale @ A3	**first issue date**
1 : 200	13/11/2020

drawing purpose
SKETCH

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Appendix B - Preliminary Calculations

AEG02751_Independence House: Wimshurst Pelleriti Existing Runoff Rates	Date: 12/09/2023		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
TOTAL EXISTING SITE AREA	EXISTING RUNOFF RATES		Time of Concentration	0.083	100	0	100	0.083
TOTAL		**0.0**		**0.083**				**0.083**

AEG02751_Independence House: Wimshurst Pelleriti Existing Runoff Rates	Date: 12/09/2023		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		

FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
EXISTING RUNOFF RATES	FEH: 2 years: +0 %: 15 mins: Winter	10.000	9.000	9.000	0.000	13.0	0.000	0.000	13.0	6.207	OK

AEG02751_Independence House: Wimshurst Pelleriti Existing Runoff Rates	Date: 12/09/2023		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		

FEH: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
EXISTING RUNOFF RATES	FEH: 30 years: +0 %: 15 mins: Winter	10.000	9.000	9.000	0.000	31.2	0.000	0.000	31.2	14.928	OK

AEG02751_Independence House: Wimshurst Pelleriti Existing Runoff Rates	Date: 12/09/2023		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		

FEH: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
EXISTING RUNOFF RATES	FEH: 100 years: +0 %: 15 mins: Winter	10.000	9.000	9.000	0.000	40.1	0.000	0.000	40.1	19.185	OK

AEG02751_Independence House: Wimshurst Pelleriti Proposed Calculations	Date: 12/09/2023			
	Designed by: SD	Checked by:	Approved By:	
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:			

TOP ROOF BIOSOLAR GREEN/BLUE ROOF

Type : Cellular Storage

Dimensions

Exceedance Level (m)	10.000
Depth (m)	0.100
Base Level (m)	9.750
Number of Crates Long	1
Number of Crates Wide	1
Number of Crates High	1
Porosity (%)	95
Crate Length (m)	22.35
Crate Width (m)	10
Crate Height (m)	0.1
Total Volume (m³)	21.383

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	TOP ROOF CATCHMENT
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Orifice

Diameter (m)	0.022
Coefficient of Discharge	0.600
Invert Level (m)	9.750

AEG02751_Independence House: Wimshurst Pelleriti Proposed Calculations	Date: 12/09/2023		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		

LEVEL 3 GREEN/BLUE ROOF

Type : Cellular Storage

Dimensions

Exceedance Level (m)	10.000
Depth (m)	0.100
Base Level (m)	9.750
Number of Crates Long	1
Number of Crates Wide	1
Number of Crates High	1
Porosity (%)	95
Crate Length (m)	11.25
Crate Width (m)	10
Crate Height (m)	0.1
Total Volume (m³)	10.838

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	LEVEL 3 CATCHMENT
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Orifice

Diameter (m)	0.020
Coefficient of Discharge	0.600
Invert Level (m)	9.750

AEG02751_Independence House: Wimshurst Pelleriti Proposed Calculations	Date: 12/09/2023		
	Designed by: SD	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
LEVEL 3 CATCHMENT	LEVEL 3 GREEN/BLUE ROOF		Green Roof	0.016		0		0.016
TOP ROOF CATCHMENT	TOP ROOF BIOSOLAR GREEN/BLUE ROOF		Green Roof	0.030		0		0.030
TOTAL		**0.0**		**0.046**				**0.046**

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FEH

Type: FEH

Site Location	GB 518594 175465 TQ 18594 75465
Rainfall Version	2013
Data Type	Point
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
2.0	40.000
30.0	40.000
100.0	40.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880

FEH: 2 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
TOP ROOF BIOSOLAR GREEN/BLUE ROOF	FEH: 2 years: +40 %: 600 mins: Winter	9.782	9.782	0.032	0.032	0.8	6.744	0.000	0.000	0.1	5.921	68.461	OK
LEVEL 3 GREEN/BLUE ROOF	FEH: 2 years: +40 %: 600 mins: Winter	9.780	9.780	0.030	0.030	0.4	3.170	0.000	0.000	0.1	3.939	70.754	OK

AEG02751_Independence House: Wimshurst Pelleriti Proposed Calculations	Date: 12/09/2023			
	Designed by: SD	Checked by:	Approved By:	
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:			

FEH: 30 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
TOP ROOF BIOSOLAR GREEN/BLUE ROOF	FEH: 30 years: +40 %: 480 mins: Winter	9.821	9.821	0.071	0.071	1.8	15.079	0.000	0.000	0.2	9.629	29.480	OK
LEVEL 3 GREEN/BLUE ROOF	FEH: 30 years: +40 %: 360 mins: Winter	9.818	9.818	0.068	0.068	1.2	7.232	0.000	0.000	0.2	5.683	33.272	OK

AEG02751_Independence House: Wimshurst Pelleriti Proposed Calculations	Date: 12/09/2023			
	Designed by: SD	Checked by:	Approved By:	
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:			

FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
TOP ROOF BIOSOLAR GREEN/BLUE ROOF	FEH: 100 years: +40 %: 480 mins: Winter	9.847	9.847	0.097	0.097	2.3	20.695	0.000	0.000	0.3	11.910	3.215	OK
LEVEL 3 GREEN/BLUE ROOF	FEH: 100 years: +40 %: 360 mins: Winter	9.843	9.843	0.093	0.093	1.5	9.952	0.000	0.000	0.2	7.067	8.169	OK

Appendix C - SuDS Preliminary Layout

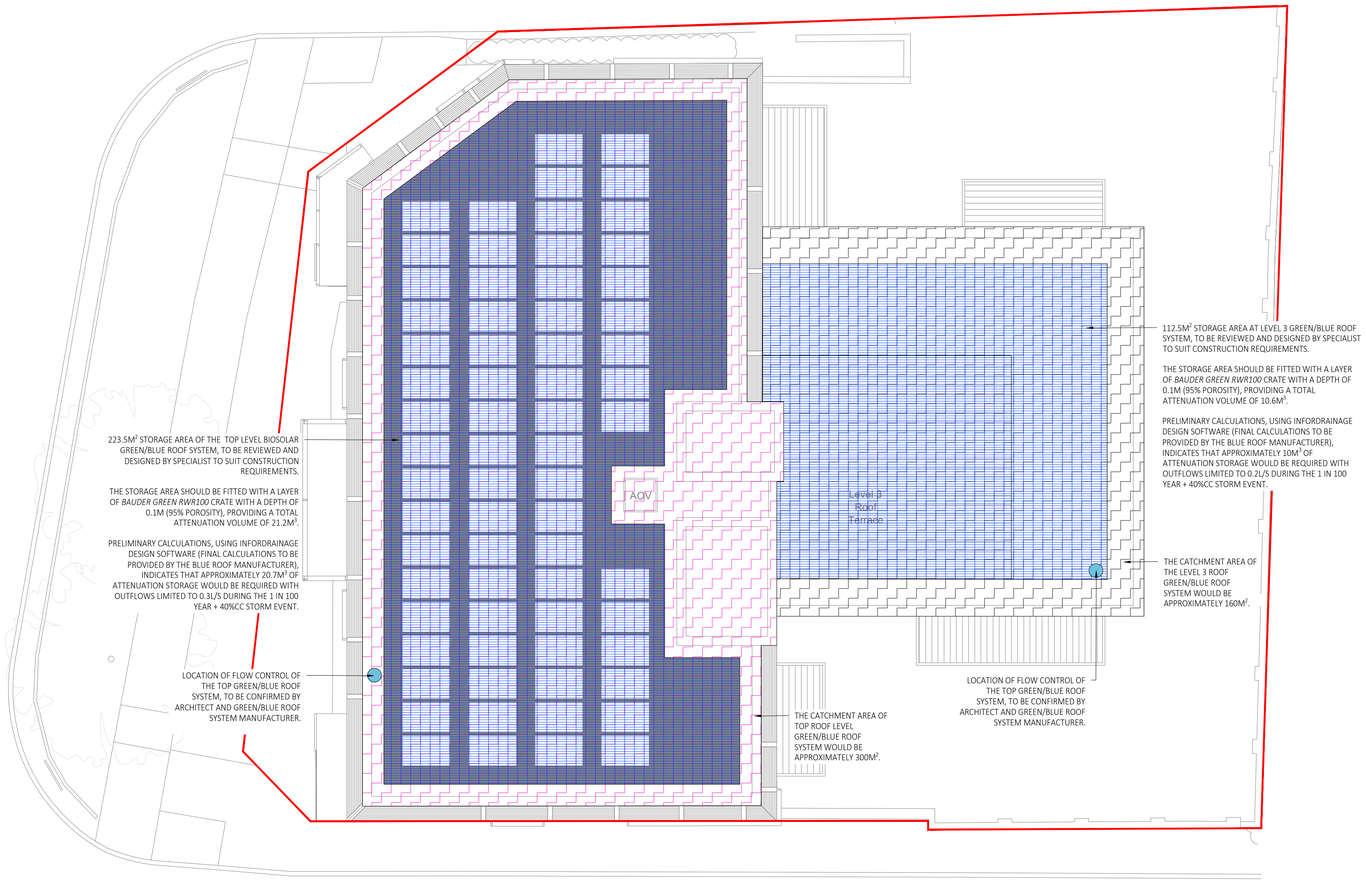
THE PROPOSED GREEN ROOF SYSTEM IS BASED ON DESIGN GUIDELINES FROM BAUDER LTD, A GREEN/BLUE ROOF SPECIALIST COMPANY.

OTHER SPECIALIST GREEN/BLUE ROOF COMPANIES, WITH SIMILAR TECHNOLOGY, SHOULD BE ASSESSED BY THE CLIENT PRIOR TO CONSTRUCTION AND SCHEME AMENDED TO SUIT REQUIREMENTS.

THE SELECTED GREEN/BLUE ROOF SYSTEM SHOULD BE ABLE TO ACHIEVE A VERY LOW OUTFLOW RATE, AS CLOSE AS POSSIBLE TO THE BAUDER SYSTEM.

OUTFLOWS TO THE SEWER TO BE APPROVED BY THAMES WATER PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS.

DISCHARGES FROM THE GREEN/BLUE ROOF SYSTEMS TO BE DIRECTED TO THE ONSITE SURFACE/COMBINED DRAINAGE INFRASTRUCTURE, LOCATION AND DETAILS TO BE CONFIRMED FOLLOWING CCTV SURVEY.



1:100 @ A1
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NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT REPORTS, PLANS AND ARCHITECTURAL DRAWINGS
2. THIS DRAWING SHOULD NOT BE SCALED. THERE SHOULD BE NO RELIANCE ON THIS DRAWING WITH REGARDS TO DIMENSIONS. ALL DIMENSIONS SHOULD BE CONFIRMED ON SITE.
3. ANY DISCREPANCY ON THIS DRAWING SHOULD BE REPORTED TO AEGAEA IMMEDIATELY FOR CLARIFICATION.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORKS AND FOR THE STABILITY, INSTALLATION AND HEALTH AND SAFETY OF THE WORKS.
5. AEGAEA HAVE PRODUCED THIS DRAWING BASED ON THE DRAWINGS AND INFORMATION PROVIDED BY THE CLIENT AVAILABLE AT THE TIME OF PRODUCTION. WE CANNOT ACCEPT RESPONSIBILITY FOR DISCREPANCIES RESULTING FROM NEW PLANS/ INFORMATION BEING ISSUED POST-ISSUE OF THIS DRAWING. THE CONTRACTOR SHOULD REVIEW THIS DRAWING IN LIGHT OF WIDER SITE INFORMATION SUCH AS CONTAMINATION, UTILITIES SURVEYS AND SITE INVESTIGATIONS
6. IT IS THE RESPONSIBILITY OF THE PRINCIPLE CONTRACTOR TO MAKE THE DESIGNER AND CLIENT AWARE OF SITE-SPECIFIC RISKS AND HAZARDS THAT MAY AFFECT THE DRAWING AND SPECIFICATION

LEGEND

- GREEN/BLUE ROOF OUTLET
- GREEN/BLUE ROOF STORAGE AREA
- TOP ROOF CATCHMENT AREA
- LEVEL 3 CATCHMENT AREA

CLIENT: WIMSHURST PELLERITI

SITE: 84 LOWER MORTLAKE ROAD
RICHMOND, TW9 2HS

DRAWING: PRELIMINARY SUDS SCHEME

DRAWING NUMBER: 2751_DL_01

DATE: 25/09/23 | **REV:** -

DRAWN BY: SD

DRAWING SCALE: 1 IN 100

**PRELIMINARY DRAWING
FOR PLANNING ONLY - NOT FOR CONSTRUCTION**

aegaea
Flood risk, water and environment