

**FLOOD RISK ASSESSMENT
&
Throughflow Screening
&
SUDS Strategy**

**Richmond SFRA 2020/21 & LP21 compliant
London Plan SI.12 and SI.13 compliant**

**Rear ground floor extension to existing dwelling
Defended section of River Crane: no flood compensation
required in accordance with EA guidance and
Householder extension requirements**

**Ground floor no lower than existing
Flood resilience for full height of new ground floor**

**Direct response to EA Letter: SL/2022/121747/01-L01
No new footprint within c. 9.2m of the top of bank
Evidence provided to remove EA objection based on the
8.0m easement: no additional restriction of access /
maintenance to the flood defence / watercourse**

AT

58D Cole Park Road, Twickenham, TW1 1HS

April 2022

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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.

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1.0 Scope

This report contains the details of a flood risk assessment statement for planning carried out by Ark Environmental Consulting Limited (“ARK Ltd”) for 58D Cole Park Road, Twickenham, TW1 1HS, henceforth referred to as “the site” in this report.

This report has been prepared for 50 Degrees North Architects and must not be relied upon by any other party without the explicit written permission of ARK 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.

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2.0 Introduction

The information source used to undertake this FRA & SUDS / Drainage Strategy has been collected from the following sources:

- British Geological Survey Website;
- EA Website;
- Richmond Strategic Flood Risk Assessment 2020 / 2021
- DRAIN LONDON Preliminary (Surface Water) Flood Risk Assessment for London Borough of Richmond. (GLA & Environment Agency, June 2011)
- Internet mapping and searches

3.0 Existing Site Status and Environmental Setting

3.1 Site Location and Topography

This site is an existing dwelling with part hardstanding and part soft landscaping in FZ2 / part FZ1 at the access / egress to Cole Park Road.

The eastern boundary is the River Crane with the River Crane flood defences.

Topography Requirement

The scheme is an extension to an existing dwelling in FZ2 which already has an upper level as safe refuge and a full topographic survey is not required because a raised floor level is not an option that is feasible or required.

There remains no requirement for the extension to have to raise flood levels to above the 1in100year+NEWcc flood level. Extension finisher floor level to be no lower than existing.

A full topographic survey is not required based on the nature of the scheme given no comparison of flood heights vs a structure relative to ordnance datum is required for a FZ1 setting.

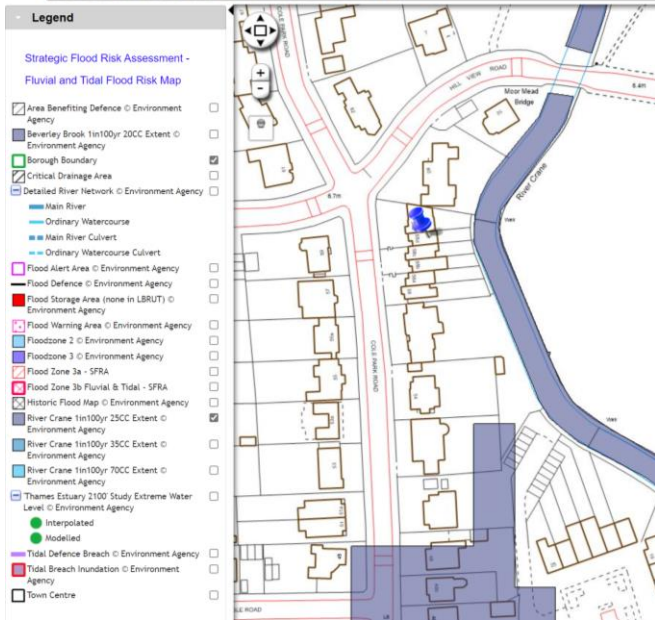
3.2 Flood Status including new climate change allowances

The site is partly in defended FZ2 (new climate change allowances) and adjacent to FZ1.

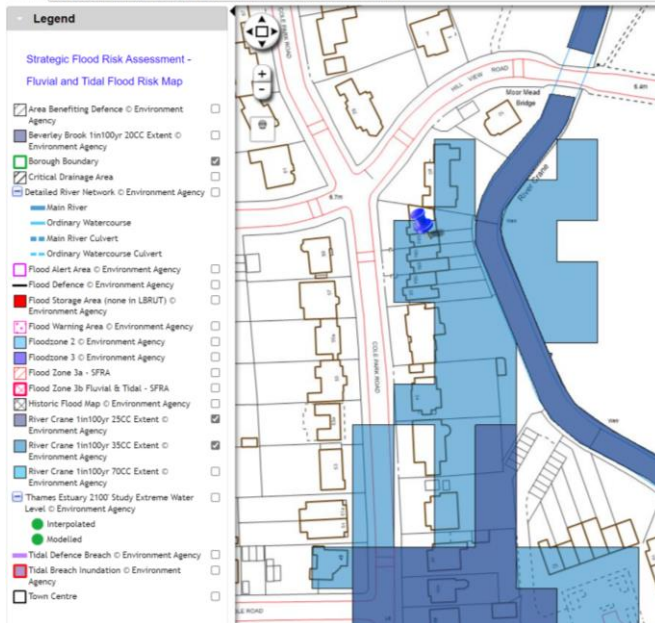
This is all corroborated by the Richmond SFRA 2020 / 2021.

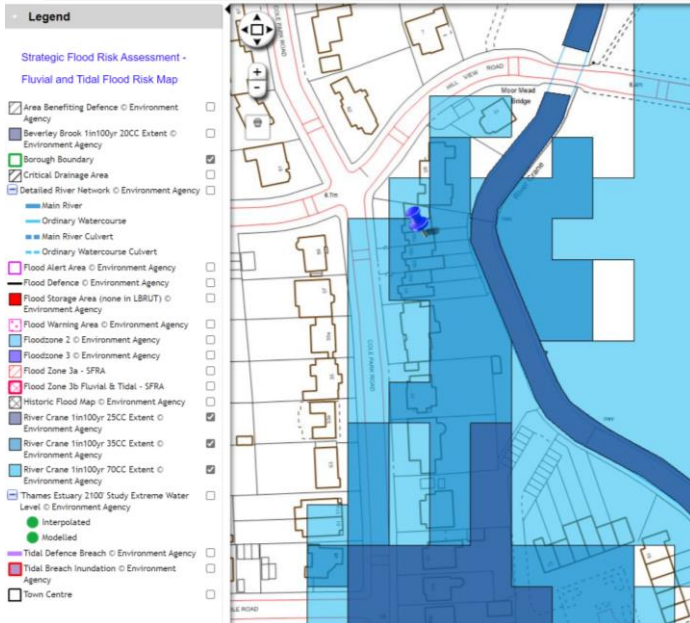
- 1in100year+25%cc: site not inundated
- 1in100year+35%cc: site partly inundated; access & egress remain in FZ1
- 1in100year+70%cc: site mostly inundated but access & egress still partly / immediately to FZ1

Location: 58 D COLE PARK ROAD TWICKENHAM TWICKENHAM TW1 1HS



Location: 58 D COLE PARK ROAD TWICKENHAM TWICKENHAM TW1 1HS





3.3 Geology, SPZ's and Throughflow Zones

Based on BGS mapping, surrounding borehole records and the council SFRA, the site is underlain by:

Bedrock: London Clay

Superficial deposits: Kempton Park Gravels

Strata and Flood Risk:

There will be no groundwater body displaced by the scheme (no lower ground structures) and hence there will be no increased risk of flooding from the scheme from groundwater to surrounding areas.

Strata and Drainage / SUDS

Given the main Bedrock is London Clay and the site is adjacent to the River Crane, it is entirely appropriate that these strata are not to be relied upon for infiltration. No BRE365 testing is required. Soakaways will not work and are not appropriate at this site.

However, the new Richmond SFRA 2020/21 includes new Throughflow Zone to consider the soil throughflow of perched water within the upper levels of clay.

The property itself is not within the Richmond Throughflow

But the site is partly within a Richmond Throughflow zone: see specific section on Throughflow Screening.

3.4 Existing Drainage

The site is an existing operating residential property. It has connections to the adjacent sewers in Cole Park Road / potential surface water outfall to the River Crane.

There is no evidence of any existing SUDS.

The site currently discharges 100% unattenuated by a combination of:

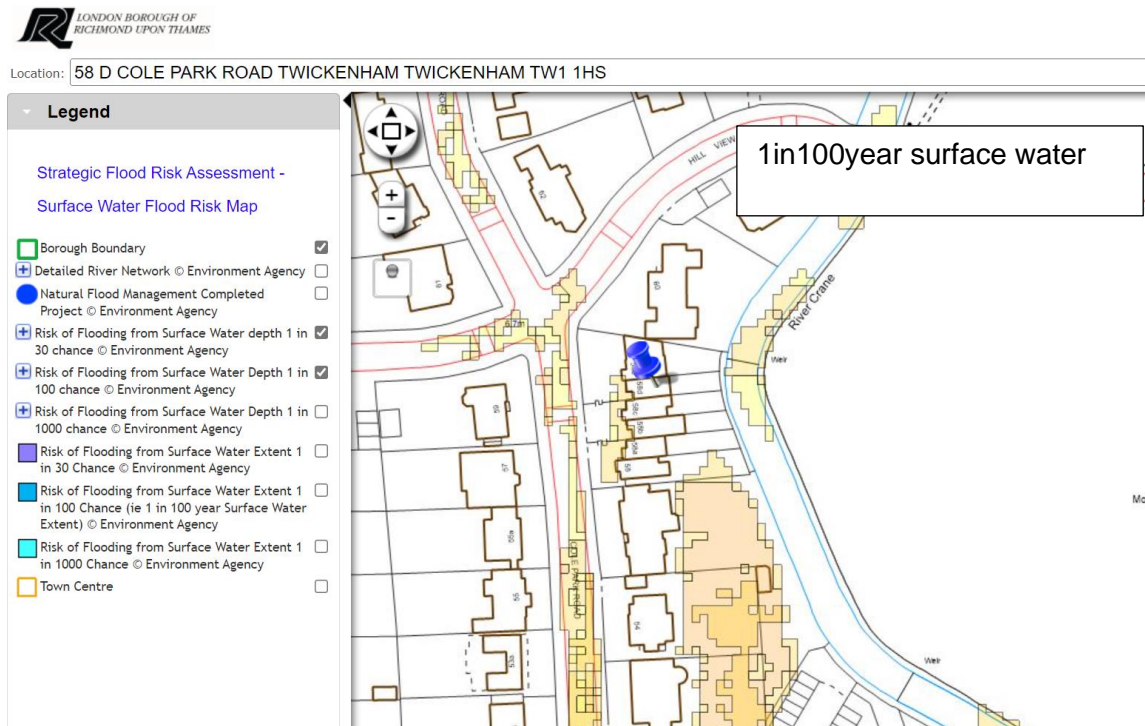
- Low Order Storms: natural on site interception from vegetation, soil infiltration and roof with RWP's direct to sewer / watercourse
- Higher Order Storms: majority to sewer / watercourse

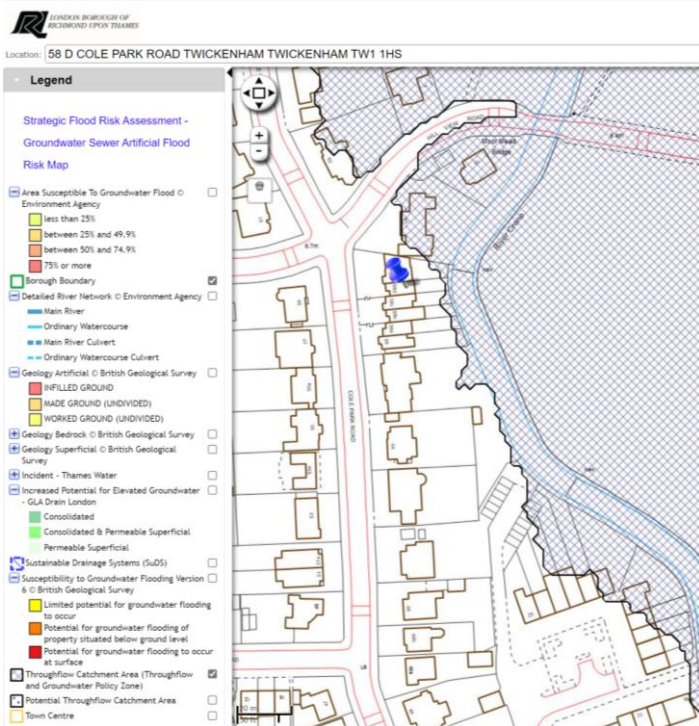
The scheme does not need to alter the connections.

3.5 Summary of other Flood Risks Posed to and From Site and Scheme

Flood Sources	Site Status	Comment on flood risk posed to / from the development
Groundwater	Site is within an area of potential for elevated groundwater flooding No works pose an increased risk to or from groundwater flooding Site is within Richmond Throughflow	Scheme will not increase the risk posed to or from groundwater No lower ground structures Suitable waterproofing of ground extension slab But Richmond require Throughflow Screening
Artificial Sources	Site is within EA general Reservoir Flood Warning area No other artificial sources with likely flood flowpaths that could reach the site	Low Risk
Climate Change	Included in the flood modelling extents 40% used in the SUDS storage calculations	Development will manage the peak flow and volume of discharge from the site Low risk posed to and from the development

Richmond SFRA Surface Water Layers





The property itself is not within the Richmond Throughflow
 But the site is partly within a Richmond Throughflow zone:
 see specific section on Throughflow Screening.

4.0 Throughflow Screening & Flood Defence Easement

4.1 Throughflow Screening

Of relevance to the Throughflow screening, site and scheme specifically:

- The site is an existing property
- The actual property is not within the Throughflow zone
- The site has existing impermeable areas that are a loading on the site
- The scheme does not involve any lower ground structures

No additional ground investigation is required at this stage to verify this assessment; no additional groundwater monitoring or modelling would be required for this type of scheme in this geological setting.

The scheme will not increase the risk posed from this source to surrounding areas.

Risk posed to the scheme itself

Given the site specific groundwater setting, the scheme will be able to address the appropriate waterproofing with standard construction materials and methods; it is a low hazard to the scheme at this site.

No further Throughflow assessment is required based on site and scheme specifics.

4.2 Environment Agency Flood Defence Easement & Permit

The new extension remains 9.2m distance from the flood defence structure.

This is appropriate as it is greater than the 8.0m statutory easement distance.

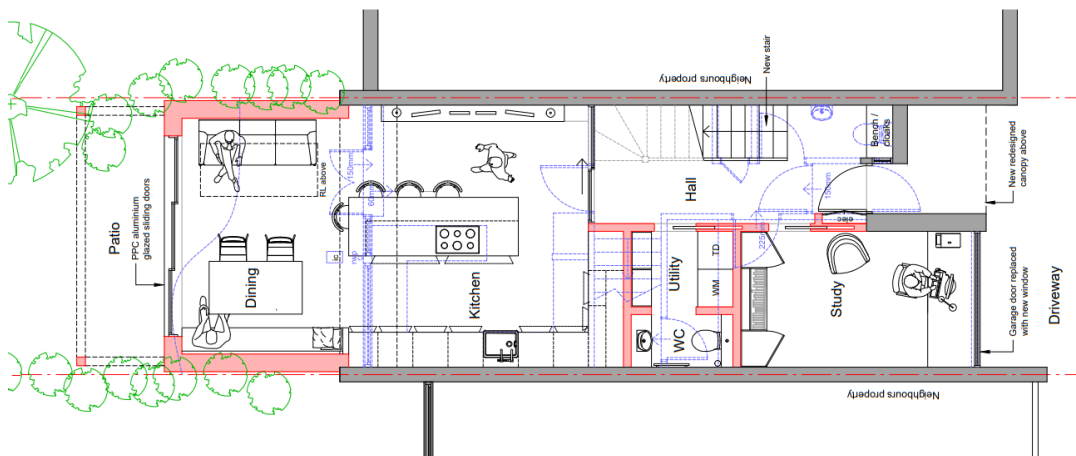
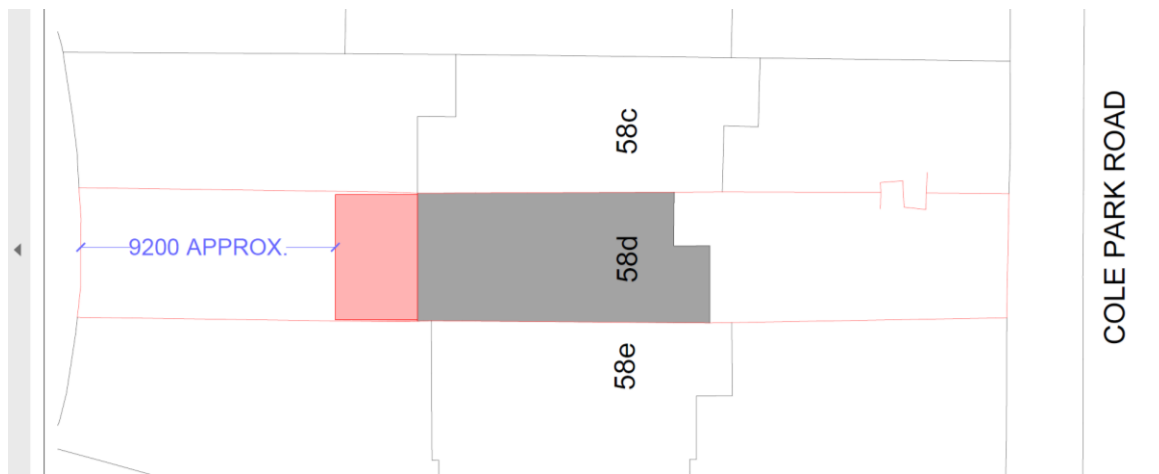
It is considered the EA's objection could be removed.

Patio with Brise Soleil / canopy (not a structure that will impede access to the river) will likely be within the 8.0m easement.

Patio to be same level as existing garden; no raising of the ground levels.

It is likely that there will also be temporary storage of materials / plant required within the 8.0m easement.

The appropriate flood risk activity permit can be provided; this is standard.



5.0 SUDS Strategy

5.1 Existing site

The existing landscaping comprises existing impermeable hardstanding and porous planted garden areas.

5.2 SUDS Assessment and Specifications

Formal infiltration is not feasible due to the geology and site constraints.

The nature of the structural specification for such a small extension also means that any additional weight at height would require additional concrete and steel. For such a small area, it is therefore not sustainable to incorporate additional sedum / green roofs because of the embodied carbon increase which would not be offset by the amount of biodiversity and SUDS gain.

However, if the structural calculations demonstrate a sedum roof could be incorporated, this would be a suitable SUDS and biodiversity enhancement.

The site still discharges via gravity given the invert of the lowest element of drainage on site is still higher than the invert of final manhole invert on site.

There is an assumed rainwater system that drains from the rainwater pipes (RWP's) at the rear and discharges to the garden / watercourse and under the house under gravity and from the RWP at the front of the house to communicate with the sewer in the road.

The most sustainable approach is a re-use of the existing system with betterment i.e. the maximisation of porous and permeable areas can be complemented with additional Source Control SUDS storage.

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

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

- Any new permeable surfacing can be constructed following the guidance

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

5.3 Flood resilience for extension / refurbishment flood future-proofing

Given the scheme is a refurbishment of an existing property but with extensions, the following flood resilient measures will be incorporated where feasible / where works are required

- Electrics to be installed top-down where feasible
- Non-return valves as standard for ground floor
- Any new waterproofing to be installed to above ground level as appropriate
- Plasterboards will be installed in horizontal sheets on ground & basement rather than conventional vertical installation methods to minimise the amount of plasterboard that could be damaged in a flood event
- Wall sockets will be raised to as high as is feasible and practicable in order to minimise damage if flood waters inundate the property
- Any wood fixings on the ground floor will be robust and/or protected by suitable coatings in order to minimise damage during a flood event
- Only if required: the concrete sub floor will likely be laid to fall to drains or gullies which will remove any build-up of ground water to a sump pump where it will be pumped into the mains sewer. This pump will be fitted with a non-return valve to prevent water backing up into the property should the mains sewer become full

6.0 Summary

The scheme will be flood future-proofed for the lifetime of the scheme.

There will be no permanent footprint within 8.0m of the flood defence.

There is no other raising of the ground in the floodplain.

The scheme can include additional informal Source Control SUDS as necessary through the detailed design stages.

Throughflow Screening:

The extension is not within the Throughflow area. The site specific groundwater setting and scheme specifics mean the additional horizontal extension will not have an impact on a throughflow area that could result in an increase in flooding off site.

- No further calculations are required
- The scheme includes full height flood resilience
 - There is not a need to compare site and floor levels to any flood levels

The scheme will result in a better flood protected and lifetime flood future-proofed property than existing.

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.

APPENDICES

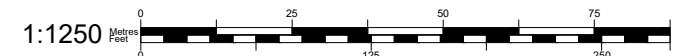
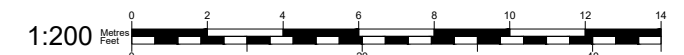
APPENDIX A



Existing Location Plan
1:1250 @ A3



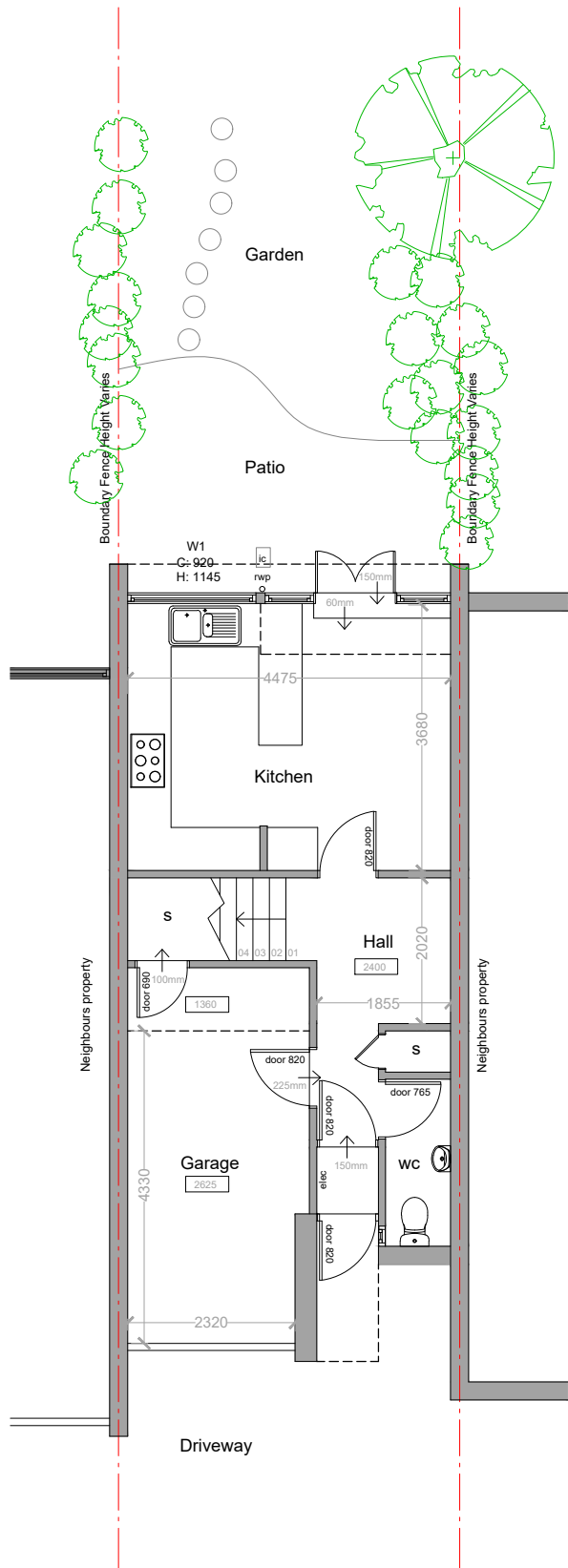
Existing Site Plan
1:200 @ A3



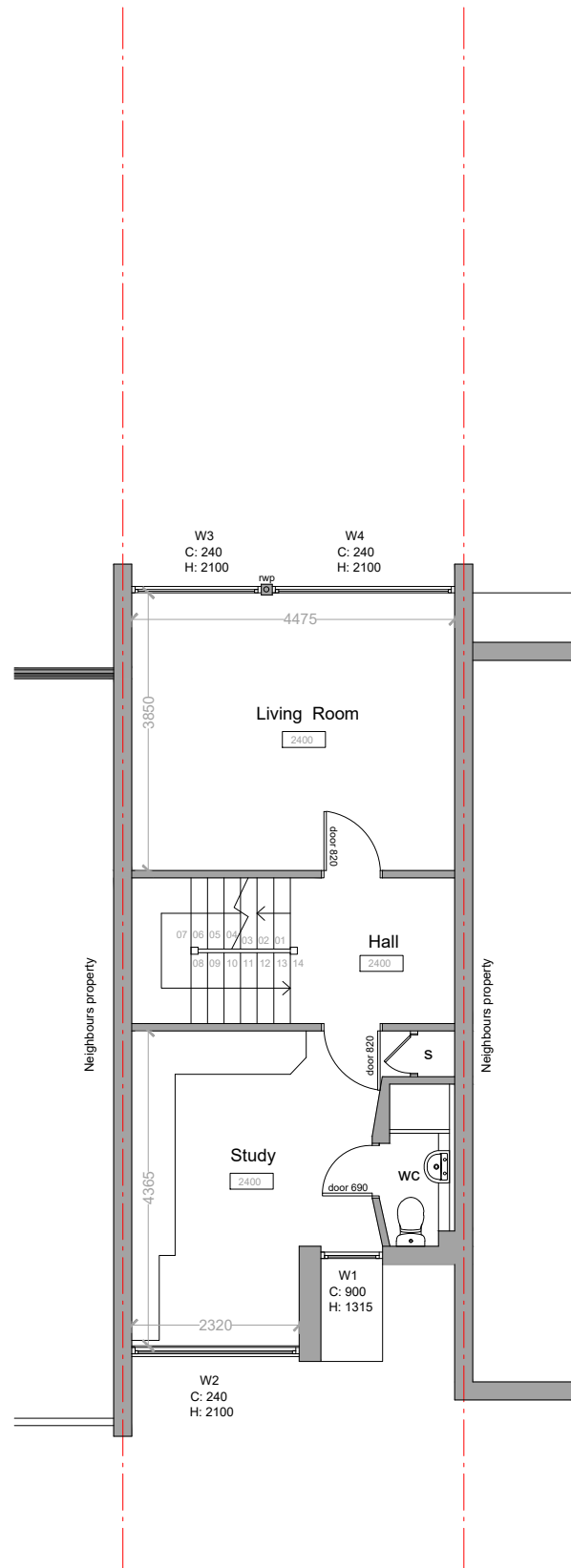
NOTES:
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Revisions:
- 07.12.21 PLANNING ISSUE

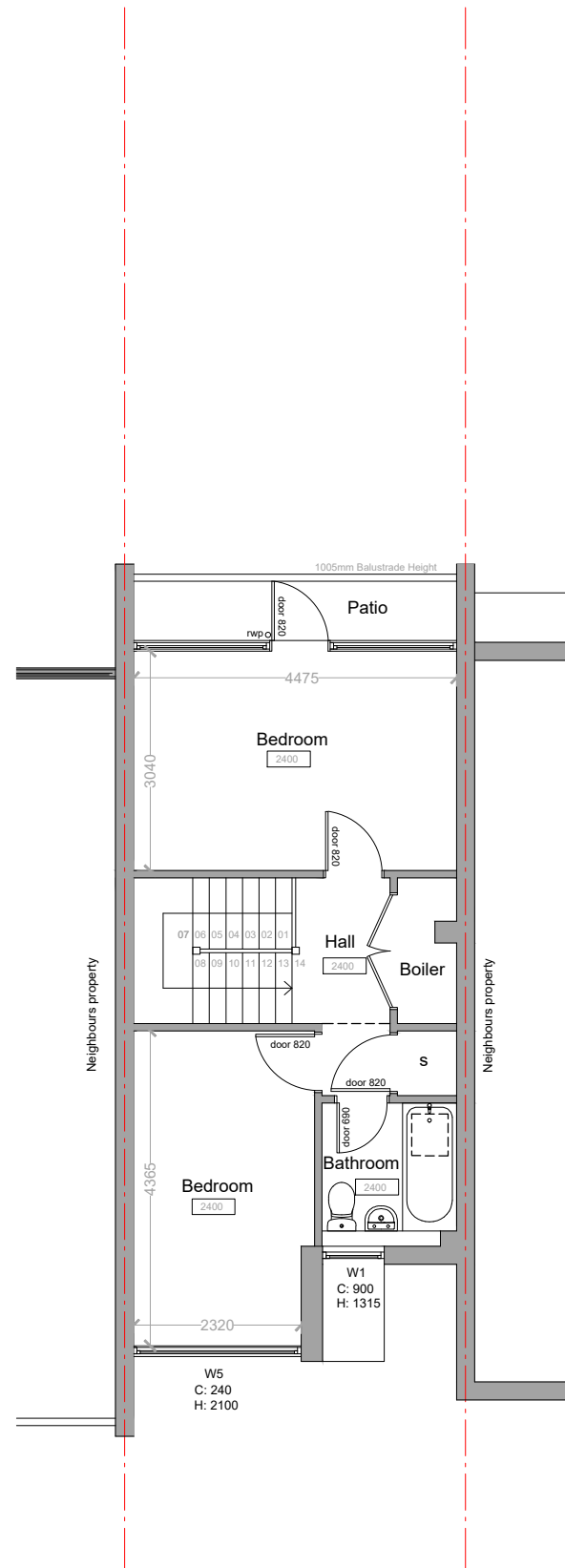
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JOB DESCRIPTION Rear extension and internal remodelling	SCALE Various @ A3	STATUS Existing	CHECKED BY YK	DRAWING No 001	REV	
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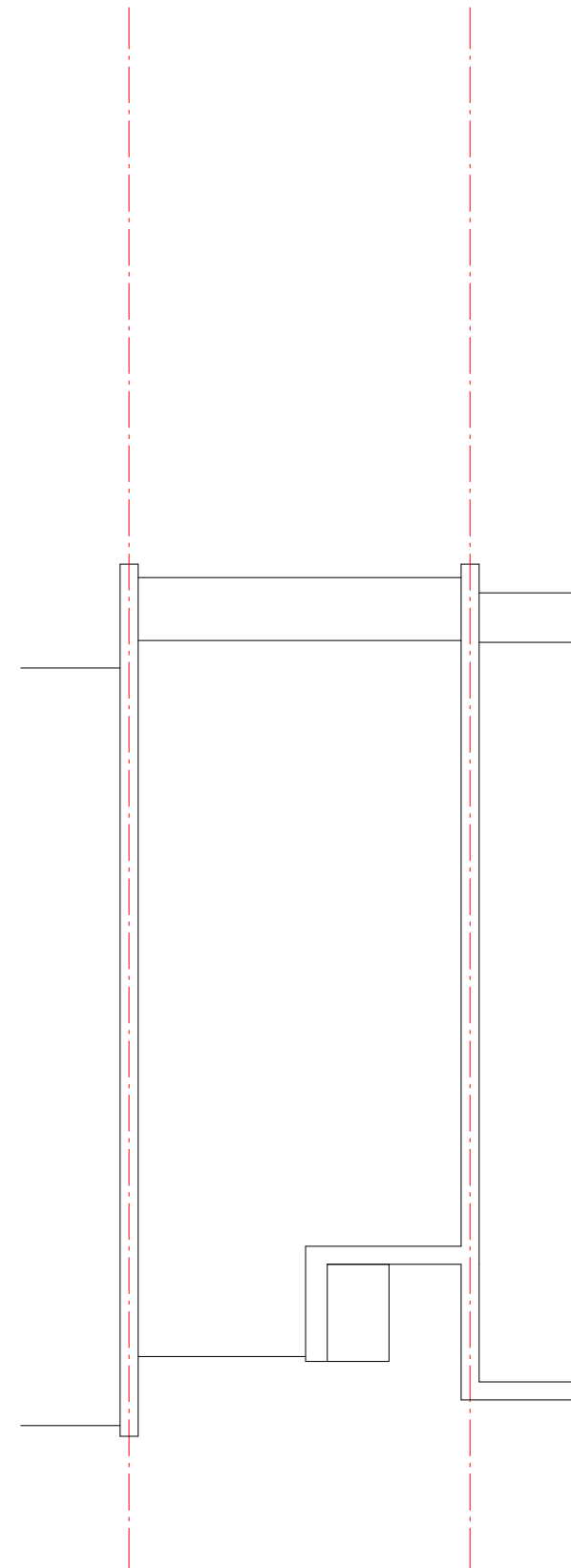
Existing Ground Floor Plan



Existing First Floor Plan



Existing 2nd Floor Plan



Existing Roof Plan



Revisions:
- 07.12.21 PLANNING ISSUE



LOCATION 58D Cole Park Rd Twickenham TW1 1HS	CLIENT Paul Vickery	DRAWN BY NA	DRAWING TITLE Existing Plans	JOB No 2553	SIZE A3	 50degrees.co.uk
JOB DESCRIPTION Rear extension and internal remodelling	SCALE 1:100 @ A3	STATUS Existing	CHECKED BY YK	DRAWING No 002	REV	

Alice Murphy
London Borough of Richmond upon
Thames
Planning Department
Civic Centre (44) York Street
Twickenham
Middlesex
TW1 3BZ

Our ref: SL/2022/121747/01-L01
Your ref: 21/4232/HOT
Date: 21 February 2022

Dear Alice Murphy,

Single storey rear extension. New front door, change of use of garage to habitable space including new window to replace existing garage door.

58D Cole Park Road, Twickenham, TW1 1HS

Thank you for consulting the Environment Agency on the above planning application. We have reviewed the submitted information and respond as follows:

Environment Agency position

We **object** to the planning application as submitted.

The application proposed building in proximity to the River Crane and its associated flood defences. There must be a minimum of an 8m buffer between the development and any main river and/or flood defences. This is supported by Part D 'Flood Defences' of Policy LP 21 'Flood Risk and Sustainable Drainage' of the Richmond Local Plan (2018). This space is required to ensure that the development does not impact the structural integrity of the flood defence and to ensure there is adequate space and access for maintenance, inspection, emergency works and upgrading of the flood defence in the future. It is currently not clear how far the existing and proposed development is from the main river and its associated flood defences.

The proposal, therefore, does not comply with the requirements for planning, as set out in paragraphs 149 to 157 of the Flood Risk and Coastal Change section of the planning practice guidance. The proposal does not therefore adequately assess the development's impact on proximity to the River Crane and the flood defence.

In particular, the submitted information fails to:

- Provide an exact location of the flood defence in relation to the existing and proposed development (including any foundation or anchor ties) and therefore has not demonstrated that an 8 metre buffer zone has been provided. We would not accept any encroachment into the 8 metre buffer zone.
- The applicant has not assessed whether access to the flood defence will be maintained post construction (e.g. that an 8 metre buffer zone is provided).

Where reasonable, improvements to access should be made (e.g. larger buffer zone).

- The applicant has not considered the space required (8m) for future defence maintenance or replacement, including the use of vehicles and heavy duty machinery. Where buildings overhang, we require an 8m buffer from the closest part of the building to the flood defence.
- The applicant has not provided evidence that the flood defence is currently in sufficient condition.
- The applicant has not provided evidence that the flood defence will be maintained for the lifetime of the development.
- The applicant must demonstrate that the proposed works will not increase the likelihood of structural failure to the flood defence due to additional loading which poses the risk of collapse, increasing flood risk.

Overcoming our objection

To overcome our objection the applicant will need to:

- Provide a map showing the exact location of the flood defence in relation to the existing and proposed development (including any foundation or anchor ties).
- The applicant must demonstrate that an 8m buffer zone will be provided between the flood defence and proposed development.
- The applicant must provide evidence that access to the flood defence will be maintained post construction. Where reasonable, improvements to access should be made (e.g. larger, buffer zone).
- The applicant must consider the space required (8m) for future defence maintenance or replacement, including the use of vehicles and heavy duty machinery. Where building overhang, we require an 8m buffer from the closest part of the building to the flood defence.
- The applicant must submit a condition survey of the defence that demonstrates that the flood defence is currently in fair to good condition. If the flood defence condition is insufficient, its condition must be improved before we can consider the proposal acceptable. This could be done through maintenance, upgrade or replacement as appropriate.
- Where the flood defence is 3rd party owned/maintained (i.e. not EA owned or maintained), the applicant must provide a statement of liability and asset maintenance plan to ensure the flood defence will be maintained post construction.
- The applicant must provide evidence that the proposed works will not increase the likelihood of structural failure to the flood defence due to

additional loading which poses the risk of collapse, increasing flood risk. This can be demonstrated through loading calculations, vibration information, and foundation/piles drawings as appropriate. As a minimum, an 8 metre buffer zone is required, but this does not negate the possibility that a larger buffer zone will be required to ensure no negative impact on the flood defence.

Please refer to 'Section 1 – Advice to the applicant and Local Planning Authority' for further information.

Note to Local Planning Authority

Please be aware that we wish to be re-consulted on this planning application once the required information has been submitted. If you are minded to approve the planning application contrary to our advice, we request that you contact us to allow further discussion and/or representations from the Environment Agency.

Decision notice request

The Environment Agency requires decision notice details for this planning application in order to report on our effectiveness in influencing the planning process. Please email kslplanning@environment-agency.gov.uk with any decision notice details.

We hope you find our response helpful. Please contact us if you have any questions.

Yours sincerely,

Miss Rachel Holmes
Planning Advisor

Direct e-mail rachel.holmes@environment-agency.gov.uk

Section 1 – Advice to the applicant and Local Planning Authority

We would like to offer the following advice with respect to Environmental Permitting and Biodiversity:

Environmental Permitting

The Environmental Permitting (England and Wales) Regulations 2016 require a permit or exemption to be obtained for any activities which will take place:

- on or within 8 metres of a main river (16 metres if tidal)
- on or within 8 metres of a flood defence structure or culverted main river (16 metres if tidal)
- on or within 16 metres of a sea defence
- involving quarrying or excavation within 16 metres of any main river, flood defence (including a remote defence) or culvert
- in a floodplain more than 8 metres from the river bank, culvert or flood defence structure (16 metres if it's a tidal main river) and you don't already have planning permission

For further guidance please visit <https://www.gov.uk/guidance/flood-risk-activities-environmental-permits> or contact our National Customer Contact Centre on 03708 506 506 (Monday to Friday, 8am to 6pm) or by emailing enquiries@environment-agency.gov.uk.

The applicant should not assume that a permit will automatically be forthcoming once planning permission has been granted, and we advise them to consult with us at the earliest opportunity.

Please note that, at present, it is unlikely that we would grant a flood risk activity permit for this application.

Biodiversity

We would like to highlight that plans should protect and enhance rivers and their associated ecosystems. The [National Planning Policy Framework](#) (NPPF) makes reference to how the planning system should safeguard biodiversity and geodiversity:

- Paragraph 179 provides details of what ecological aspects should be considered in plans;
- Paragraph 180 highlights the principles by which Local Planning Authorities should determine the outcome of planning applications.

Where possible we encourage all plans to achieve biodiversity net gain objectives. Please refer to the '[biodiversity, geodiversity and ecosystems](#)' section of the gov.uk website for advice on net gain.

Small incremental losses to marginal bankside habitat, which are often the result of unsympathetic small scale garden development, when combined with similar losses

creating a better place
for people and wildlife

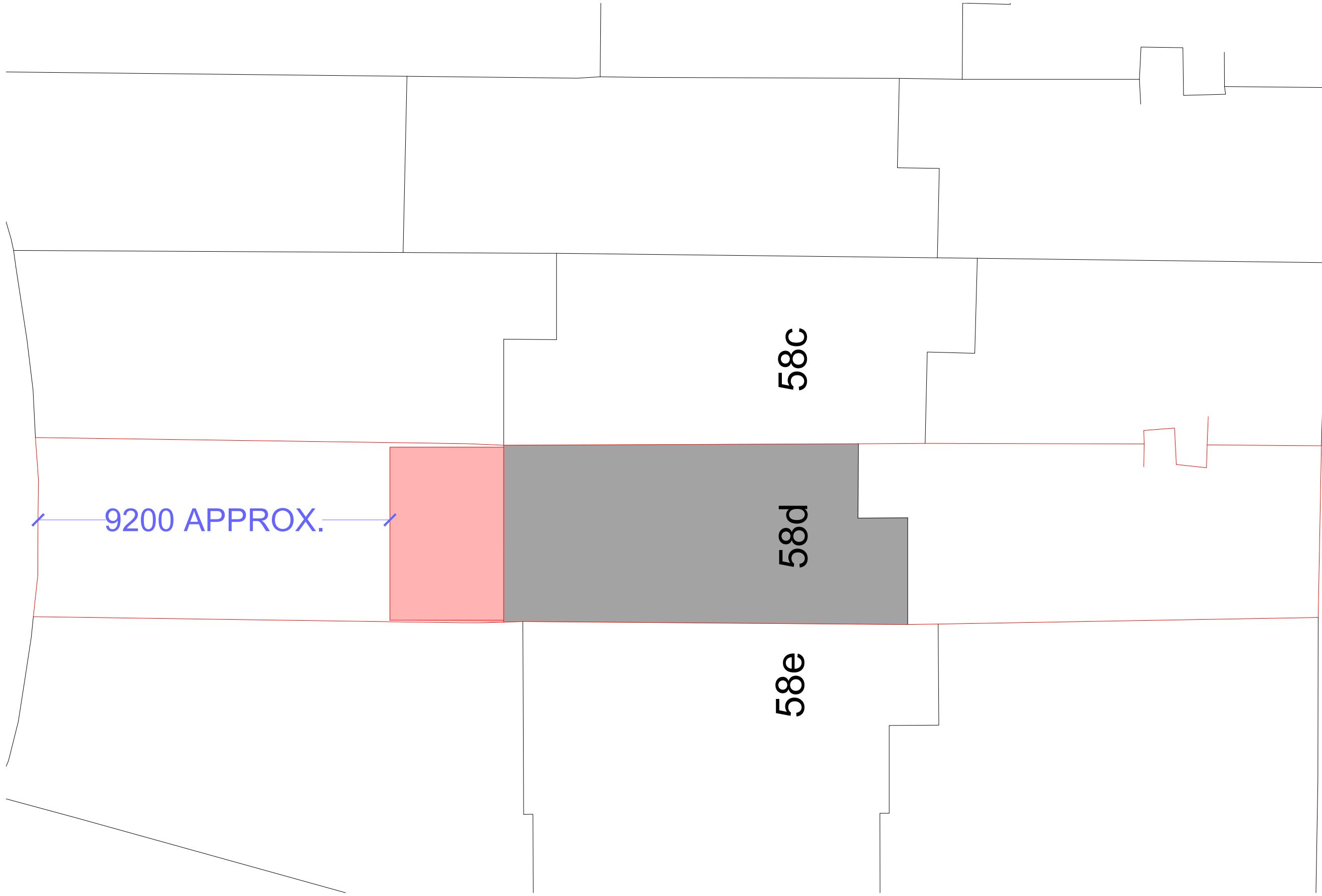


further along the river, can lead to the cumulative degradation of the riverine ecosystem and may also exacerbate flood risk.

The best way to ensure habitat is either maintained or enhanced is to provide a minimum buffer zone of 8m from the top of bank of fluvial rivers and 16m for tidal. The buffer zone should be naturalised, free from landscaping and include native terrestrial and marginal bankside species.

APPENDIX B

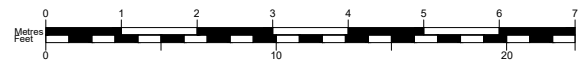
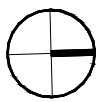
COLE PARK ROAD




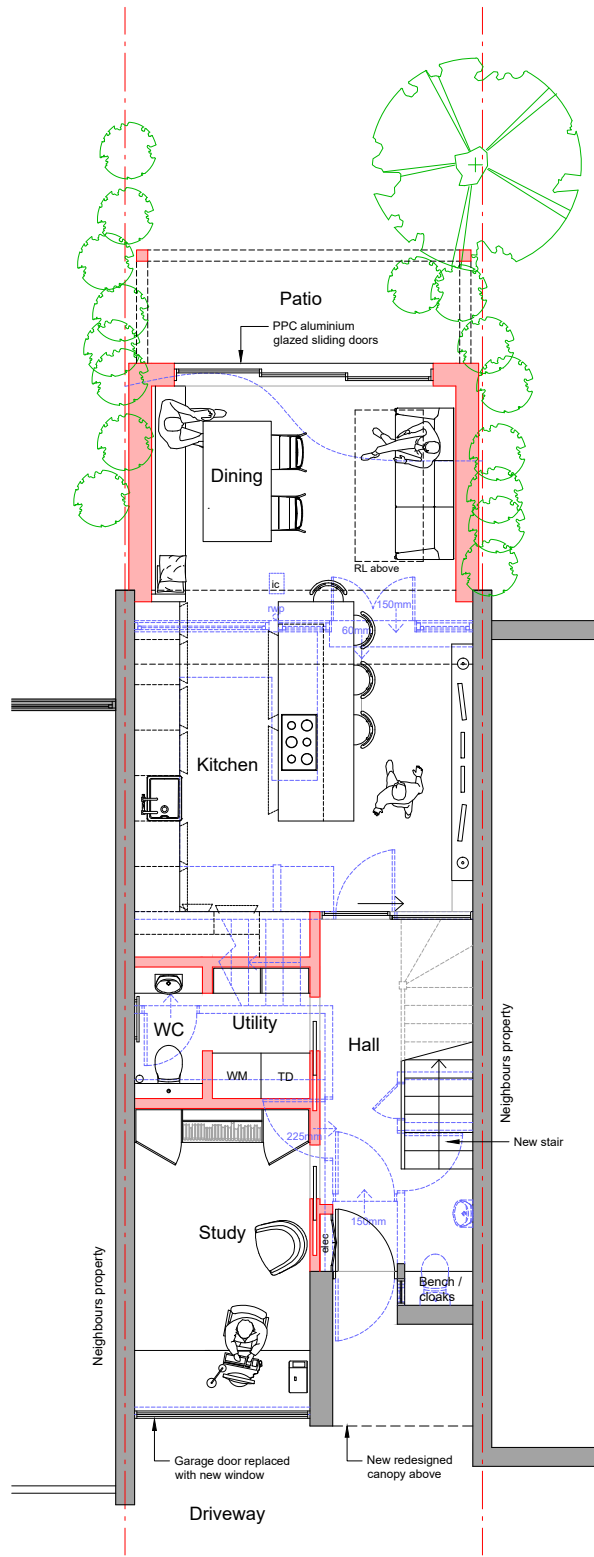
NOTE:
SITE PLAN IS BASED ON OS LOCATION PLAN

- Existing retained
- Proposed

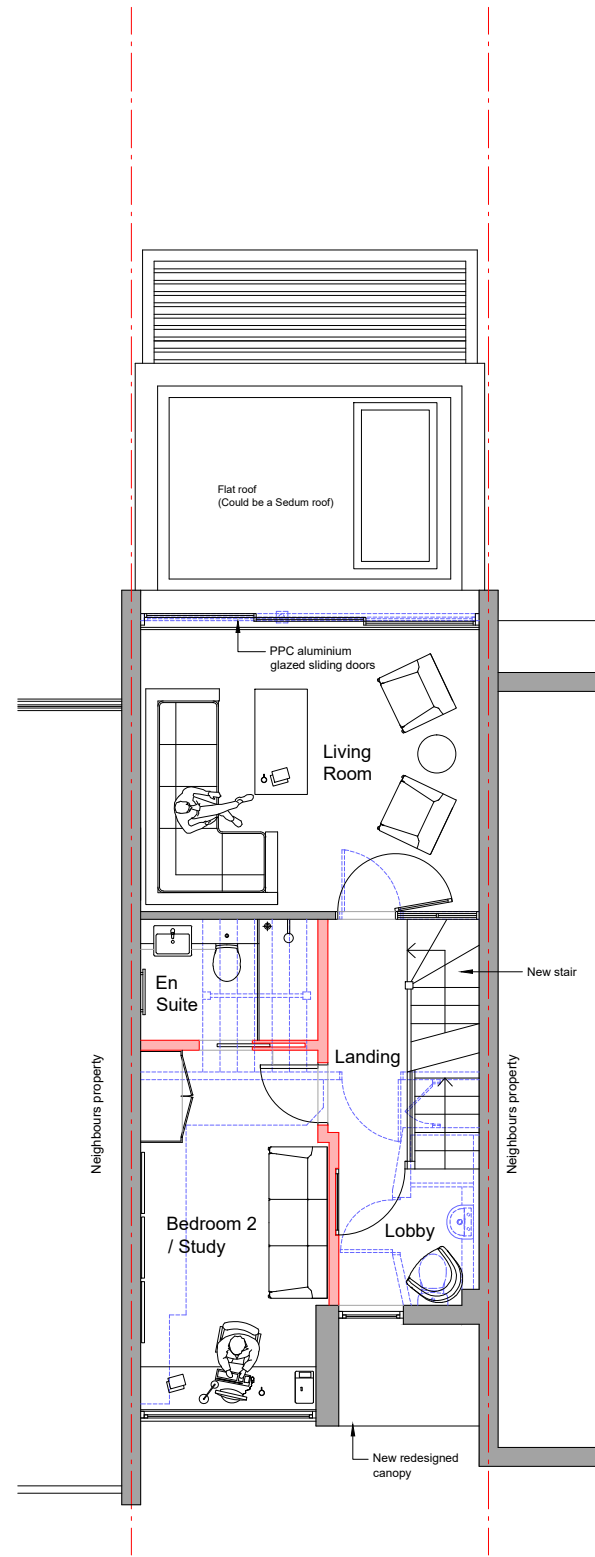
Revisions:
 - 07.12.21 PLANNING ISSUE
 A 31.03.22 DIMENSION ADDED



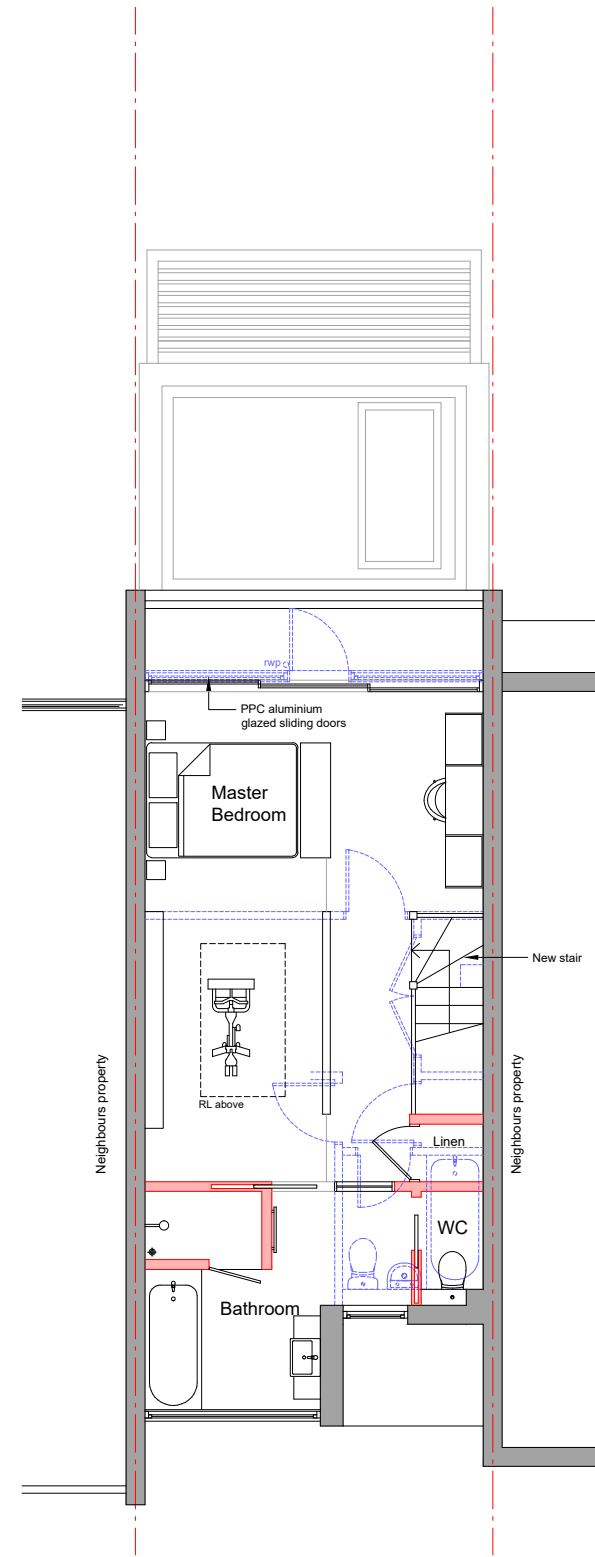
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JOB DESCRIPTION Rear extension and internal remodelling		SCALE 1:100 @ A3		STATUS Planning		CHECKED BY		DRAWING No 010		REV A		



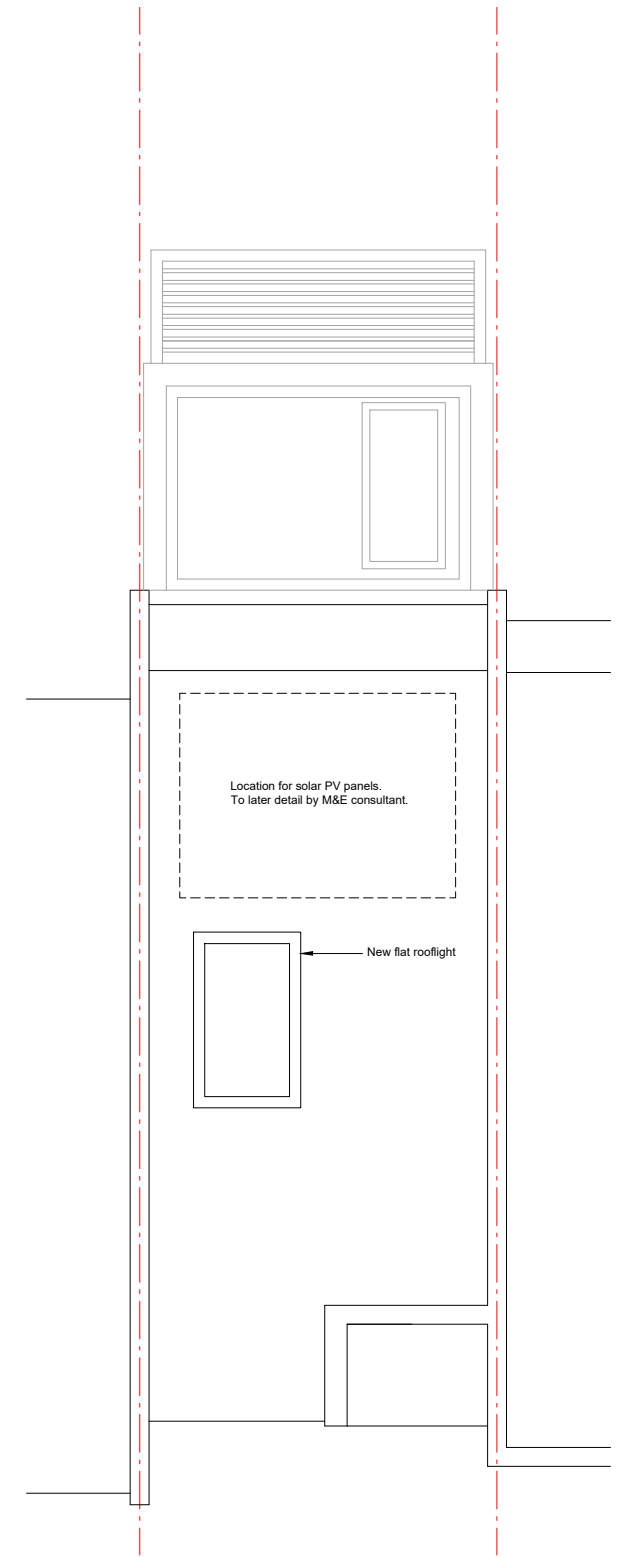
Proposed Ground Floor Plan



Proposed First Floor Plan



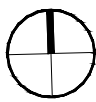
Proposed 2nd Floor Plan



Proposed Roof Plan

- Existing retained
- Existing to be removed
- Proposed

Revisions:
A 07.12.21 PLANNING ISSUE



LOCATION 58D Cole Park Rd Twickenham TW1 1HS	CLIENT Paul Vickery	DRAWN BY GN	DRAWING TITLE Proposed Floor Plans	JOB No 2553	SIZE A3	
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