FLOOD RISK ASSESSMENT

NPPF & PPG compliant (including 2022 update)
Hillingdon and London Plan Policies SI.12 & SI.13 compliant

Rear and infill extension to an existing dwelling & Internal alterations

Extension floor level no lower than existing

Full height of ground floor for flood resilience

This is EA householder extension in FZ2 guidance compliant

Hillingdon drainage officers enforce the source control / SUDS hierarchy for all projects based on objections to various schemes

at

46 Frays Avenue, UB7 7AG

April 2023

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If this report has been released electronically, the appendices referred to herein can be found in the annexed zip folder/s as .pdf or .dwg files. If this report has been released in hard copy the appendices will be bound into the back of this report. Plans may be annexed separately as A1 or A0 copies where a bound-in A3 copy is not appropriate.

Contents

1.0 Scope

This report contains the details of a Flood Risk Assessment and SUDS for Planning carried out by Envirosolution Ltd for 46 Frays Avenue, UB7 7AG, henceforth referred to as "the site" in this report.

This report has been prepared for Mr Mark Smith and must not be relied upon by any other party without the explicit written permission of Envirosolution Ltd.

All parties to this report do not intend any of the terms of the Contracts (Right of Third Parties Act 1999) to apply to this report. Please note this report does not purport to provide definitive legal advice nor can it be used to demonstrate that the site will never flood in the future or provide exact specifications / warranties for the products used.

2.0 Executive Summary

This FRA has been carried out in accordance with the National Planning Policy Framework (NPPF) & PPG. It is to be used to assist the Local Planning Authority (LPA) and Environment Agency (EA) when considering the flooding issues of the proposed development as part of a planning application.

The proposed development comprises a single storey rear extension and internal changes to an existing dwelling to increase the existing living space; **no change to site operation or sensitivity**.

This is categorized as a "More Vulnerable" landuse in accordance with the NPPF classifications; the site is located partly in EA FZ2 at the very far extent of the floodplain BUT this is also the Lower Colne future extreme climate change flood allowance extents (35% and 70%). The NPPF Exception Test does not need to be passed but it is considered passed by this assessment has a precautionary approach.

Regardless: the design requirements and suitability of a rear extension in FZ2 and FZ3 are the same: the householder extension requirements are the same. Site also in LOW hazard for surface water.

The correct approach has been followed by the scheme:

- Ground extension floor level no lower than existing; no additional raising of floor levels is necessary
- Modern flood resilience required for ground floor extension
    - Use the full height of the ground floor as a precaution for fluvial climate change extents

Results in better protected and flood future-proofed property than existing.

No additional formal SUDS are considered necessary to still be compliant with policy.

Given the residual risk flood setting, the level, extent and depth of flooding on the site can be managed in terms of continued refuge for all site users for the lifetime of the development.

Based on the likely flooding risk, it is considered that the proposed development can be constructed and operated safely in flood risk terms, without increasing flood risk elsewhere and is therefore appropriate development in accordance with the NPPF.

3.0 Introduction

The site boundary is provided in the location plan in Appendix A.

The FRA combined a desktop study, review of available information, consultations and an assessment of all sources of flooding posed to and from the site and proposed development, in accordance with National Planning Policy Framework (NPPF). Appropriate flood mitigation measures were then considered, either as already incorporated within the scheme or recommended for inclusion at detailed design stage. The suitability of the proposed development was also reviewed in the context of the NPPF and the technical guidance accompanying the NPPF.

4.0 Purpose of the Report

This FRA has been carried out in accordance with National Planning Policy Framework (NPPF). It is to be used to assist the Local Planning Authority (LPA) and Environment Agency (EA) when considering the flooding issues of the proposed development as part of a planning application.

The report provides the following information:

- An assessment of the flood risk posed to the site based on flood information and mapping provide by the EA and Strategic Flood Risk Assessment (SFRA);
- An assessment of the proposed development in terms of surface water run-off; and
- Proposals for measures to mitigate the flood risks posed to and from the development where appropriate.

5.0 Report Information Sources

The information source used to undertake this FRA has been collected from the following sources:

- EA Website and Data
- British Geological Survey Website and iGeology App
- London Borough of Hillingdon Strategic Flood Risk Assessment (as updated)
- London Borough of Hillingdon Preliminary Flood Risk Assessment (as updated)
- London Borough of Hillingdon SUDS Guidance and Policies
- London Plan (March, 2021) SUDS Policies
    - London Plan SUDS compliant for Plan Policy SI.13
- Internet mapping and searches.

6.0 Overview of British Legislation

6.1 National Planning Policy

The National Planning Policy Framework (NPPF) and PPG supercede all Planning Policy Statements (PPS's) and remaining Planning Policy Guidance (PPG's). Flood risk is retained as a key development consideration.

The Sequential and Exception Tests are retained as part of the NPPF. The accompanying NPPF Technical Guidance also includes Tables 2 and 3 to assist with flood risk vulnerability classifications and development suitability. This report provides the flood risk assessment element of both tests where appropriate. It is the decision of the planning authority as to whether the tests can be fully passed.

PPG 2022: site is not within the newly designated 1in30yer functional floodplain.

6.2 Local Policy

Local Authorities consider flood risk through relevant environmental and climate change policies which enforce the requirements of the NPPF.

The Strategic Flood Risk Assessment (SFRA) is a key source of flood risk specific information for the area. The SFRA provides a more detailed review of flood risks and recommendations for ensuring developments can be constructed and operated safely in accordance with the NPPF. Greater detail of the SFRA is provided in the report. Policy CS26 and Flood Risk SPD (April 2016).

7.0 Site Status and Environmental Setting

7.1 Site Location and Status

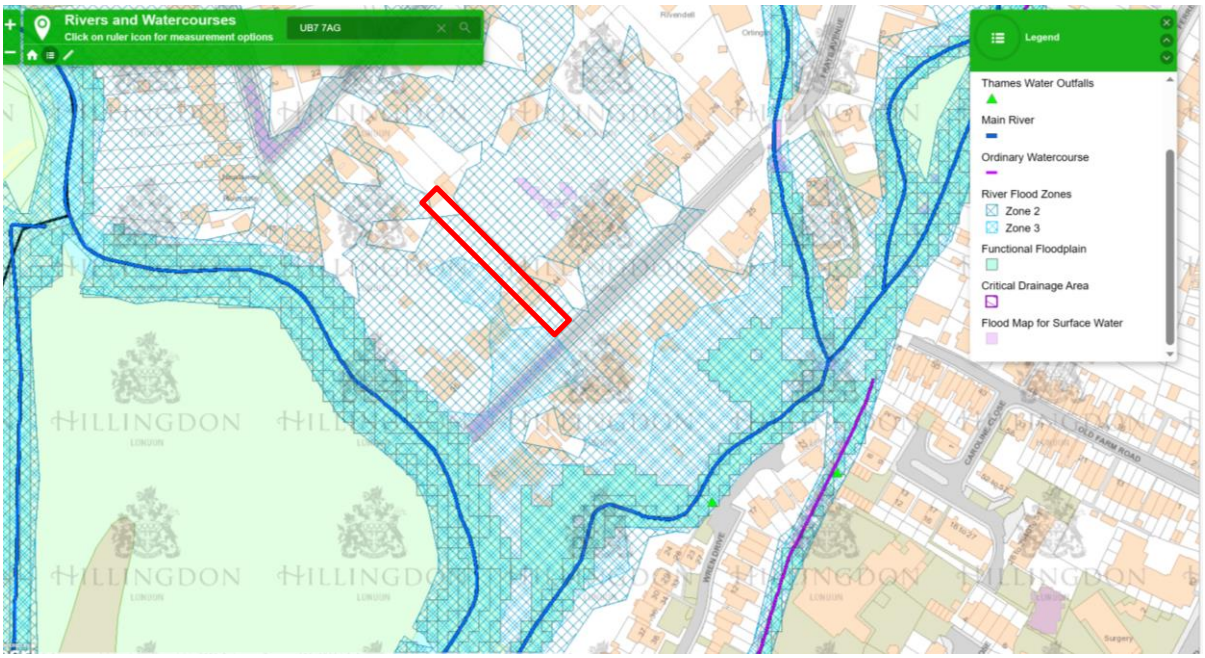
The following description is based on information made available from internet mapping, architects drawings and aerial photography. The site is 0.107ha (1,070.00m2) and comprises an existing dwelling, associated hardstanding for access and paving slabs (impermeable make-up) adjacent to the property and soft landscaping for rear garden purposes.

The location plan can be seen in Appendix A.

7.2 Existing Flood Risk Posed to the Site / from Scheme

Flood Sources	**Site Status**	**Comment on flood risk posed to / from the development**
Fluvial / Tidal	The site is located in EA FZ2 (rear partly in FZ1) at the very far extent of the floodplain BUT this is without climate change hence likely a part of the site could be within the 1in100year+35% and 70%cc No works within c. 900m of the River Colne	Whether the site is within the climate change flood extents is not relevant to the scheme given it is a small extension: that is EA guidance. **No change to site operations or sensitivity** Not necessary to define the flood zones further or to apply new climate change allowances given no further design input is required for an extension project No additional hydraulic modelling is required. All site users continue to have access to upper floors above the extreme event for the lifetime of the scheme
Groundwater	SFRA indicates site is not in an area of groundwater flooding / incidents.	The proposed development will not increase the risk of groundwater flooding. Low Risk
Artificial Sources	Site is not within EA Reservoir Flood Warning area: managed and maintained to appropriate standards No other artificial sources with likely flowpaths that could reach the site	Low Risk Not relevant to the scheme as residential use at the site is not in question
Surface Water / Sewer Flooding	Site is not located in a Critical Drainage Area but adjacent to a surface water flood extents from the council and the EA Condition, depth and location of surrounding infrastructure uncertain	No works or new footprint are to be within a surface water flood extent Scheme includes betterment with SUDS and flood resilience No additional drainage assessment required **Results in better protected and flood future-proofed property than existing.** Low Risk
Climate Change: new allowances	Site is partly within future climate change extents based on Colne mapping (35% and 70%)	Development will not increase the peak flow and volume of discharge from the site Climate change incorporated in the SFRA modelling (not EA mapping) Regardless: exact flood heights are not required for this scheme given full height flood resilience and extension only needs to ensure ground FFL no lower than existing Low risk posed to and from the development

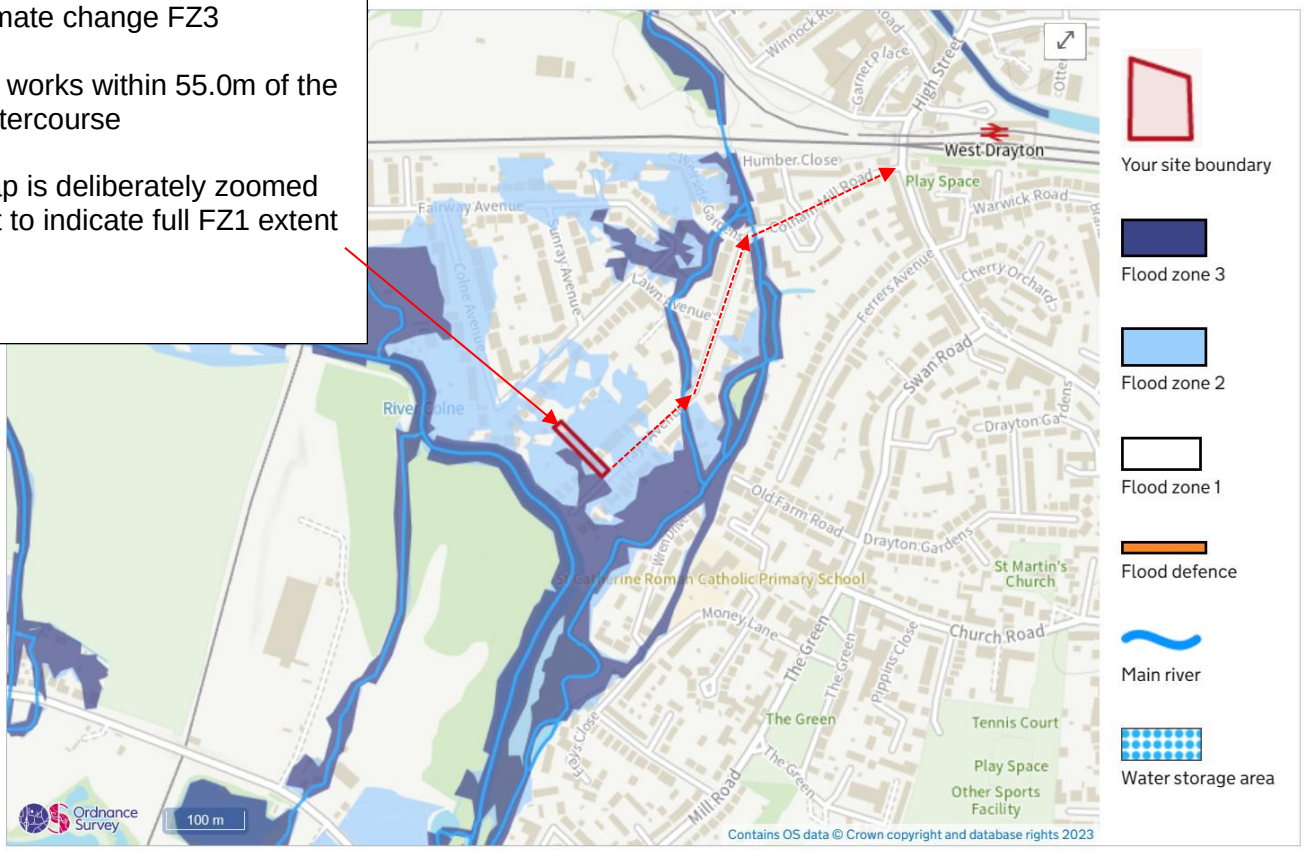
Historic Flooding	Included in the EA / council data where appropriate	Site is not in an area of historic flooding based on available data



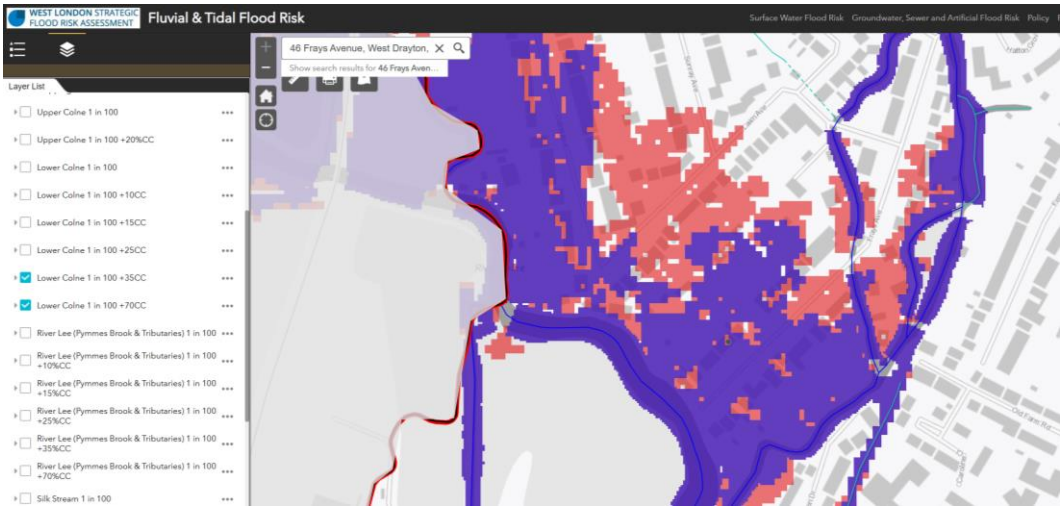
Site is in EA FZ2 / council climate change FZ3

No works within 55.0m of the watercourse

Map is deliberately zoomed out to indicate full FZ1 extent



West London SFRA: climate change extents for Lower Colne



7.3 Geology

- Bedrock: London Clay
- Potential superficial deposits: Alluvium

The strata and site setting suggest infiltration would not be suitable: none water bearing strata and likely hydraulic connectivity with the watercourse, the likely communication and fluctuating

watertable is indicative of infiltration not being a feasible option.

Given it is an existing dwelling and constrained site, a hybrid system can be used whereby the storage volume is oversized to permit partial soakaway (low order storms) with an overflow to the existing system should the soakage not locally be suitable for a full soakaway.

This is a proven approach which does not require the expensive testing up front in geological situations which suggest good soakage is feasible.

This is the correct approach for an extension project also given the most sustainable approach is to re-use and improve the existing system.

7.4 SFRA Summary

Where appropriate (eg: groundwater) the SFRA is referenced above. The SFRA does not indicate any other significant sources of flooding.

7.5 Flood Compensation

This report and the data presented demonstrate that the site and the surrounding area are within the official EA fluvial Flood Zone 2 but within the climate change extents as per the Lower Colne West London SFRA modelling. Regardless of the new climate change flood extents, a householder extension does not require flood compensation. That is national and EA guidance.

7.6 EA 2023 Surface Water Hazard

- Site is in part perimeter No - LOW hazard in all the EA risk scenarios
- Suitability of residential at the site is not in question and no flood compensation is required for surface water residual risk
- Correct approach and policy compliant approach is: standard to use modern flood resilient measures
    - **Results in better protected and flood future-proofed property than existing.**

7.7 Existing drainage

The site has no formal SUDS; the site currently drains 100% of roof and hardstanding to sewer.

An assessment of the Greenfield equivalent discharge for the site has been carried out. This has confirmed an average discharge rate (QBAR) of less than a nominal 0.10l/s.

This low figure is a simple function of the fact that the built area is relatively very small and the geology.

The restriction i.e. delay to surface water reaching the sewer is provided by the new storage: see later sections.

8.0 Assessment of Proposed Development

8.1 Proposed Development

The proposed development can be seen in Appendix A. The proposed development comprises:

- Remove existing impermeable areas adjacent to the property
- Erect a rear / infill extension
    - Ground FFL to be no lower than existing as per EA guidance
    - Amend existing infrastructure to accommodate the extension: standard inspection chambers and pipe connections to be replaced to meet Building Regulations Part H

No increase in impermeable areas overall

- Use full height flood resilient measures (see section below)
- No change to operation at the site
- No change to sensitivity of the site: remains one dwelling
- No additional formal SUDS considered necessary given scope of the scheme

Scheme results in better protected and flood future-proofed property than existing.

8.2 Hillingdon / London Plan SI.13 Drainage Requirements

The scheme comprises a small ground floor extension:

- Any additional new landscaping will be maximised to be permeable or porous surfacing with an additional depth of suitable granular material
- This will be source control and storage SUDS
- This is following the EA Specifications for Front and Rear Gardens

There is no policy trigger to incorporate additional formal SUDS other than to seek a betterment for all schemes no matter the size.

Furthermore, incorporating additional SUDS at this site would not necessarily be the most sustainable approach due to the need to use additional resources and energy which would be not commensurate with the scale and lifetime of the scheme.

8.3 SUDS Specifications: see Appendix B also

The scheme is a minor scheme to an existing dwelling.

Additional formal extensive SUDS would not be commensurate with the scale and sensitivity of the scheme.

- Retain all existing porous grassed / planting areas

To meet council policy, use the **EA's specific "Guidance on the permeable surfacing of front gardens"**

http://www.communities.gov.uk/publications/planningandbuilding/pavingfrontgardens

- Any new permeable surfacing can be constructed following the guidance
- A new patio area of 5.0m by 3.0m with the extra 200mm of subbase and assuming a 30% void for the angular material would provide 0.90m3 of storage ((5.0m x 3.0m x 0.20) x 0.3 void ratio)

8.4 Maintenance

With respect to maintenance, the proposed SUDS techniques should be maintained in accordance with the appropriate regimes set out within the SUDS manual and will be the responsibility of the owner / management company.

Given the SUDS required for this site are new grass areas and if new patio areas are included, for them to have an extra subbase of granular material: no further maintenance or management measures are required given these are minimal intervention and no maintenance, for them to still operate as SUDS measures.

8.5 SUDS Hierarchy Check

Site Specific SUDS Appraisal

SUDS Hierarchy	SUDS Technique	Potential Benefits			Site Specific	
		Flood Reduction	Pollution Reduction	Landscape & Wildlife Benefit	?	Scheme Specific SUDS Suitability Appraisal and Comment
Most Sustainable	Living Roofs	•	•	•	X	Not likely feasible given nature of roof construction. (Blue, Green and Brown roofs)
	Ponds / Basins	•	•	•	X	Not suitable in this flood setting / size of site or scheme
	Swales	•	•	•	X	Not suitable in this flood setting / size of site or scheme
	Infiltration Techniques	•	•		X	Not required given no increase in impermeable areas and scale of scheme and London Clay; likely Kempton Gravels has water table not suitable for soakage
	Permeable Surfaces with granular subbase	•	•		✓	Included to meet council policy
Least Sustainable	Tanked Systems	•			X	Not required given no increase in impermeable areas and scale of scheme

Key:
Potentially suitable at the site: * Incorporated in the scheme: ✓ Not suitable / possible at the site: X

8.6 Flood Resilience

The following elements for the ground floor extension will be undertaken using the most resilient approaches:

- The new ground floor slab / block and beam system will be concrete in order to minimise damage and reduce the turnaround time for returning the property to full operation after a flood event
- No change to site levels outside of the new footprint and no increase in impermeable areas
- Waterproofing to be tied in to the existing and proposed ground floor slab as appropriate to reduce the turnaround time for returning the property to full operation after a flood event; details to be provided at detailed design to building regulations requirements
- New waterproofing where feasible will be extended to an appropriate level as high as is feasible, above existing ground levels.
- Plasterboards will be installed in horizontal sheets rather than conventional vertical installation methods to minimise the amount of plasterboard that could be damaged in a flood event
- Wall sockets where possible will be raised to as high (minimum of 450mm above existing ground levels) as is feasible and practicable in order to minimise damage if flood waters inundate the property
- If any new waterproofing to be included: waterproofing to be incorporated as appropriate; details to be provided at detailed design to building regulations requirements as necessary
- Any wood fixings on ground floor will be robust and/or protected by suitable coatings in order to minimise damage during a flood event

9.0 Flood Response Management

9.1 Evacuation and refuge

A precautionary approach has been taken.

The scheme does not change any operation at the site.
The site is in FZ2 / new climate change FZ3.
The site is an existing dwelling.
No formal evacuation plan is required; all site users can access upper refuge areas above the extreme event for the lifetime of the scheme.
If evacuation is deemed necessary

- Take Frays Avenue northeast
- Continue into FZ1 via Colham Mill Road eastwards
    - least flood hazard routes
    - this is immediately away from the Lower Colne climate change flood extents
    - shortest distance to unrestricted FZ1

9.2 Flood Risk Vulnerability & Exception Test

According to the NPPF retained Flood Risk Vulnerability Classification, the proposed residential land use would be classified as “More Vulnerable.”

The NPPF also retained Flood Risk Vulnerability and Flood Zone “Compatibility” Classification; this states that a “More Vulnerable” development in FZ2 is appropriate without the need to pass the Exception Test. It is acknowledged that the site is within the council FZ3 climate change allowance extents this does not alter the suitability or design of the scheme.

It is considered the Exception Test can be passed regardless.

10.0 Conclusion

The scheme comprises an extension for an existing dwelling to increase the existing living space, no change to site operation or sensitivity.

The site is considered to be generally at a low risk from all sources of including for potential residual surface water flooding in extreme events.

It is acknowledged that the site is within the Lower Colne climate change extreme future modelled flood extents.

The scheme addresses this residual hazard with the appropriate response: flood resilience to the full height of the new ground floor:

- **The scheme results in better protected and flood future-proofed property than existing.**

The proposed development is categorised as “More Vulnerable” in accordance with the NPPF; it is therefore an appropriate type of development in Flood Zone 2 / new climate change FZ3; the Exception Test is considered passed as a precautionary approach.

Based on the likely flooding risk, it is considered that the proposed development can be constructed and operated safely in flood risk terms, without increasing flood risk elsewhere and is therefore appropriate development in accordance with the NPPF / PPG.

10.1 Recommendations

1. Use EA guidance for constructing any new permeable paving areas

11.0 Appendices

A. Location Plan

B. Proposed Layout & Floor Plans & EA's SUDS Permeable Storage Specification

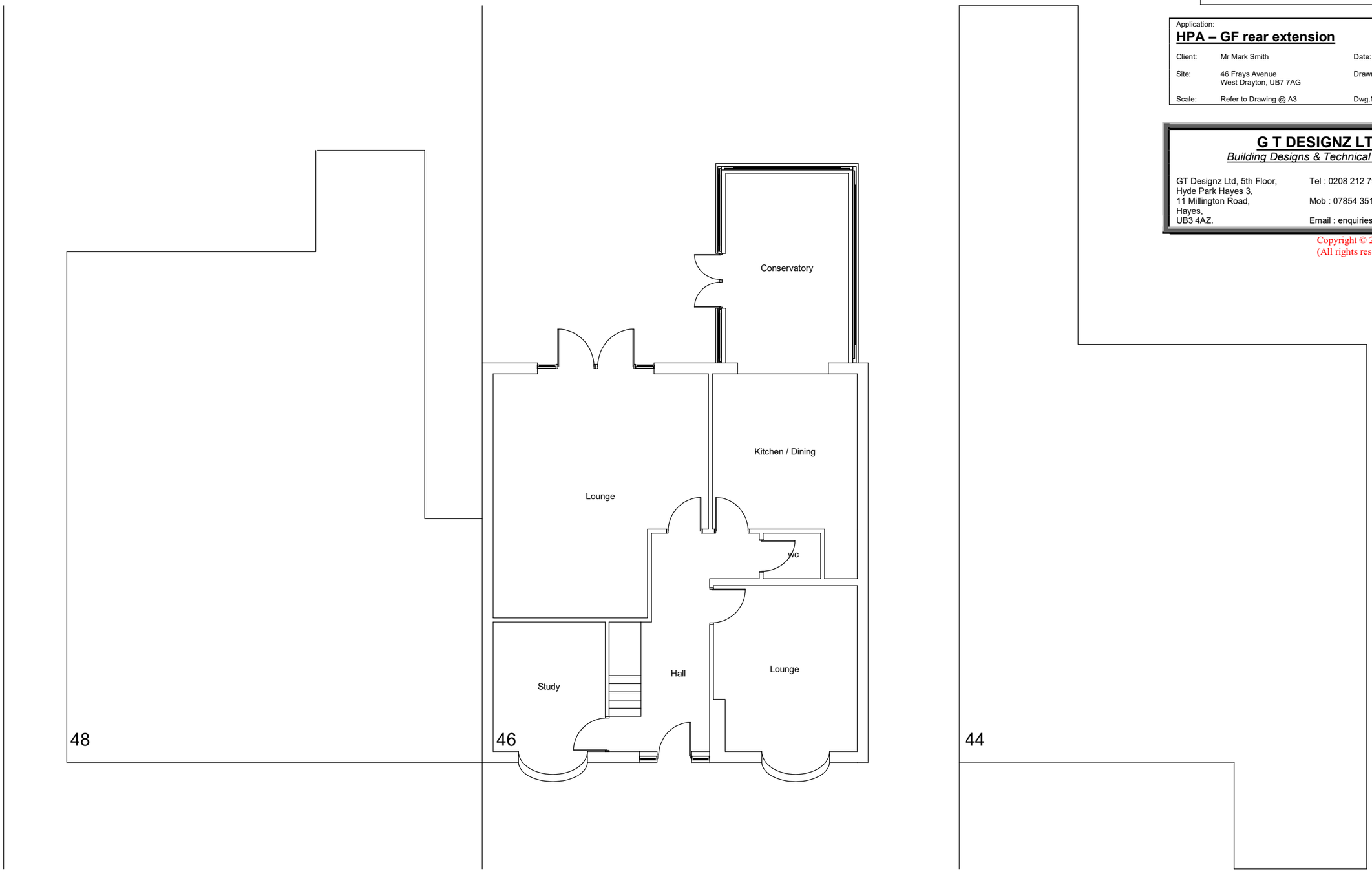
Appendix A

LOCATION PLAN
SCALE 1:1250

Metres

5 0 1 2 3 4 5 10

SCALE 1 : 100



EXISTING SITE LAYOUT
Scale 1:100

REV/NOTES:

Where building to the boundaries the adjacent owner is to be informed under the terms of the Party Wall Act 1996 and its provisions followed. Where building over boundaries the adjacent owner is to be served notice under section 65 of the Town & Country Planning Act 1990.

Application:

HPA – GF rear extension

Client:	Mr Mark Smith	Date:	22nd Jan 2022
Site:	46 Frays Avenue West Drayton, UB7 7AG	Drawn By:	Gurps Benning
Scale:	Refer to Drawing @ A3	Dwg.No:	GTD46FA – 01

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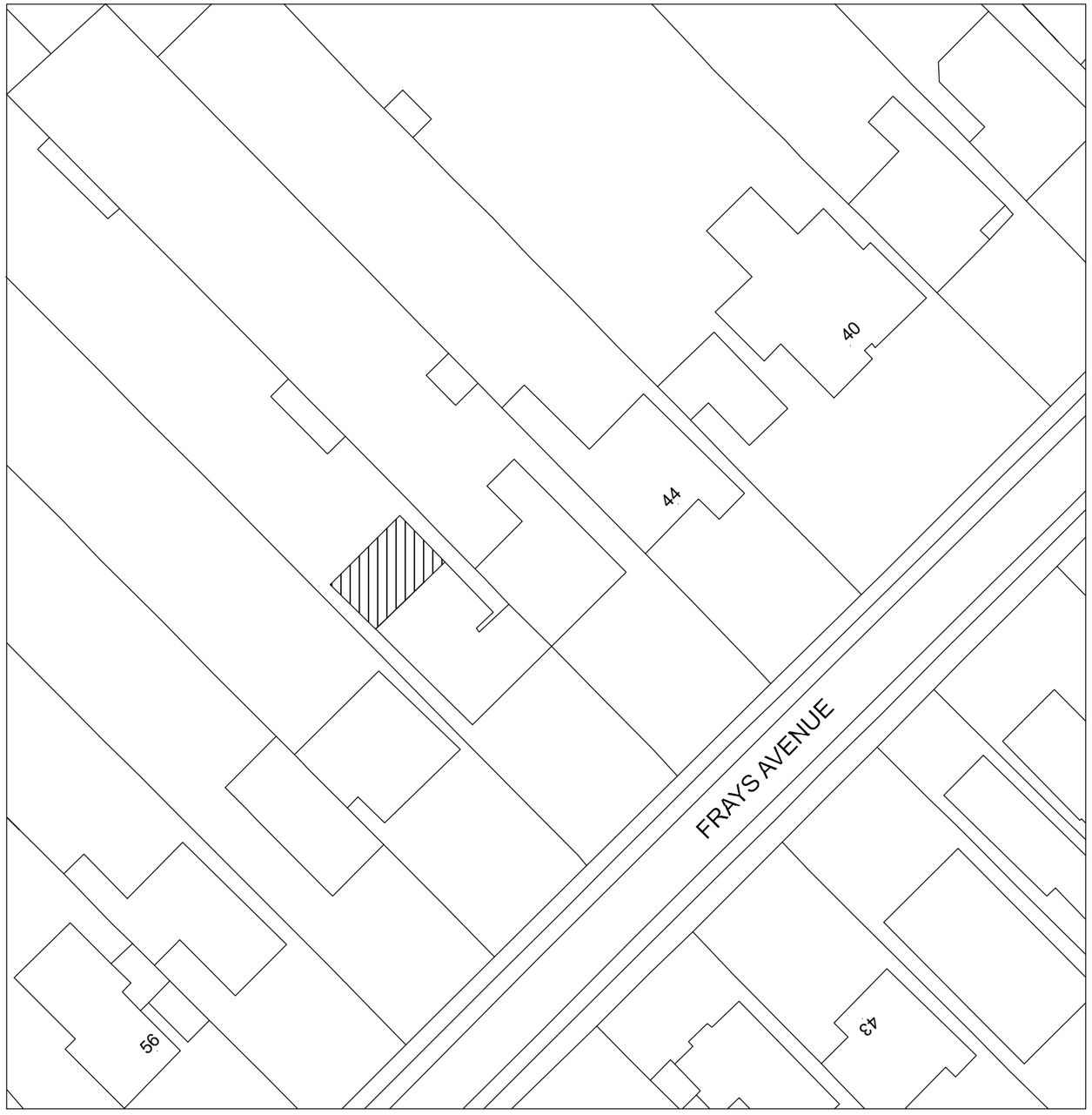
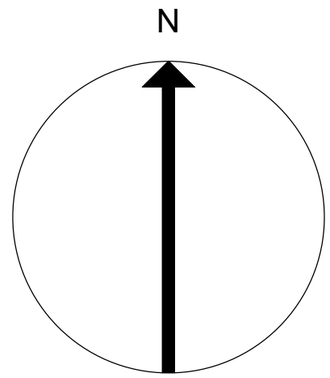
Appendix B





BLOCK PLAN
SCALE 1:500

Application:
HPA – GF rear extension

Client:	Mr Mark Smith	Date:	22nd Jan 2022
Site:	46 Frays Avenue West Drayton, UB7 7AG	Drawn By:	Gurps Benning
Scale:	Refer to Drawing @ A3	Dwg.No:	GTD46FA – 05

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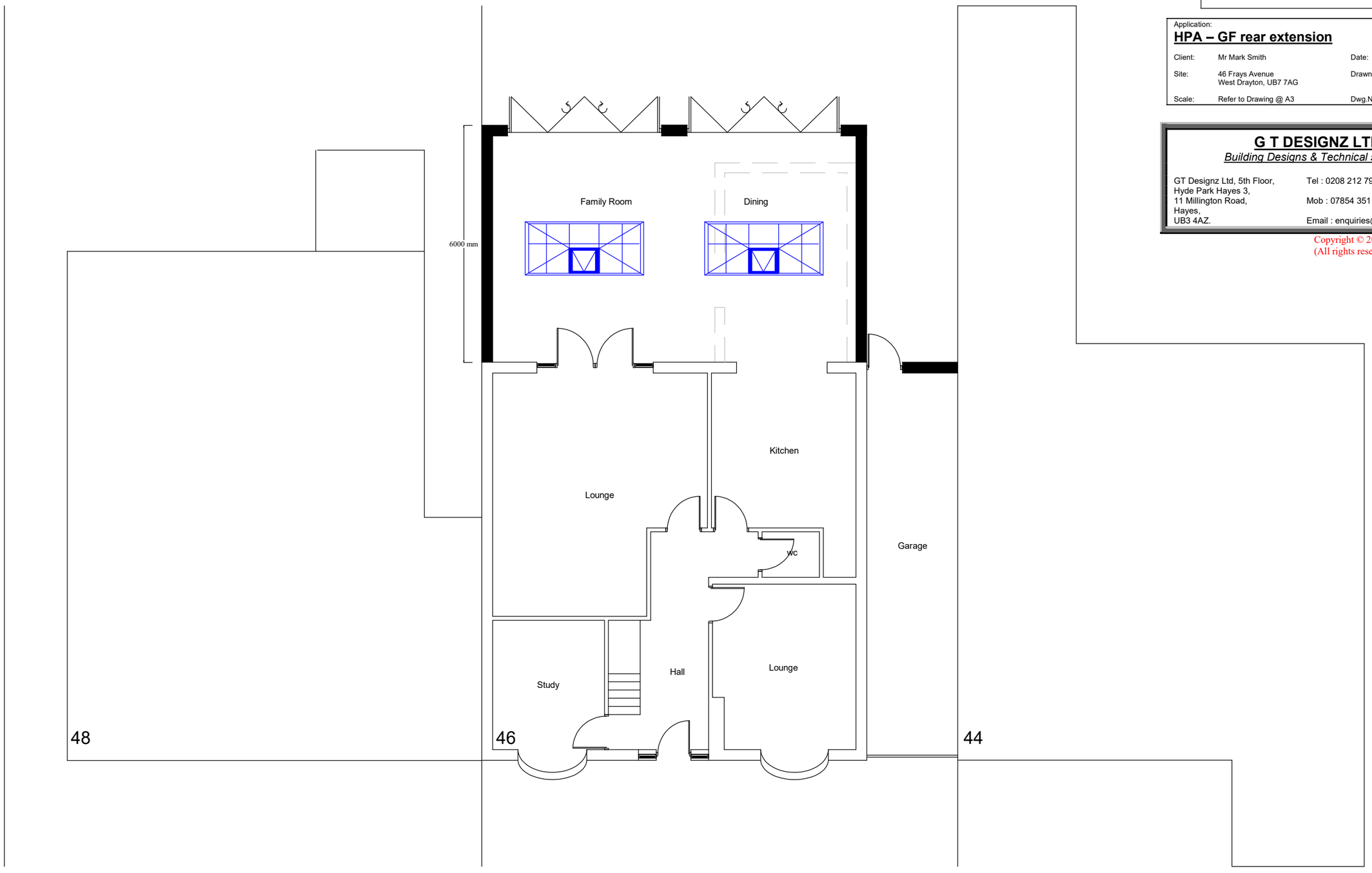
Metres

5 0 1 2 3 4 5 10

SCALE 1 : 100



PROPOSED SITE LAYOUT
Scale 1:100

REV/NOTES:

Where building to the boundaries the adjacent owner is to be informed under the terms of the Party Wall Act 1996 and its provisions followed. Where building over boundaries the adjacent owner is to be served notice under section 65 of the Town & Country Planning Act 1990.

Application:

HPA – GF rear extension

Client:	Mr Mark Smith	Date:	22nd Jan 2022
Site:	46 Frays Avenue West Drayton, UB7 7AG	Drawn By:	Gurps Benning
Scale:	Refer to Drawing @ A3	Dwg.No:	GTD46FA – 03

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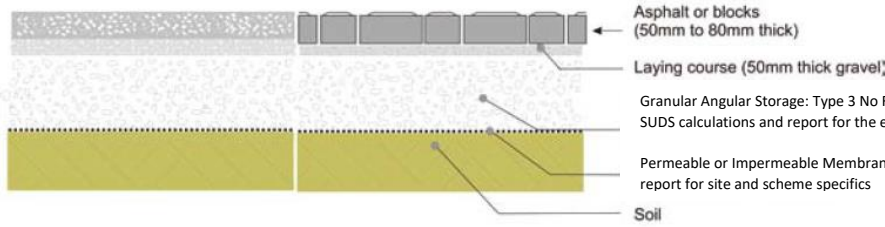
EA Permeable Paving Specification from EA SUDS Guidance

Hard permeable and porous surfaces

Hard surfacing which allows water to soak into it can be built with porous asphalt, porous concrete blocks, concrete or clay block permeable paving. The material has open voids across the surface of the material or around the edges of blocks that allow water to soak in. The surface is constructed over a permeable sub-base. Systems are available from a variety of manufacturers. Sources of further information are provided in Section 6.



Pros	Cons
Hard and durable with a very long service life if correctly constructed	Can be more expensive than other options
Require the least amount of maintenance	Require knowledgeable contractor to construct correctly (especially porous asphalt which should be provided and laid by a specialist company)
Wide variety of shapes and colours available for concrete blocks	