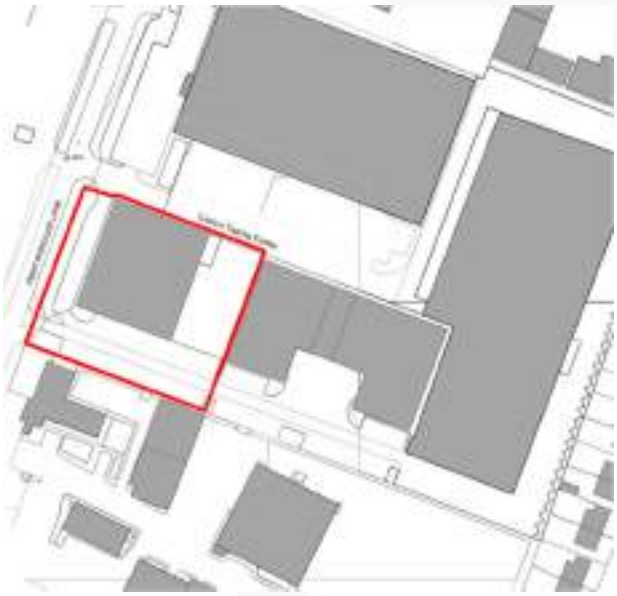
PROPOSED INDUSTRIAL/COMMERCIAL DEVELOPMENT
UNIT 1, CAXTON ESTATE, PRINTING HOUSE LANE, HAYES UB3 1AP
FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY
DECEMBER 2025
REPORT REF: 2519-FRA-01



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REGISTRATION OF AMENDMENTS

REV	COMMENTS AND ANY CHANGES	PREPARED BY:
First Issue December 2025	For Planning Application	AR

CONTENTS

APPENDICES

EXECUTIVE SUMMARY

Flood Risk

This Flood Risk Assessment has been carried out in accordance with the requirements of the National Planning Policy Framework (December 2024) and its companion document the National Planning Practice Guidance.

The Environment Agency flood maps show that the site is located within **Flood Zone 1**, where there is a low probability of fluvial flooding (less than 1 in 1,000 annual probability). The proposed development involves internal alterations to an existing industrial building including subdivision into Units 1-8, addition of mezzanine/first/second floors in parts, installation of lifts, and a side extension over the existing service yard. The proposed development (commercial/industrial units) is classified as "less vulnerable", making it fully compatible with Flood Zone 1.

The vulnerability of the development to flooding from other sources, including pluvial (surface water), sewerage, groundwater, and artificial water bodies, has been assessed. Surface water flood risk at a 1 in 30 year probability affects the existing service yard and areas surrounding the existing building. The proposed mitigation measures include implementing sustainable drainage systems with geocellular attenuation and restricting discharge to greenfield runoff rates where discharge to sewer is required, or preferably disposing of surface water via infiltration to the underlying Lynch Hill Gravel deposits subject to BRE 365 testing.

Summary of Flood Risk to the Development

Location/Flood Risk	Existing Building	Proposed Extension	Service Yard/Car Park
Fluvial (Main River)	Very Low (Flood Zone 1)	Very Low (Flood Zone 1)	Very Low (Flood Zone 1)
Pluvial/Surface Water	Low to Medium (1 in 30)	Low to Medium (1 in 30)	Medium (1 in 30)
Groundwater	Very Low	Very Low	Very Low
Sewerage	Very Low	Very Low	Very Low
Artificial Water Bodies	Very Low	Very Low	Very Low

1.0 INTRODUCTION

1.1 This Flood Risk Assessment has been commissioned by Michael Wood to assess flood risk for the proposed industrial/commercial development at Unit 1, Caxton Estate, Printing House Lane, Hayes UB3 1AP. A site location plan and site layout are included in Appendix A.

1.2 This Flood Risk Assessment has been carried out in accordance with the requirements of the National Planning Policy Framework (December 2024) and its companion document the National Planning Practice Guidance.

1.3 Reference has been made to the Environment Agency flood maps and the Environment Agency Standing Advice for Local Planning Authorities (Development and Flood Risk – England). Additionally, the West London Strategic Flood Risk Assessment has been consulted to provide local context for flood risk management within the London Borough of Hillingdon.

1.4 The purpose of this report is to provide relevant information to satisfy the requirements of planning policy regarding flood risk and drainage for the proposed development.

1.5 The assessment has been prepared using best engineering judgement but there are levels of uncertainty implicit in the historical data and methods of analysis. The report is based on the following information:

- British Geological Survey Mapping
- Flood Zone Maps from the Environment Agency website
- Environment Agency Long Term Flood Risk Information
- Thames Water sewer records
- Topographical survey information
- Architectural drawings prepared by WAMM Consulting Limited

1.6 All comments and opinions contained in this report, including any conclusions, are based on the information available at the time of writing. The conclusions drawn could therefore differ if the information is found to be inaccurate, incomplete or misleading. No liability is accepted should this prove to be the case, or if additional information exists or becomes available with respect to this site.

1.7 This report has been completed for the benefit of Michael Wood and any relevant Statutory Authority which may require reference in relation to approvals for the proposed redevelopment of the site. Other third parties should not use or rely upon the contents of the report unless written approval has been gained.

1.8 No responsibility or liability is accepted for:

a. the consequences of this documentation being used for any purpose or project other than that for which it was commissioned, and

b. use of this document by any third party with whom approval for use has not been agreed.

2.0 SITE DESCRIPTION

Site Location and Surroundings

2.1 The site is located in an urban environment at grid reference 509422, 179964, within the Hayes area of the London Borough of Hillingdon. The site is situated on Printing House Lane within the Caxton Trading Estate. The surrounding area comprises a mixture of commercial, industrial and residential land uses. The Grand Union Canal is located approximately 130 metres to the south of the site. Refer to Appendix A for site location details.

Site Description

2.2 The proposed development area is situated within the curtilage of an existing industrial premises. The site currently comprises an existing industrial/warehouse building with associated car parking and service yard. The proposal involves internal alterations including subdivision into Units 1-8, the addition of mezzanine, first and second floors in parts of the building, installation of passenger lifts, infilling of existing openings, and minor external modifications including a new ramped entrance and refuse/cycle storage areas. The proposal also includes a side extension constructed over the existing service yard, which is already 100% impermeable hardstanding.

2.3 The site lies within the administrative boundary of the London Borough of Hillingdon. The Lead Local Flood Authority (LLFA) for this area is the London Borough of Hillingdon.

Topography

2.4 The site is located at an elevation of approximately 32.6 metres Above Ordnance Datum (mAOD) as indicated on the architectural drawings. The site is generally level with the surrounding area, typical of the developed trading estate environment.

Geology

2.5 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the site is underlain by the London Clay Formation, comprising clay, silt and sand. These sedimentary rocks are marine in origin and were formed during the Palaeogene period. They are detrital and comprise coarse- to fine-grained deposits from the continental shelf flowing into a deep-sea environment, forming distinctively graded beds.

2.6 The British Geological Survey (BGS) viewer shows the site is overlain by the Lynch Hill Gravel Member superficial deposits, comprising sand and gravel. These sedimentary superficial deposits are fluvial in origin. They are detrital, ranging from coarse- to fine-grained and form beds and lenses of deposits reflecting the channels, floodplains and levees of ancient river systems. The presence of these granular superficial deposits suggests that infiltration drainage may be viable at this location, subject to site-specific soakaway testing in accordance with BRE Digest 365.

Hydrology and Hydrogeology

2.7 The site lies upon Lynch Hill Gravel superficial deposits according to BGS records. The presence of sand and gravel superficial deposits indicates potential for infiltration drainage, which is

the preferred method of surface water disposal in accordance with Part H of the Building Regulations and national planning policy. Ground investigation including BRE 365 soakaway testing will be required to confirm infiltration capacity and inform detailed drainage design.

2.8 The Environment Agency Long Term Flood Risk information indicates that this location is outside of a groundwater flood alert area, suggesting low risk from groundwater flooding.

2.9 The Grand Union Canal is the nearest significant watercourse to the site, located approximately 130 metres to the south. The canal is a man-made navigable waterway under the jurisdiction of the Canal & River Trust. No natural watercourses directly affect the site.

Existing Drainage

2.10 Thames Water Utilities Limited is responsible for the operation and maintenance of the public sewers within the Hillingdon area.

2.11 Thames Water records show public sewers in the vicinity of the site (see Appendix B). The sewer record search (Reference: ALS/ALS Standard/2025_5264553, dated 11 December 2025) indicates various public sewers in Printing House Lane and surrounding areas, including combined sewers, foul sewers and surface water sewers of varying sizes ranging from 100mm to 825mm diameter. The records show surface water sewers, foul sewers and combined sewers in the highway network around the site. Private drainage infrastructure is present within the site boundary serving the existing building.

2.12 The Thames Water records indicate that clean water supply for this area is provided by Affinity Water, as the site falls outside the Thames Water clean water catchment area.

2.13 Copies of the Thames Water sewer record plans are included in Appendix B.

Artificial Water Bodies

2.14 The Environment Agency's Risk of Flooding from Reservoirs mapping indicates that the site is not at risk of flooding from reservoirs. The Grand Union Canal, whilst a man-made water body, is located approximately 130 metres from the site at a similar or lower elevation, and does not pose a significant flood risk to the development.

3.0 POLICIES

National Planning Policy Framework

3.1 The National Planning Policy Framework (December 2024) sets out the Government's objectives for the planning system and emphasizes there should be a 'Presumption in Favour of Sustainable Development'. The planning system should facilitate and promote sustainable patterns of development, avoiding inappropriate development in areas at risk of flooding and accommodating the impacts of climate change.

3.2 The Framework seeks to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Reference should also be made to the National Planning Practice Guidance which provides additional guidance on flood risk and the Sequential Test.

3.3 For the purposes of applying the National Planning Policy Framework, areas at risk from all sources of flooding are included. For fluvial (river) and sea flooding, this is principally land within Flood Zones 2 and 3. It can also include an area within Flood Zone 1 which the Environment Agency has notified the local planning authority as having critical drainage problems.

3.4 Key elements from the Framework include:

Paragraph 175 establishes that a sequential test is not needed where a site-specific flood risk assessment demonstrates that no built development within the site boundary would be located on an area at risk of flooding from any source.

Paragraph 180 states that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk.

Paragraph 182 requires that developments should incorporate sustainable drainage systems proportionate to the scale and nature of the development proposal, unless there is clear evidence that this would be inappropriate.

Flood and Water Management Act 2010

3.5 The Flood and Water Management Act 2010 gained Royal Assent on 8th April 2010. The Act is the government's legislation to improve flood risk management and ensure the security of water supplies in England and Wales. The Act updates legislation to ensure better protection from flooding, manage water more sustainably, improve public services and secure water resources during periods of drought. The Flood and Water Management Act helps to reduce flood risk by:

- Clarifying who is responsible for managing all sources of flood risk
- Encouraging more sustainable forms of drainage in new developments
- Making it easier to resolve misconnections to sewers

3.6 The Flood and Water Management Act imparts significant new roles and responsibilities on local authorities. County or unitary authorities are now classified as Lead Local Flood Authorities

(LLFAs) who have responsibilities for managing local flood risk. The responsibilities of a LLFA include:

- Prepare and maintain a strategy for local flood risk management in their areas, coordinating views and activity with other local bodies and communities through public consultation and scrutiny, and delivery planning
- Maintain a register of assets – these are physical features that have a significant effect on flooding in their area
- Investigate significant local flooding incidents and publish the results of such investigations
- Issue consents for altering, removing or replacing certain structures or features on ordinary watercourses
- Play a lead role in emergency planning and recovery after a flood event

Planning Practice Guidance on Flood Risk & Coastal Change

3.7 The Government's planning policy on sustainable drainage systems expects local planning policies and decisions on planning applications relating to development to ensure that sustainable drainage systems for the management of runoff are put in place, unless demonstrated to be inappropriate. Lead Local Flood Authorities (LLFAs) are statutory consultees on major developments.

3.8 The December 2024 update to the NPPF has extended SuDS requirements beyond major developments. Paragraph 182 now requires SuDS to be considered for all development proportionate to the scale and nature of the scheme, recognising that cumulative impacts from smaller developments can significantly affect local flood risk.

3.9 The policy states that local planning authorities are expected, when considering planning applications:

- To consult the relevant Lead Local Flood Authority on the management of surface water
- To satisfy themselves that the proposed minimum standards of operation are appropriate
- To ensure through the use of planning conditions or planning obligations that there are clear arrangements in place for ongoing maintenance over the lifetime of the development

Sustainable Drainage Systems - Non-statutory Technical Standards

3.10 The non-statutory technical standards for the design, maintenance and operation of sustainable drainage systems to drain surface water have been published by Defra. The standards apply to systems that drain surface water from housing, non-residential or mixed-use developments for the lifetime of the developments. The non-statutory technical standards are to be used in conjunction with the National Planning Policy Framework and Planning Practice Guidance.

West London Strategic Flood Risk Assessment

3.11 The West London Strategic Flood Risk Assessment (SFRA) provides detailed information on flood risk within the London Borough of Hillingdon's administrative area, as part of a joint assessment covering the boroughs of Barnet, Brent, Ealing, Harrow, Hillingdon and Hounslow. The SFRA identifies flood risk from multiple sources and provides guidance for development

management decisions. Consultation of the West London SFRA confirms the site's location within Flood Zone 1 and provides additional context regarding local flood risk and climate change impacts.

London Borough of Hillingdon Local Flood Risk Management Strategy

3.12 The London Borough of Hillingdon, as Lead Local Flood Authority, has published a Local Flood Risk Management Strategy (LFRMS) which sets out the approach to managing flood risk within the borough. The strategy details local flood risks relating to surface water runoff, groundwater and ordinary watercourses and outlines the collaborative approach with other responsible authorities including Thames Water Utilities Limited.

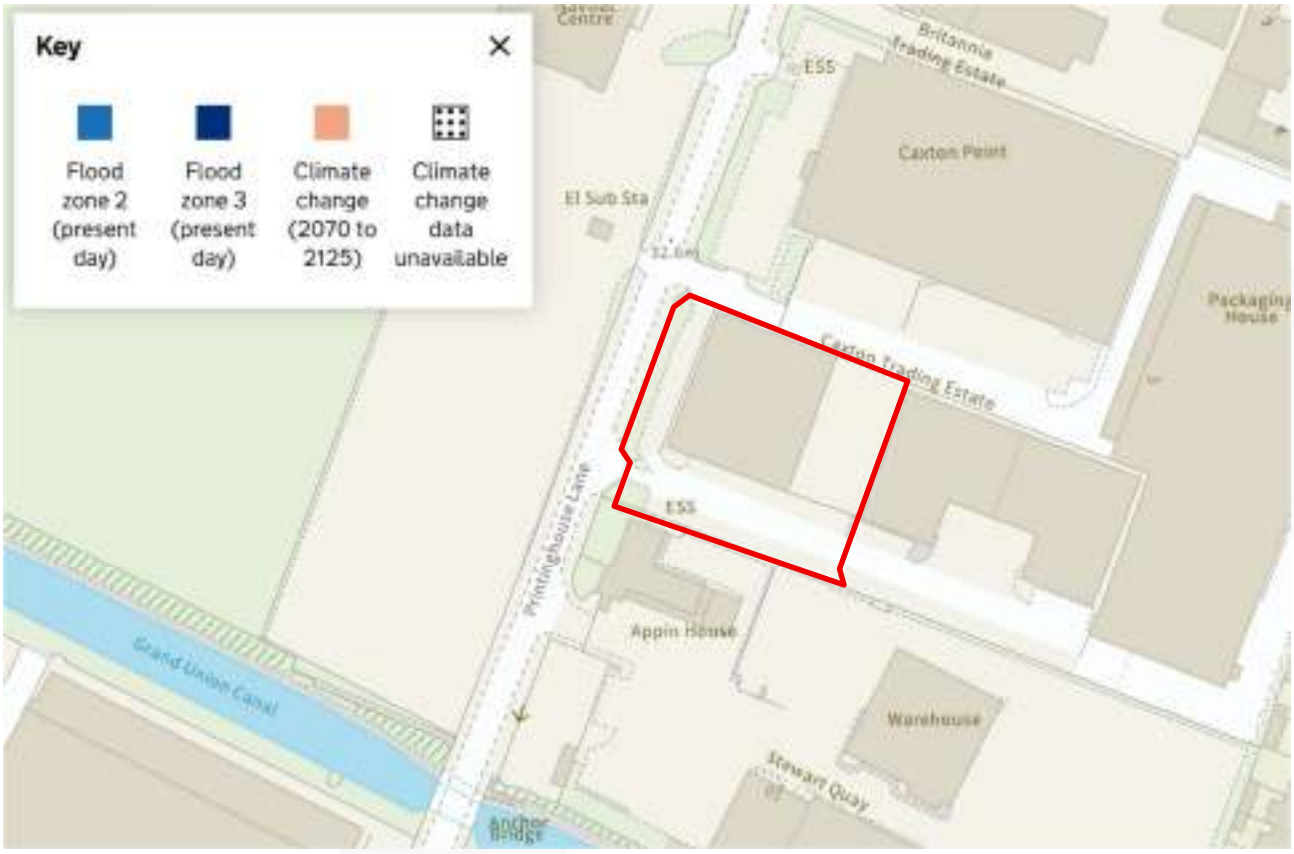
4.0 FLOOD RISK TO THE SITE

Fluvial Sources

4.1 The site has been assessed using Environment Agency flood zone maps which provide guidance for fluvial flood risk.

4.2 The Environment Agency flood maps show that the site is located within **Flood Zone 1**, where there is a low probability of fluvial flooding (less than 0.1% annual probability, or less than 1 in 1,000 year return period). This indicates that the site is at the lowest risk of flooding from rivers and the sea.

Figure 1 EA Flood Map for Planning



4.3 No Product 4 flood risk data has been obtained for this assessment as the site is located entirely within Flood Zone 1 and is not affected by flood zones associated with Main Rivers or the sea. The Grand Union Canal, located approximately 130 metres to the south, is a man-made navigable waterway rather than a natural fluvial system and does not have associated flood zones affecting the site.

4.4 The proposed development is for commercial/industrial units with ancillary office space. Using Table 3 'Flood Risk Vulnerability and Flood Zone Compatibility' from the National Planning Practice Guidance, the development is classified as **'less vulnerable'**.

4.5 In accordance with Table 3 of the National Planning Practice Guidance, 'less vulnerable' development is appropriate in Flood Zone 1, and therefore the development is fully compatible with the flood zone designation from a fluvial perspective.

Sequential Test Consideration

4.6 Paragraph 175 of the NPPF (December 2024) and the Planning Practice Guidance (September 2025 update) require consideration of the Sequential Test for development in areas at risk from any source of flooding, including surface water. The Environment Agency mapping indicates that parts of the existing service yard are at risk of surface water flooding during 1 in 30 year events.

4.7 However, the September 2025 PPG update (paragraph 27) provides that where a site-specific flood risk assessment demonstrates clearly that "the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development (taking climate change into account), without increasing flood risk elsewhere, then the Sequential Test need not be applied."

4.8 This assessment demonstrates that the Sequential Test exemption applies for the following reasons:

- The proposed extension is constructed over an existing service yard (100% impermeable hardstanding) at a level consistent with the existing building
- The proposed drainage strategy will intercept surface water from the new roof areas and direct it to attenuation/infiltration systems, thereby reducing surface water flood risk on site
- The proposal will not increase flood risk elsewhere as discharge rates will be restricted to greenfield rates (or zero for infiltration)
- The development provides betterment to the existing drainage situation
- Occupiers of the commercial/industrial units will remain safe as the building is designed with appropriate floor levels and resilience measures
- Climate change has been accounted for with 40% uplift on peak rainfall intensity

4.9 On this basis, the development satisfies the requirements of NPPF paragraph 175 and the September 2025 PPG paragraph 27, and the Sequential Test need not be applied. The Exception Test is not required for 'less vulnerable' development.

Flood Risk Vulnerability Classification and Flood Zone Compatibility

Flood Risk Vulnerability Classification	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
Essential Infrastructure	✓	✓	Exception Test Required	Exception Test Required
Water Compatible	✓	✓	✓	✓
Highly Vulnerable	✓	Exception Test Required	✗	✗
More Vulnerable	✓	✓	Exception Test Required	✗

Flood Risk Vulnerability Classification	Flood Zone 1	Flood Zone 2	Flood Zone 3a	Flood Zone 3b
Less Vulnerable	✓	✓	✓	✗

Key: ✓ Development is appropriate | ✗ Development should not be permitted

Pluvial/Surface Water Flooding

4.6 Pluvial/Surface Water flooding occurs when natural and engineered systems have insufficient capacity to deal with the volume of rainfall. Pluvial flooding can occur in urban areas during extreme, high intensity, low duration summer rainfall events which overwhelm local surface water drainage systems, or during medium intensity, long duration events where saturated ground conditions prevent infiltration into the subsoil. This flood water is then conveyed via overland flow routes dictated by local topography.

Figure 2 – EA Surface Water Flood Extents 1-100

4.7 The Environment Agency Risk of Flooding from Surface Water mapping has been reviewed for the site area. The mapping indicates that areas of the existing service yard and areas immediately surrounding the existing building are at risk of surface water flooding during 1 in 30 year rainfall events (High Risk - greater than 3.3% annual probability).

4.8 The surface water flood risk is associated with local ponding where drainage capacity is insufficient during intense rainfall events, typical of developed urban areas with extensive

impermeable surfaces. The existing service yard area where the proposed extension will be constructed is already 100% impermeable hardstanding, and therefore the extension will not increase impermeable area or surface water runoff from this part of the site.

4.9 Surface water flood risk mitigation measures are proposed as part of the drainage strategy, including the provision of attenuation storage to manage runoff rates and volumes, and where possible the use of infiltration drainage to dispose of surface water to ground, thereby reducing surface water flood risk both on and off site.

Sewer Sources

4.10 Information on sewer infrastructure has been provided by Thames Water (see Appendix B). The records indicate public sewers are present in the vicinity of the site within Printing House Lane and surrounding roads. The Thames Water records show a network of surface water, foul and combined sewers serving the area with pipe diameters ranging from 100mm to 825mm.

4.11 Private drainage infrastructure is indicated on the site plans within the site boundary, including connections to the private sewer network. Given the site's location in a developed trading estate and the presence of established drainage infrastructure, sewer flooding risk to the proposed development is considered low.

4.12 The Thames Water records do not indicate any recorded sewer flooding incidents affecting the site. The proposed drainage strategy will ensure that surface water discharge to the sewer network is minimised where infiltration is viable, or restricted to controlled rates where sewer discharge is necessary.

Tidal/Coastal

4.13 The site is not at risk of tidal or coastal flooding due to its inland location.

Groundwater Sources

4.14 The Environment Agency Long Term Flood Risk information indicates the site is outside of a groundwater flood alert area. Given the underlying geology comprising Lynch Hill Gravel superficial deposits (sand and gravel) over London Clay bedrock, groundwater levels are likely to be influenced by the relatively permeable superficial deposits. However, the London Clay bedrock provides an underlying aquitard which limits deeper groundwater movement. The risk from groundwater flooding is considered very low.

4.15 Ground investigation including groundwater monitoring may be undertaken as part of detailed design to confirm groundwater conditions and inform the design of any infiltration drainage systems.

Artificial Water Bodies

4.16 The Environment Agency's Risk of Flooding from Reservoirs mapping indicates that the site is not at risk of flooding from reservoirs.

4.17 The Grand Union Canal, located approximately 130 metres to the south, is a man-made navigable waterway managed by the Canal & River Trust. The canal is maintained with controlled water levels and does not pose a flood risk to the site at this distance and elevation.

Historical Flooding

4.18 There are no records of historical fluvial flooding affecting the site, which is consistent with its location in Flood Zone 1. Local surface water flooding may have occurred during intense rainfall events, but no specific flood incident records for this site have been identified.

4.19 The London Borough of Hillingdon Local Flood Risk Management Strategy identifies surface water flooding as a significant source of flood risk within the borough, with the drainage network including areas of combined sewers which can become overloaded during heavy rainfall. The proposed drainage strategy addresses this risk through the provision of attenuation storage and controlled discharge rates.

5.0 FLOOD RISK FROM THE DEVELOPMENT

5.1 The requirements of a Site-Specific Flood Risk Assessment, as outlined in the National Planning Practice Guidance, should assess the following off-site impacts:

- How will it be ensured that the proposed development and the measures to protect the site from flooding will not increase flood risk elsewhere?
- How will runoff from the completed development be prevented from causing an impact elsewhere?
- Are there any opportunities offered by the development to reduce flood risk elsewhere?

5.2 The primary flood risk generated by the new development is the risk posed to others by surface water runoff from impermeable surfaces.

Existing Site Characteristics

5.3 The site currently comprises an existing industrial building with associated car parking and service yard. The existing service yard where the proposed extension is to be constructed is already 100% impermeable hardstanding.

5.4 The total site area is approximately 1,529.0227 m².

Proposed Development

5.5 The proposed development involves internal alterations to the existing building including subdivision into Units 1-8, addition of mezzanine/first/second floors, installation of lifts, and infilling of existing openings. The external works include a new ramped entrance, refuse and cycle storage areas, and a side extension over the existing service yard.

5.6 The proposed development does not increase the impermeable area of the site with the extension positioned over the existing service yard. The parking area will also be slightly reduced.

Greenfield Runoff Rates

5.8 Greenfield runoff rates have been calculated to establish the baseline discharge rates against which the proposed drainage strategy should be designed. Based on a conservative Qbar value of 1.6 l/s/ha for the catchment and the proposed impermeable area, the greenfield runoff rates are as follows:

Greenfield Runoff Rates

Storm Event	Qbar Rate (l/s/ha)	Site Runoff Rate
Qbar	1.6	0.5 l/s

Climate Change

5.9 Environment Agency 'Flood Risk Assessments – Climate Change Allowances' provides guidance on the impacts of climate change on flooding from rivers, the sea and rainfall as part of flood risk assessments. The guidance provides climate change allowances for peak river flow, peak rainfall, sea level rise, wind speed and wave height.

5.10 For surface water drainage design in the Thames River Basin District, the peak rainfall intensity allowances for small and urban catchments are applied. Based on a development lifetime extending beyond 2060, the 2070s epoch allowances are applicable.

Peak Rainfall Intensity Allowances - Thames River Basin District

Allowance Category	2050s (2040-2059)	2070s (2060-2100)
Central	20%	25%
Upper End	35%	40%

5.11 When considering the lifetime of the development up to 2125, a **40% climate change allowance** (Upper End, 2070s epoch) is appropriate for peak rainfall intensities to ensure the drainage system is resilient to future climate conditions.

Proposed Discharges

5.12 The proposed site layout shows the developed site would result in approximately 130.8003 m² of new impermeable area (roofed areas of the extension). The drainage strategy is designed to ensure that volumes and peak flow rates of surface water leaving the developed site are no greater than existing greenfield rates, thereby providing betterment to the existing drainage situation.

5.13 It is proposed that surface water discharge is restricted to the minimum practical rate. Where infiltration to ground is viable following BRE 365 testing, all surface water will be disposed of via soakaways with no discharge to the sewer network. Should infiltration prove unviable, discharge to the existing private sewer within the site boundary will be restricted to a maximum of 5 l/s, which is the minimum practical discharge rate for a flow control device and exceeds the greenfield rate only due to practical limitations of flow control technology.

Loss of Floodplain Storage

5.14 The site is located entirely within Flood Zone 1 and is not within any fluvial floodplain. Therefore, the proposed development will not result in any loss of floodplain storage.

5.15 The proposal will not increase flood risk elsewhere provided the drainage strategy is implemented as designed, with surface water runoff managed through infiltration or controlled discharge to the sewer network.

6.0 CONSIDERATION OF SUSTAINABLE DRAINAGE SYSTEMS

6.1 Surface water arising from the developed site should, as far as practical, be managed in a sustainable manner to mimic the surface water flows arising from the site in its natural state and to reduce flood risk both on and off site.

6.2 Part H of the Building Regulations 2010 (as amended) recommends that surface water runoff shall discharge to one of the following, listed in order of priority:

a) an adequate soakaway or some other adequate infiltration system, or where that is not reasonably practicable,

b) a watercourse, or, where that is not reasonably practicable,

c) a sewer.

6.3 Disposal of surface water runoff by the preferred method of infiltration is subject to verification of suitable ground soakage capacity and no contaminated ground issues. If the site is not suitable for infiltration drainage, evidence must be provided to the drainage authorities in the form of soakage test results or a statement from a suitable site investigation.

6.4 The available geological information shows the site is underlain by Lynch Hill Gravel Member superficial deposits (sand and gravel). Based on a conservative infiltration rate of 0.0036 m/hr for sand (from CIRIA guidance), initial calculations indicate that infiltration drainage is likely to be viable at this location. However, site-specific soakaway testing in accordance with BRE Digest 365 will be required to confirm actual infiltration rates and inform detailed design.

6.5 Based on the conservative infiltration rate of 0.0036 m/hr and the proposed impermeable area of 130.8003 m², the required storage volume for infiltration drainage is calculated to be in the range of **206-330 m³**. This storage is proposed to be provided by a geocellular storage crate system.

6.6 Should infiltration prove to be unviable following site investigation, the building will drain to the existing private surface water sewer within the site boundary, which connects to the public sewer network to the south of the site. In this scenario, the minimum practical discharge rate of 5 l/s will be adopted, requiring a storage volume of approximately **188-250 m³** to be provided by a geocellular storage system and flow control chamber.

6.7 The proposed drainage strategy will incorporate sustainable drainage principles including source control, attenuation storage, and water quality treatment regardless of the final outfall method.

7.0 DRAINAGE STRATEGY

Surface Water

7.1 The surface water strategy proposes that runoff arising from the developed site will be managed in a sustainable manner. The preferred strategy is infiltration to the underlying Lynch Hill Gravel deposits, subject to confirmation of viable infiltration rates through BRE 365 testing.

7.2 The strategy proposes a system of surface water drainage to collect runoff from the new building roof areas (the extension over the existing service yard), then drain into a geocellular attenuation/soakaway system. This system will attenuate and infiltrate runoff for storms up to the 1 in 100 year (+40% climate change) event.

7.3 Should infiltration prove to be unviable, the alternative strategy proposes discharge to the existing private sewer within the site boundary at a restricted rate of 5 l/s. The private sewer connects to the public sewer network to the south of the proposed building. Connection will be subject to Thames Water agreement and compliance with their requirements.

7.4 Causeway Flow or equivalent drainage design software will be used to calculate the required surface water storage volume at detailed design stage. Based on the proposed impermeable area of 130.8003 m², a discharge rate of 5 l/s (or zero for infiltration), and a 40% allowance for climate change, the required attenuation storage volume is calculated to be approximately **206-330 m³ for infiltration** or **188-250 m³ for restricted discharge**. This storage will be provided in the form of a geocellular storage crate installed beneath areas of hardstanding.

7.5 Flows between the attenuation crate and the final outfall (soakaway or sewer connection) will be controlled using a suitable vortex or orifice flow control device where discharge to sewer is required. The flow control device will be accessible for inspection and maintenance.

7.6 The proposed surface water drainage strategy layout is included in Appendix C.

7.7 The existing car parking areas will be retained in their current condition with existing drainage arrangements unchanged. No new drainage works are proposed for these areas.

7.8 It should be noted that the drainage design and calculations enclosed as part of this report are for strategy purposes only and are subject to refinement as part of the detailed drainage design during the construction phase following completion of BRE 365 soakaway testing.

Water Quality Treatment - CIRIA Document C753

7.9 Table 26.2 of The SuDS Manual CIRIA document C753 indicates the minimum treatment indices appropriate for contributing pollution hazards for different land use classifications. To deliver adequate treatment, the selected SuDS components should have a total pollution mitigation index (for each contaminant type) that equals or exceeds the pollution hazard index.

7.10 For a commercial/industrial development, the roof water requires low treatment of 0.2 for total suspended solids, 0.2 for heavy metals and 0.05 for hydrocarbons.

CIRIA 753 Pollution Hazard Indices

Land Use	TSS	Metals	Hydrocarbons
Roof (commercial)	0.3	0.2	0.05
Car park (infrequent change)	0.5	0.4	0.4

7.11 To provide the correct level of treatment, an assessment of the mitigation provided by each SuDS feature is required. Table 26.3 of The SuDS Manual CIRIA document C753 indicates the treatment provided by different SuDS features.

CIRIA 753 SuDS Mitigation Indices

SuDS Component	TSS	Metals	Hydrocarbons
Geocellular storage	0	0	0
Proprietary treatment device (Sudspod)	0.6	0.6	0.6

7.12 The proposed treatment train for roof water will incorporate a proprietary treatment device (Sudspod or equivalent) upstream of the geocellular storage/soakaway system. This provides mitigation indices of 0.6/0.6/0.6 which exceeds the required 0.5/0.4/0.4 a car park.

7.13 This proposed system provides sufficient mitigation to address the site's designated pollution indices, meeting the requirements of CIRIA C753 for water quality treatment.

Foul Water

7.14 The strategy proposes that foul water drainage will be collected from the new building welfare facilities and connected to the existing private foul drainage infrastructure on site. The existing private drainage network connects to the public foul sewer system.

7.15 Any new foul water connections will be designed in accordance with Approved Document H of the Building Regulations and will be subject to Building Control approval.

Maintenance

7.16 The proposed on-site drainage system will be designed to current standards and will remain a private asset of the landowner. A maintenance plan will be developed to ensure the drainage system, including the attenuation storage, flow control devices, and any treatment devices, is inspected and maintained regularly to ensure continued effective operation throughout the lifetime of the development.

7.17 Access for maintenance will be provided to all key drainage components including inspection chambers, flow control devices, and attenuation storage. The geocellular crate system will be designed with appropriate access points for inspection and maintenance activities.

8.0 FLOOD MITIGATION

8.1 Given the site's location within Flood Zone 1 (low probability of fluvial flooding) and the relatively low overall flood risk, the mitigation measures required for this development are proportionate to the identified risks. The primary flood risk to be addressed is surface water flooding, which affects the existing service yard at a 1 in 30 year probability.

Surface Water Flood Risk Mitigation

8.2 The most significant flood mitigation measure is the implementation of a sustainable drainage system to manage surface water runoff from the development. The proposed drainage strategy will:

- Intercept surface water runoff from the new roofed areas (extension over service yard)
- Provide attenuation storage to manage peak runoff rates for storms up to the 1 in 100 year + 40% climate change event
- Dispose of surface water via infiltration to ground where viable, eliminating discharge to the sewer network and reducing downstream flood risk
- Where infiltration is not viable, restrict discharge to the minimum practical rate of 5 l/s to avoid overloading the downstream sewer network

8.3 The proposed surface water drainage system will reduce the incidence of surface water ponding on site by providing positive drainage from the new building roof areas. Where currently rainfall falling on the service yard would pond or sheet flow across the hardstanding, the new extension roof will intercept this rainfall and direct it to the attenuation/infiltration system.

8.4 Exceedance routes will be incorporated into the site design to direct overland flows away from buildings and toward safe flow paths in the event of storms exceeding the design standard. The existing site levels and gradients provide natural exceedance routes toward the surrounding highway and trading estate road network.

Building Design

8.5 The proposed development involves internal alterations to an existing building and an extension over existing hardstanding. No raising of ground levels or floor levels is proposed. The existing building finished floor level is appropriate for the site conditions and provides adequate protection from the identified surface water flood risk.

8.6 Where practicable, flood resilience measures will be incorporated into areas at ground level that could be affected by surface water ponding during extreme events. These measures may include:

- Water-resistant floor finishes in areas at risk
- Raised electrical sockets and consumer units where appropriate
- Non-return valves on drainage connections to prevent backflow

Car Parking Areas

8.7 The existing car parking areas will be retained in their current condition with no alterations proposed. The existing drainage arrangements for these areas will remain unchanged. Car parking is

classified as "less vulnerable" development and experiences minimal consequences from temporary surface water flooding.

Access and Egress

8.8 Access and egress to the site is via Printing House Lane from the existing estate road entrance. The access route is not located within any Environment Agency flood zone and provides safe access to the development during flood events.

8.9 During extreme surface water flood events affecting the wider area, Printing House Lane may experience localised ponding. However, such events would be short-duration and the trading estate location ensures multiple potential egress routes are available.

Maintenance of Drainage Systems

8.10 The continued effective operation of the proposed drainage system is essential to managing flood risk at the site. A maintenance schedule will be developed and implemented by the site owner to ensure regular inspection and maintenance of all drainage components, including:

- Inspection of inlet gullies and channels quarterly and after major storm events
- Inspection and cleaning of flow control devices annually
- Inspection of geocellular storage system annually
- Removal of debris and sediment from treatment devices as required

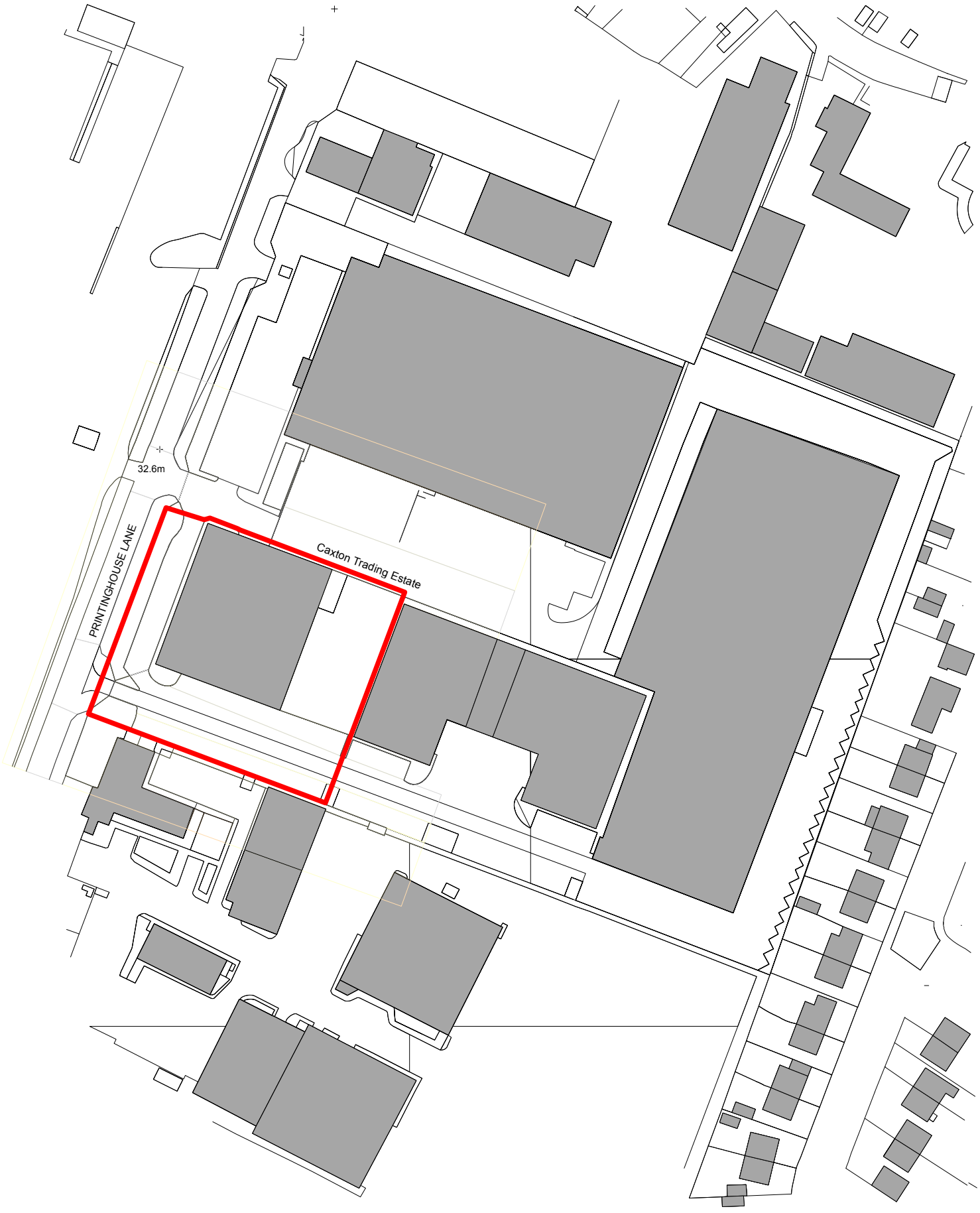
9.0 REFERENCES

9.1 The following documents have been referred to in this report:

1. The Building Regulations 2010 (as amended), Approved Document H – Drainage and Waste Disposal.
2. Sewers for Adoption 8th Edition.
3. Civil Engineering Specification for the Water Industry, 8th Edition.
4. National Planning Policy Framework – December 2024.
5. Environment Agency Flood Risk Standing Advice for Local Planning Authorities.
6. The SuDS Manual – CIRIA C753 (2015).
7. British Geological Survey – Geology of Britain Viewer, http://mapapps.bgs.ac.uk/geologyofbritain/home.html
8. Design and Analysis of Urban Storm Drainage. The Wallingford Procedure Vol.1.
9. Institute of Hydrology Report No. 124 – Flood Estimation for Small Catchments.
10. BS 8004:2015 – Code of Practice for Foundations.
11. BRE Digest 365:2016 – Soakaway Design.
12. Flood and Water Management Act 2010.
13. Water Industry Act 1991.
14. Sustainable Drainage Systems - Non-statutory Technical Standards for Sustainable Drainage Systems – March 2015.
15. Planning Practice Guidance – Flood Risk and Coastal Change.
16. Environment Agency – Flood Risk Assessments – Climate Change Allowances.
17. West London Strategic Flood Risk Assessment.
18. London Borough of Hillingdon Local Flood Risk Management Strategy 2024.
19. Thames Water Asset Location Search – Reference: ALS/ALS Standard/2025_5264553, dated 11 December 2025.
20. Architectural Drawings by WAMM Consulting Limited – Drawing Nos. 2519 PL1 01 to 2519 PL1 17.

APPENDIX A

0 20 40 60 80 100 m



1 Site Location Plan
Scale: 1:1250

PLANNING

REV.	DATE	DESCRIPTION

PROJECT
Unit 1, Caxton Trading Estate
Printing House
Hayes, UB3 1AP

DRAWING
Site Location Plan

CLIENT
Zongwise Limited

SCALE	DRAWN
1:1250	PW
DATE	CHECKED
December 2025	MM

DRAWING No
2519 PL1 01

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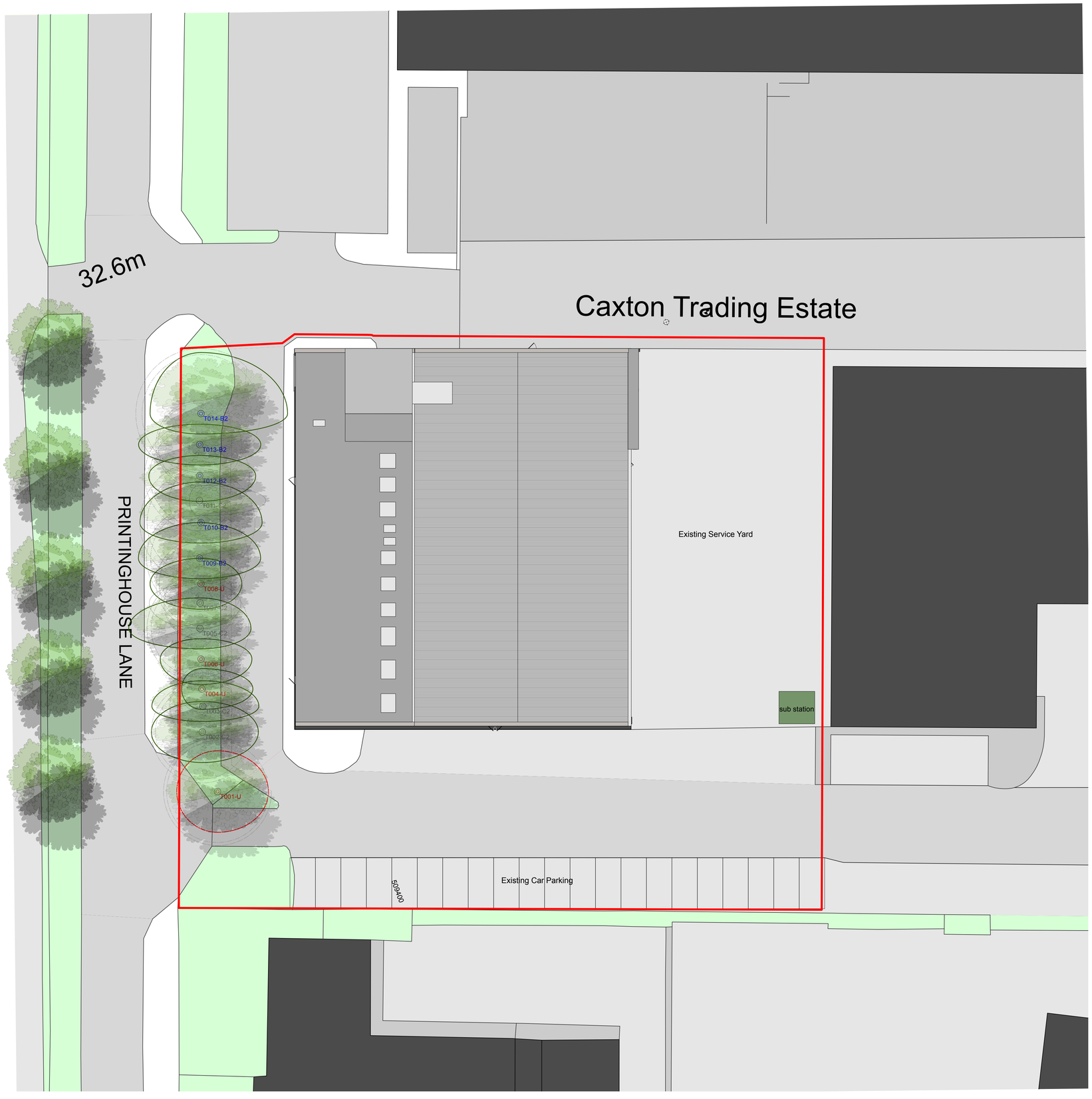

1 Existing Block Plan
Scale: 1:200

PLANNING

REV.	DATE	DESCRIPTION

PROJECT
Unit 1, Caxton Trading Estate
Printing House
Hayes, UB3 1AP

DRAWING
Existing Block Plan

CLIENT
Zongwise Limited

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0 10 20 m

1 Existing Ground Floor Plan
Scale: 1:150

N

PLANNING

REV.	DATE	DESCRIPTION

PROJECT
Unit 1, Caxton Trading Estate
Printing House
Hayes, UB3 1AP

DRAWING
Existing Ground Floor Plan

CLIENT
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0 10 20 m

N

32.6m

Caxton Trading Estate

Void

Offices

Mezzanine Storage

sub station

509400

T014-U2
T013-U2
T012-U2
T010-U2
T009-U2
T008-U2
T009-U1
T004-U1
T015-U

1 Existing First Floor Plan
Scale: 1:150

PLANNING

REV.	DATE	DESCRIPTION

PROJECT
Unit 1, Caxton Trading Estate
Printing House
Hayes, UB3 1AP

DRAWING
Existing First Floor Plan

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0 10 20 m

N

32.6m

Caxton Trading Estate

Printing House Lane

Exisiting site entry / exit unchanged

Existing Escape Door

New Escape Door

Emergency push pad

Infill existing door

Infill existing loading door

Infill existing window

UNIT 6
Ground Floor 64sq.m / 689sq.m
First 64sq.m / 689sq.m
Second 64sq.m / 689sq.m
TOTAL 192sq.m / 2,067sq.ft

UNIT 5
Ground Floor 64sq.m / 689sq.m
First 64sq.m / 689sq.m
Second 64sq.m / 689sq.m
TOTAL 192sq.m / 2,067sq.ft

UNIT 4
Ground Floor 64sq.m / 689sq.m
First 64sq.m / 689sq.m
Second 64sq.m / 689sq.m
TOTAL 192sq.m / 2,067sq.ft

UNIT 3
Ground Floor 64sq.m / 689sq.m
First 64sq.m / 689sq.m
Second 64sq.m / 689sq.m
TOTAL 192sq.m / 2,067sq.ft

UNIT 2
Ground Floor 64sq.m / 689sq.m
First 64sq.m / 689sq.m
Second 64sq.m / 689sq.m
TOTAL 192sq.m / 2,067sq.ft

UNIT 1
Ground Floor 64sq.m / 689sq.m
First 64sq.m / 689sq.m
Second 64sq.m / 689sq.m
TOTAL 192sq.m / 2,067sq.ft

UNIT 7
Ground Floor 747sq.m / 8,040sq.ft
First 246sq.m / 2,648sq.m
TOTAL 993sq.m / 10,688sq.ft

UNIT 8
Ground Floor 562sq.m / 6,049sq.m
First 130sq.m / 1,400sq.m
TOTAL 692sq.m / 7,449sq.ft

Line of mezzanine over

service loading door

service loading door

service loading door

Escape

sub station

T014-B2
T013-B2
T012-B2
T011-C2
T010-B2
T009-B2
T008-U
T007-C2
T005-C2
T006-U
T004-U
T003-C2
T002-C2
T001-U

Remove tree

New ramped entrance

2500
3060
1200
6760
12923
7300
509400

Side Loading

Side Loading

Van Turning

Existing Landscaping

Refuse & Recycle

Secure cycle store
12 spaces

Existing Car Parking Spaces

1 Proposed Ground Floor Plan
Scale: 1:150

PLANNING

REV.	DATE	DESCRIPTION

PROJECT
Unit 1, Caxton Trading Estate
Printing House
Hayes, UB3 1AP

DRAWING
Proposed Ground Floor Plan

CLIENT
Zongwise Limited

SCALE	DRAWN
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December 2025	MM

DRAWING No
2519 PL1 07

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0 10 20 m

N

Caxton Trading Estate

Caxton Trading Estate

32.6m

Printing House Lane

Exisiting site entry / exit unchanged

T014-B2
T013-B2
T012-B2
T010-B2
T009-B2
T008-U
T009-U
T004-U
T015-U

Remove tree

New ramped entrance

Existing Landscaping

UNIT 6 Ground Floor 64sq.m / 689sq.m; First 64sq.m / 689sq.m; Second 64sq.m / 689sq.m; TOTAL 192sq.m / 2,067sq.ft

UNIT 5 Ground Floor 64sq.m / 689sq.m; First 64sq.m / 689sq.m; Second 64sq.m / 689sq.m; TOTAL 192sq.m / 2,067sq.ft

UNIT 4 Ground Floor 64sq.m / 689sq.m; First 64sq.m / 689sq.m; Second 64sq.m / 689sq.m; TOTAL 192sq.m / 2,067sq.ft

UNIT 3 Ground Floor 64sq.m / 689sq.m; First 64sq.m / 689sq.m; Second 64sq.m / 689sq.m; **TOTAL 192sq.m / 2,067sq.ft**

UNIT 2 Ground Floor 64sq.m / 689sq.m; First 64sq.m / 689sq.m; Second 64sq.m / 689sq.m; TOTAL 192sq.m / 2,067sq.ft

UNIT 1 Ground Floor 64sq.m / 689sq.m; First 64sq.m / 689sq.m; Second 64sq.m / 689sq.m; TOTAL 192sq.m / 2,067sq.ft

UNIT 7
Ground Floor 747sq.m / 8,040sq.ft
First 246sq.m / 2,648sq.m
TOTAL 993sq.m / 10,688sq.ft

UNIT 8
Ground Floor 562sq.m / 6,049sq.m
First 130sq.m / 1,400sq.m
TOTAL 692sq.m / 7,449sq.ft

New Escape Door

Void Over

Void Over

Line of mezzanine over

Mezzanine area - 246sq.m / 2,648sq.m

Mezzanine area - 130sq.m / 1,400sq.m

service loading door

Escape

sub station

sub station

Side Loading

Side Loading

Van Turning

Existing Car Parking Spaces

2500
3060
1200
6760
12923
7300
5094
00

1 Proposed First Floor Plan
Scale: 1:150

PLANNING

REV.	DATE	DESCRIPTION

PROJECT
Unit 1, Caxton Trading Estate
Printing House
Hayes, UB3 1AP

DRAWING
Proposed First Floor Plan

CLIENT
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1 Existing Roof Plan
Scale: 1:150

PLANNING

REV.	DATE	DESCRIPTION

PROJECT
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Printing House
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DRAWING
Existing Roof Plan

CLIENT
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December 2025	MM

DRAWING No
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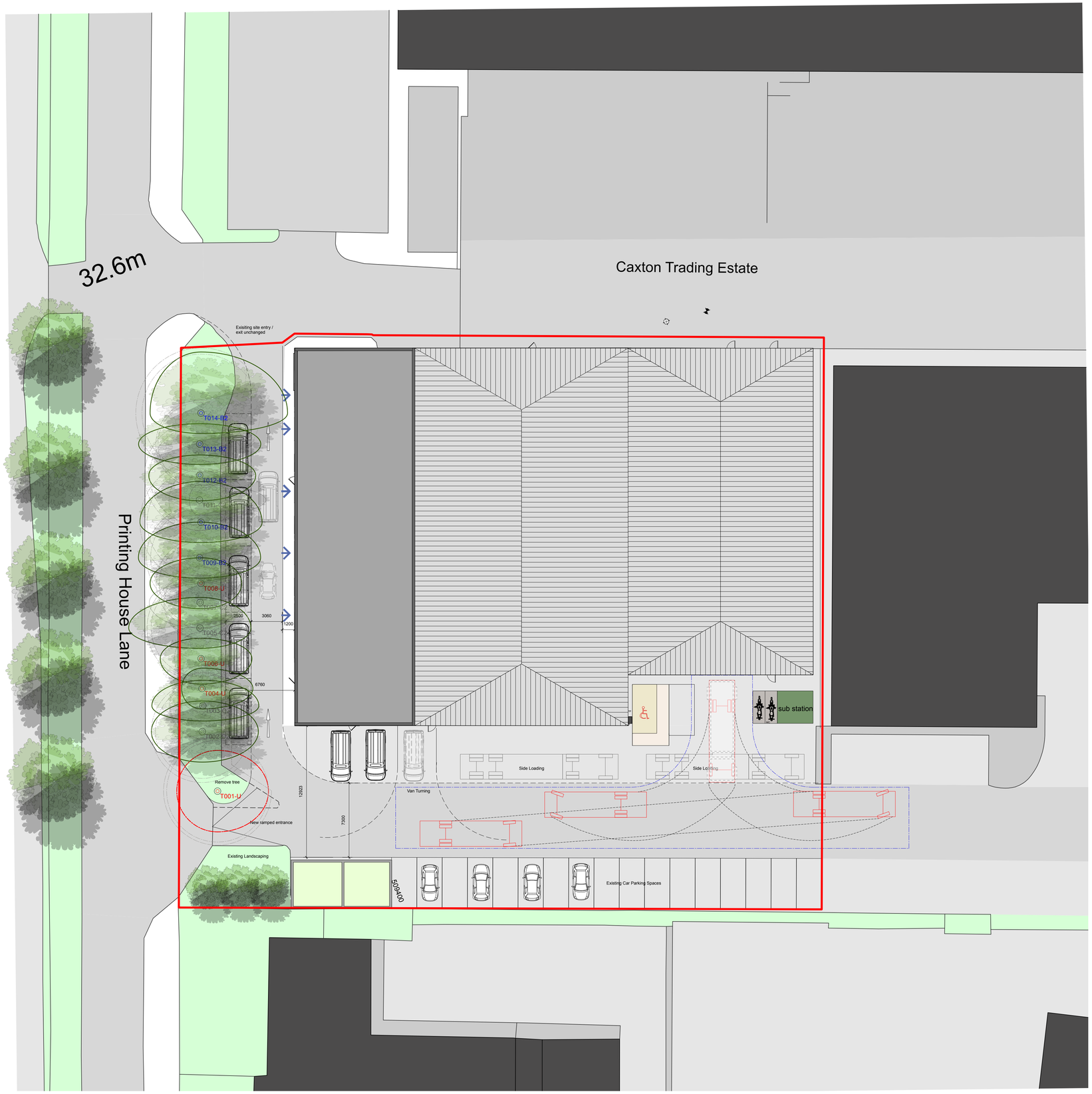

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N

1 Proposed Block Plan
Scale: 1:200

PLANNING

REV.	DATE	DESCRIPTION

PROJECT
Unit 1, Caxton Trading Estate
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DRAWING
Proposed Block Plan

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