

FLOOD RISK ASSESSMENT

NPPF & PPG compliant

Rear extension

& Internal alterations

Extension floor level no lower than existing

Full height flood resilience.

Critical: No additional comparison of flood levels vs floor levels is required of an extension scheme: this is NPPF compliant.

The flood levels will not alter the suitability or design of this scheme.

FZ3 Tidal / Fluvial defended: hence residual hazard

Acknowledged SFRA / EA new climate change extents: no flood compensation is required following EA and national guidance on flood storage for householder extension in residual future tidal defended climate change flood extents.

at

61 Park Road, Meols, Wirral CH47 7BB

April 2021

ARK Environmental Consultancy Ltd

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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 carried out by Ark Environmental Consulting Limited (“ARK Ltd”) for 61 Park Road, Meols, Wirral CH47 7BB, henceforth referred to as “the site” in this report.

This report has been prepared for Phil Griffiths 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.

The Executive Summary contains an overview of key findings and conclusions. However, no reliance should be placed on the Executive Summary until the whole of the report has been read.

Other sections of the report may contain information which puts into context the findings noted within the Executive Summary.

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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 2 storey rear extension and internal changes to an existing dwelling to increase the existing living space; **no change to site operations or sensitivity.**

This is categorized as a “More Vulnerable” landuse in accordance with the NPPF classifications; the site is located on the edge of EA FZ3 tidal defended and new climate change extents. It is considered that the scheme can pass the Exception Test.

Site is not within council or EA high risk surface water risk area; the scheme results in betterment regardless.

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
 - Just assume the full height of the new ground floor is to be resilient

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 at upper levels 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 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
- Wirral Strategic Flood Risk Assessment: Evidence Base for the Local Plan
- Wirral as the Lead Local Flood Authority (LLFA) SUDS Policies and Guidance
- 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.

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.

Lead Local Flood Authority (LLFA) SUDS requirements.

7.0 Site Status and Environmental Setting

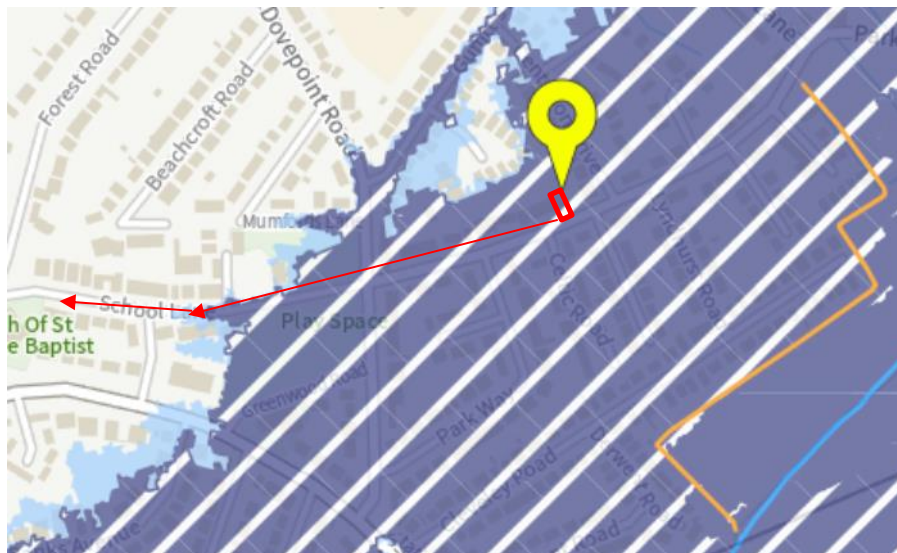
7.1 Site Location and Status

The following description is based on information made available from internet mapping, architects drawings and aerial photography.

The site comprises an existing dwelling, associated hardstanding for access and paving slabs (impermeable make-up) adjacent to the property and remaining soft landscaping for rear garden purposes. The site is on the edge of EA FZ3 tidal defended. The location plan can be seen in the mapping extracts below and 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	Site is within the edge of FZ3 principally tidal defended; Breach events are not relevant to the suitability and design of the scheme Immediate access to FZ1 in lowest hazard flood extents	No highly vulnerable uses No change to site operations or sensitivity No flood compensation required for FZ3 tidal or fluvial defended / potential new climate change flood extents from SFRA Results in better protected and flood future-proofed property than existing. 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 extensive general EA Reservoir Flood Warning area. No other artificial sources with likely flood 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 and not within the surface water flood extents from the council and the EA Condition, depth and location of surrounding infrastructure uncertain	No increase in impermeable areas requiring additional mitigation No additional drainage assessment required Results in better protected and flood future-proofed property than existing. Low Risk
Climate Change: new allowances	Included in the flood modelling extents	Development will not increase the peak flow and volume of discharge from the site Climate change incorporated in the EA / SFRA modelling 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



7.3 Tidal Flooding Mechanisms and Flood Data Requirements

There are formal raised defences; breach events however would not alter the suitability or design of the scheme and the evacuation and flood response plan correctly addresses the potential for breach events given the evacuation route is necessarily away from the direction of breach flood flowpaths.

The flooding mechanisms will be overtopping events, breach and wave action: not rapid inundation given the site is at the far extent of the floodplain.

Does the scheme need to use site specific flood levels (EA or SFRA)?

The scheme is an extension to an existing dwelling.

There is no need to compare the site and floor levels to any specific flood levels.

These data would not alter the designs or suitability of the specific scheme given the site specific flood setting.

No additional flood levels data assessment is required.

What about using the flood levels to set the flood resilient heights?

There is no need to compare the flood resilient heights to any specific flood levels because the new ground floor extension will simply be full height flood resilient and will tie in to the existing ground floor.

This is the appropriate policy compliant, pragmatic site specific and scheme specific response.

It is not possible for even the extreme future flood levels to be close to the full height of the extension at this site based on an understanding of the specific flood setting and the fact that there is no unique topographic difference at this site compared to the surrounding residential structures.

For the reasons above, no site specific full topographic survey is required; the flood risk assessment does not need to use site levels relative to ordnance datum.

7.4 Geology / Hydrogeology & Source Protection Zones (SPZ)

- Bedrock: Sidmouth Mudstone Member - Mudstone
- Potential superficial deposits: Blown Sand – Sand

These strata are not water bearing stratum suitable for soakaways; hence infiltration is not to be relied upon.

The site is not within a Source Protection Zone.

Furthermore on a more technical point: given it is an existing dwelling and constrained site, it would not be possible to secure the statutory 5.0m easement from footprint / 2.0m from the site boundary and locate a soakaway without significant excavations not commensurate with the scale and sensitivity of the scheme.

7.5 SFRA Summary

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

7.6 Flood Compensation

This report and the data presented demonstrate that the site is within the edge of EA tidal defended FZ3.

There is no floodplain to offset in tidal or partly defended flood zones hence no flood compensation is required. That is national and EA guidance.

7.7 EA 2021 Surface Water Hazard

- Site is in NO (VERY LOW) hazard in all the EA risk scenarios
 - Surrounding roads are in low hazard in the EA low risk scenario
- 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.**

7.8 Existing drainage

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

A site of this size would have a Greenfield equivalent average discharge rate (QBAR) of no greater than 0.10l/s.

This low figure is a simple function of the fact that the site is very small.

It is not possible to restrict discharge to this low rate.

No restriction devices are required or permitted; it is appropriate to re-use the existing infrastructure where appropriate and use informal SUDS storage where feasible to delay the surface water discharge (this performs the restriction).

8.0 Assessment of Proposed Development

8.1 Proposed Development

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

- Remove existing impermeable areas where appropriate
- Erect a 2 storey rear extension
- Use full ground floor 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 LLFA Drainage Requirements

The scheme comprises a small ground floor extension; of interest to the SUDS requirements:

- 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 Formal Storage: not required of policy or this assessment

The Q_{bar} for the site is only <0.10 l/s.

- It is not possible to restrict to ~ 0.10 l/s.
- It is not possible to restrict to 3 times the Q_{bar} of ~ 0.30 l/s.

This is because the size of the aperture required for this restriction would represent a flood risk in itself.

This is an industry standard and cannot be objected to; if there are comments on restriction to Q_{bar} then the drainage officer has not read the report.

IT IS NOT POSSIBLE FOR THE SITE TO DISCHARGE GREATER THAN THE LOWEST RESTRICTION RATE EVEN IN THE 1 in 200YEAR BECAUSE THIS, AS A SIMPLE FACT, IS A FUNCTION OF THE SITE BEING VERY SMALL

8.4 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.

- Maximise porous 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>


8.5 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 / planting 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 is required for them to still operate as SUDS measures.

8.6 SUDS Hierarchy Check

Site Specific SUDS Appraisal

SUDS Hierarchy	SUDS Technique	Potential Benefits			Site Specific			
		Flood Reduction	Pollution Reduction	Landscape & Wildlife Benefit	?	Scheme Specific Appraisal and Comment	SUDS Suitability	
Most Sustainable  Least 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 hydrogeology		
	Maximise porous areas; any new permeable surfaces to have granular subbase	•	•			✓	Included to meet council policy	
	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

8.7 Flood Resilience

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

- All new electrics to be installed roof to floor (top down) where feasible
- Use low smoke halogen free (LSHF) type twin and earth cables rather than PVC cables and solid conductors rather than stranded conductors.
- Any new units eg: boilers and ancillary wiring (programmer and stats) if required to be placed on the ground floor will all be located as high within the ground floor level as feasible
- Wiring for telephone, TV, Internet and other services will be protected by suitable insulation to minimise damage.
- 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
- 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 within the edge of FZ3 partly defended tidal / future climate change extents.

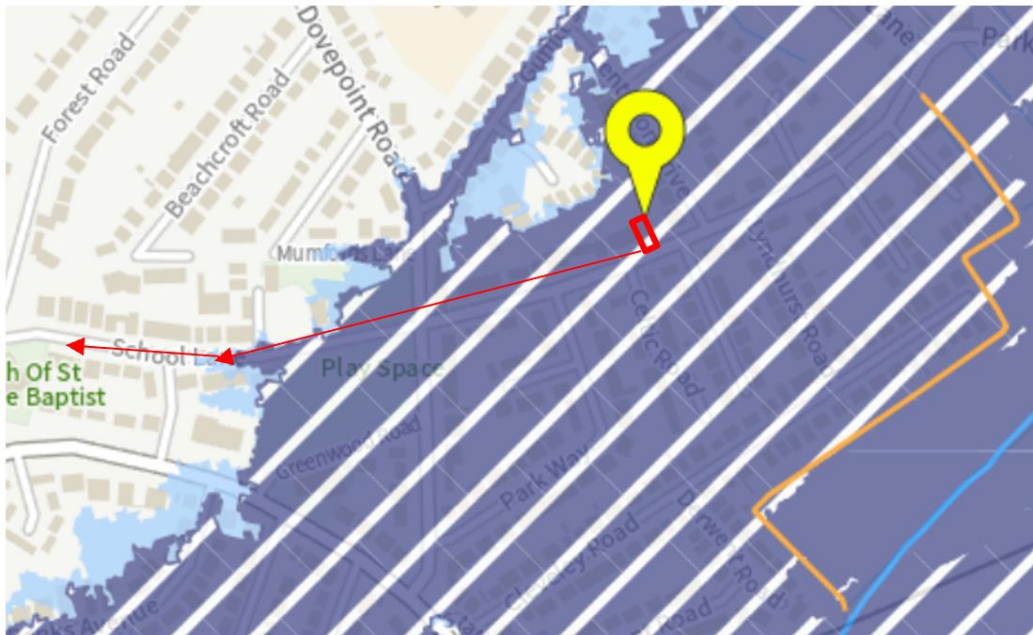
It is not in a rapid inundation zone but is likely within a breach extents (not relevant to existing dwelling extension scheme other than evacuation and flood response plan).

All site users continue to have access to upper floors above the extreme event for the lifetime of the scheme.

The site is an existing dwelling.

If evacuation is deemed necessary

- Head west on Park Road within lower hazard flood extents
- Take School Lane east towards central Meols
 - shortest distance to unrestricted FZ1 within c. 280.0m.



9.2 Flood Risk Vulnerability

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 FZ3 is appropriate with the need to pass the Exception Test; this assessment considers the Exception Test is passed.

10.0 Conclusion

The scheme comprises a 2 storey rear 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 flooding except for potential residual tidal flooding in extreme events.

The hazard is low given the site is not in a rapid inundation zone and is tidal (advanced meteorological warning).

All site users continue to have access to upper floors above the extreme event for the lifetime of the scheme.

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

- **The scheme results in better protected and 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.

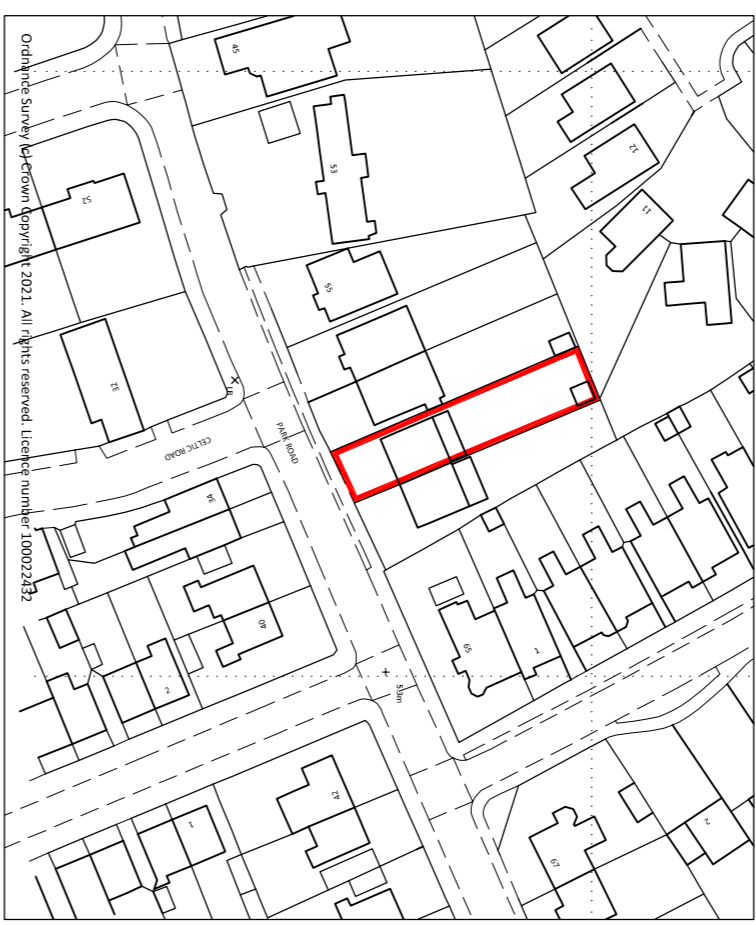
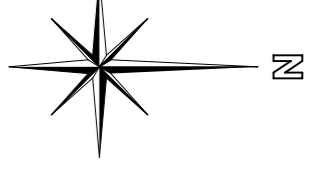
10.1 Recommendations

1. Use EA guidance for constructing any new permeable paving areas
2. Use flood resilient measures for the new extension where feasible / practicable

11.0 Appendices

- A. Location
- B. Proposed Layout & Floor Plans & EA Permeable SUDS Paving Specification

Appendix A



Location Plan

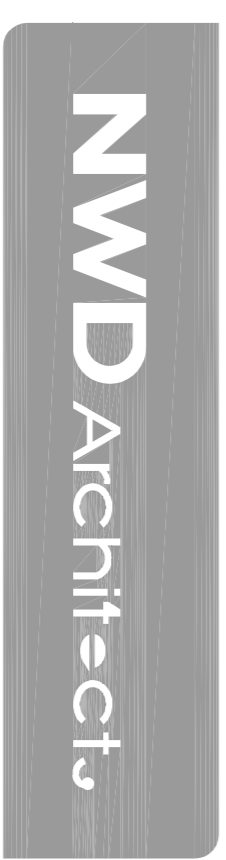


Existing Site Plan



Proposed Site Plan

Rev.	Date	Description
...
...
...



Old Coach Road, Kelsall, Tarporley, Cheshire CW6 0QJ
 01527 731553 | enquiries@nwdarchitects.co.uk | nwdarchitects.co.uk

CLIENT
 Mr. & Mrs. P. Griffiths

PROJECT
 Proposed Rear Extension to
 61 Park Road, Meols, Wirral CH47 7BB

DRAWING TITLE
 Location Plan and
 Existing & Proposed Site Plans

SCALE A1 / SCALE A3
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DATE
 29.06.21
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 MB
REVISION
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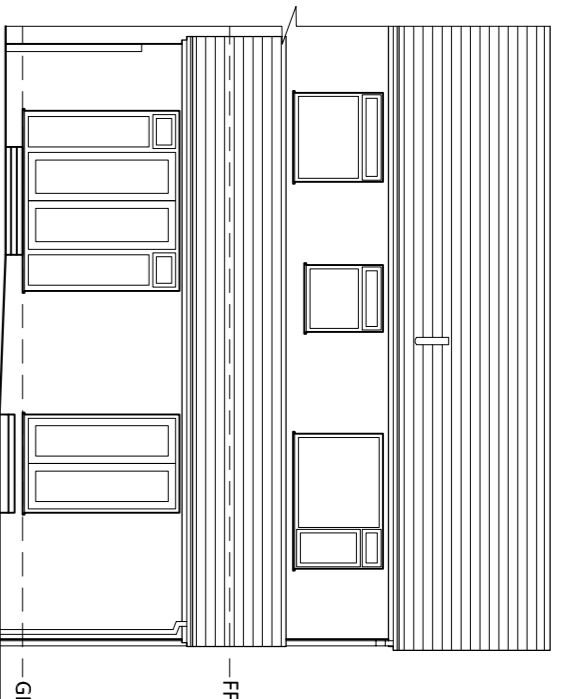
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Appendix B

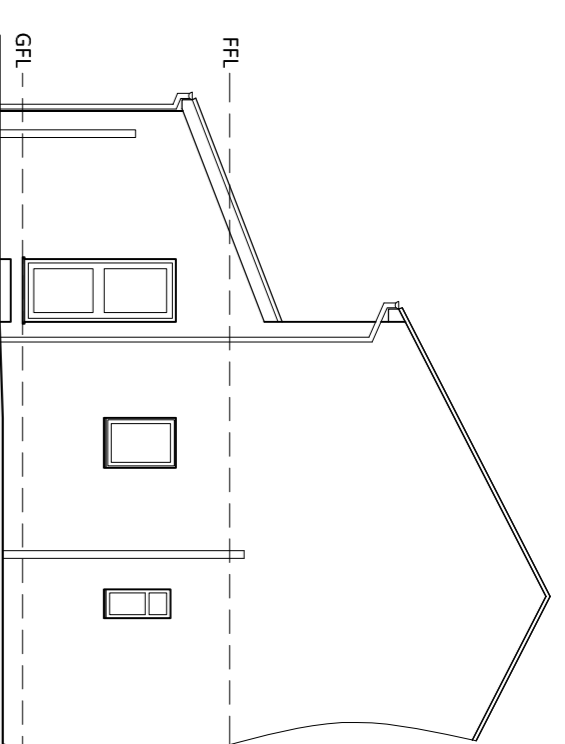
PLEASE NOTE:-
All internal dimensions, in mm, are estimated, and to block/timber face and not to plaster/render finish.

EXTERNAL FINISHES SCHEDULE:-

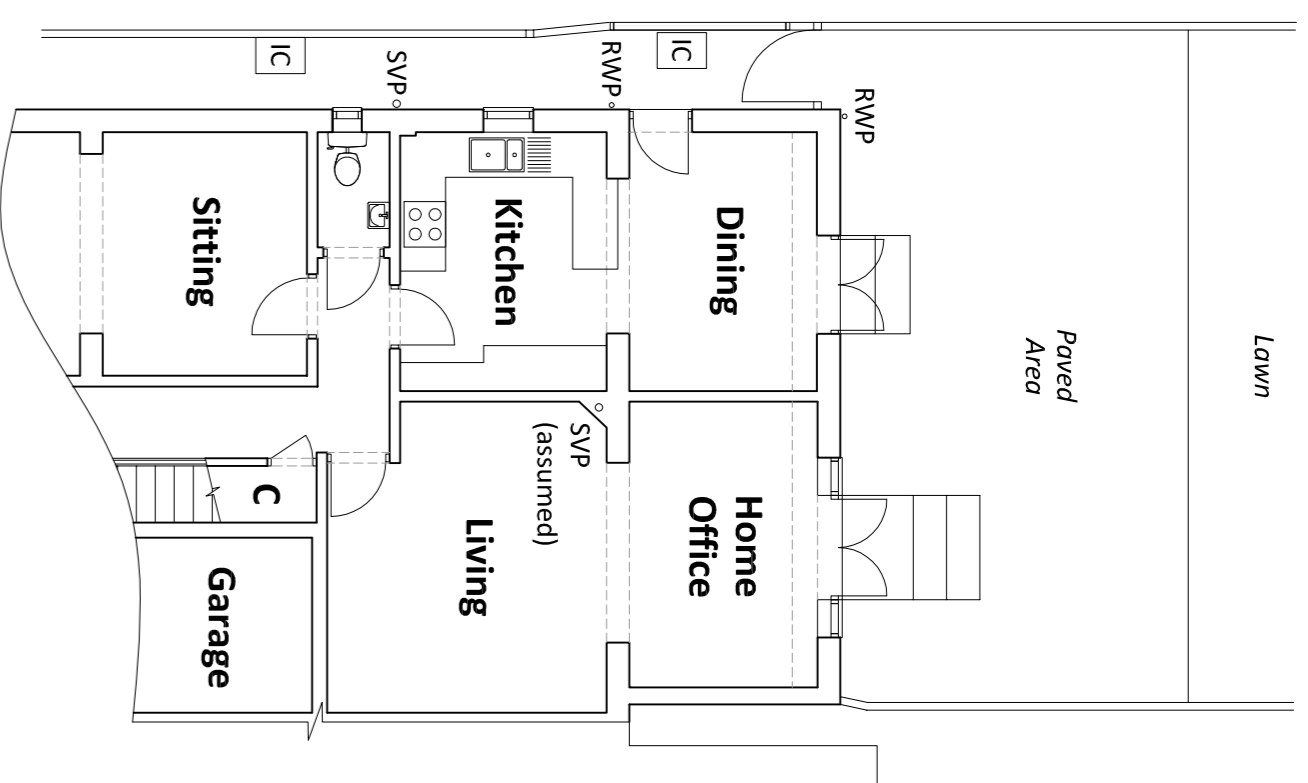
Proposed external walls to be of cavity construction, finished in brickwork to match existing.
Proposed roofs to be finished in tiles to match existing.
Proposed french doors to be UPVC, grey to match existing windows/doors to Front Elevation. Proposed bi-fold doors to be UPVC/aluminium, grey to match existing windows/doors to Front Elevation. Rooflights to be by Velux, or similar.
Rainwater goods to match existing.



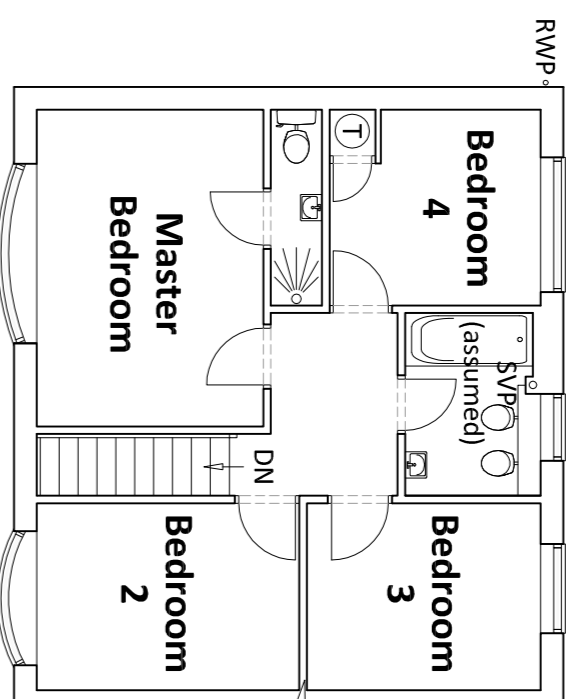
Existing North Elevation



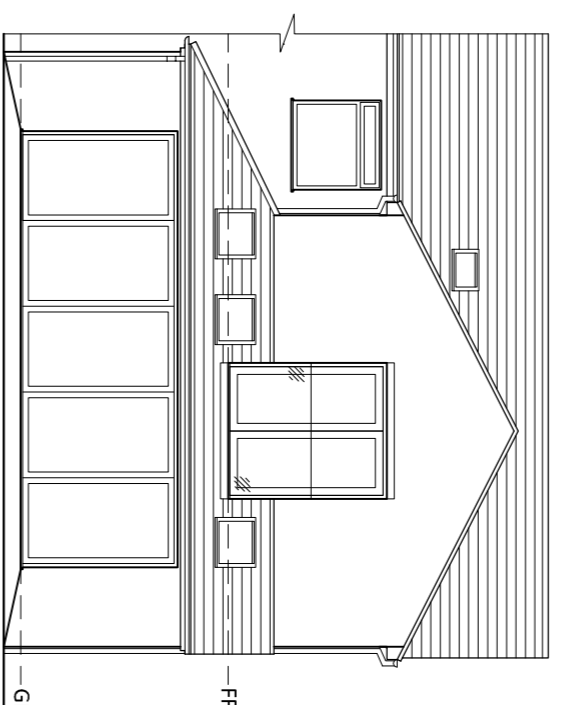
Existing (Part) West Elevation



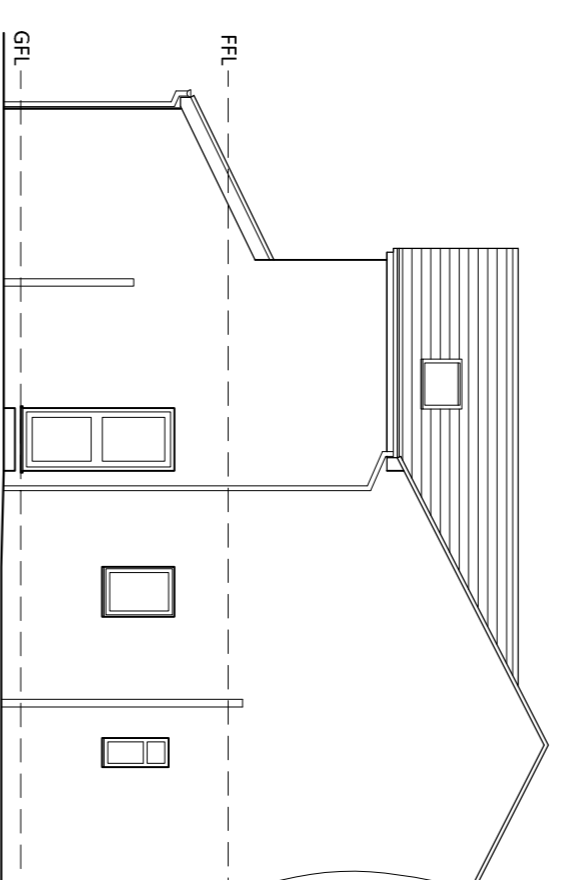
Existing (Part) Ground Floor Plan



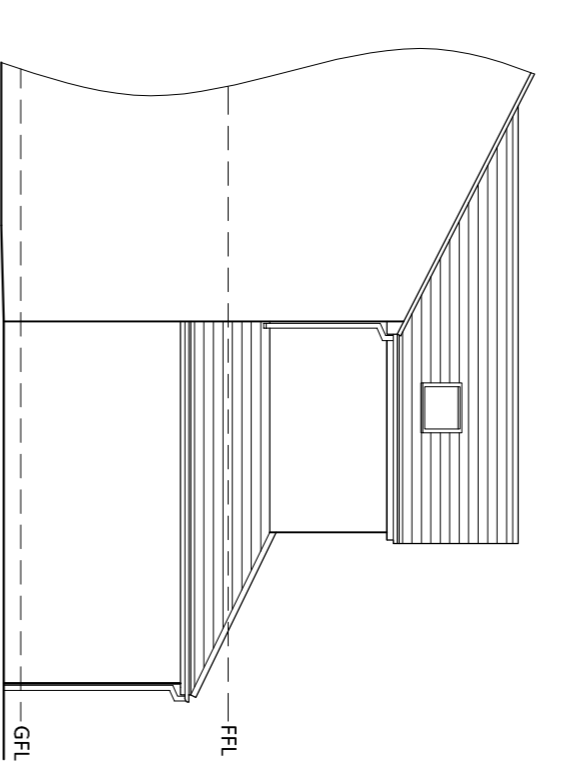
Existing First Floor Plan



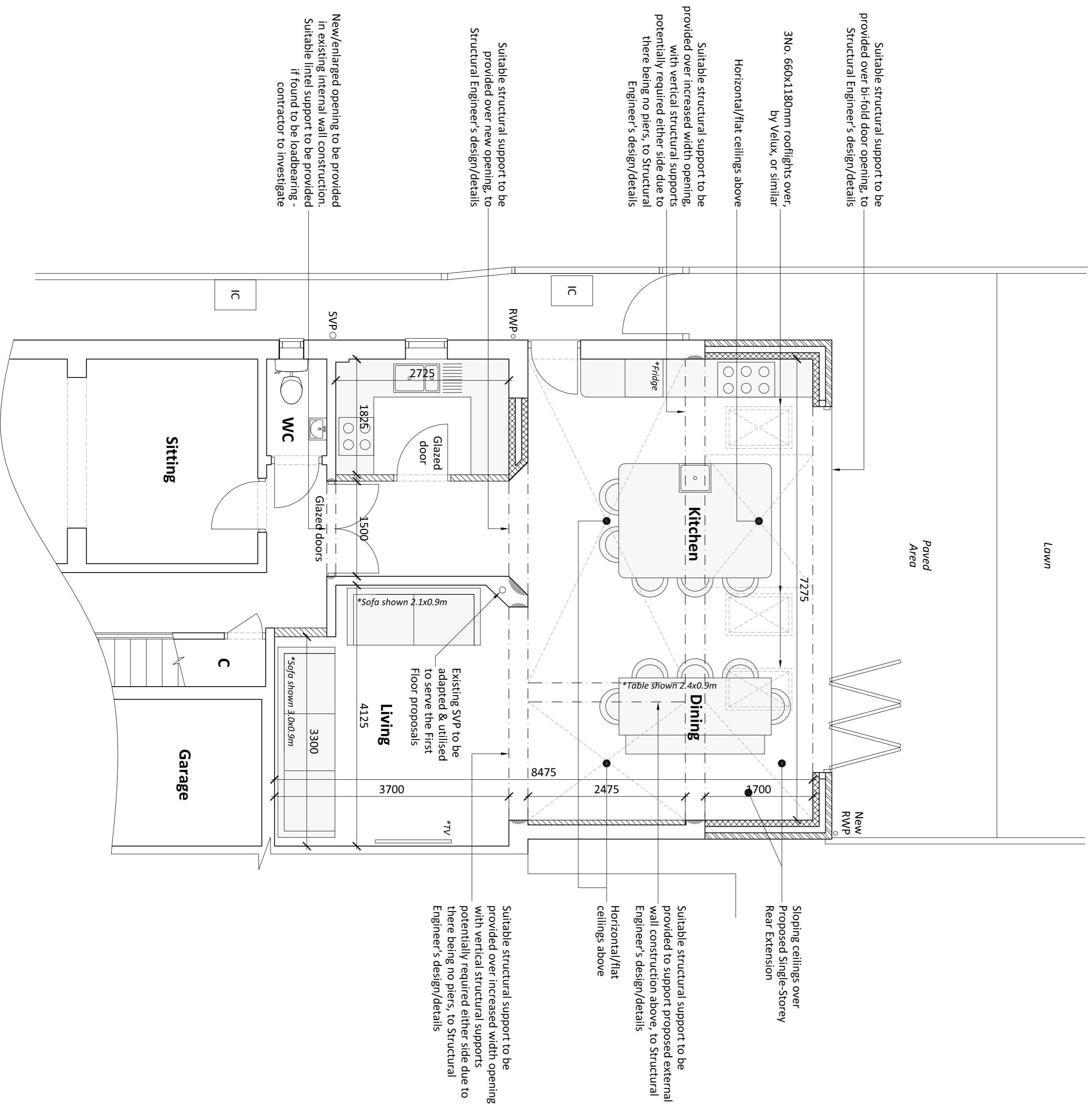
Proposed North Elevation



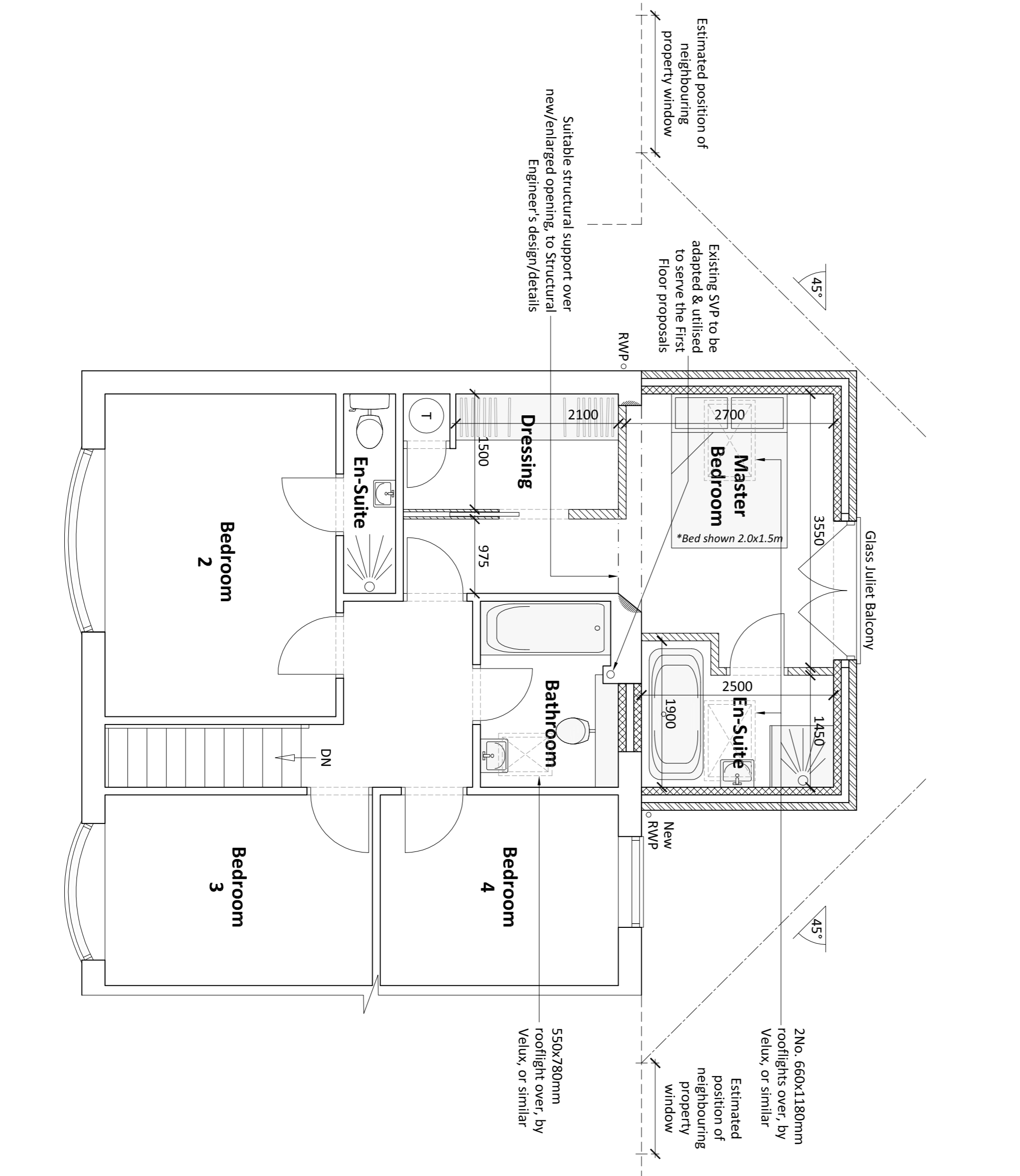
Proposed (Part) West Elevation



Proposed (Part) East Elevation

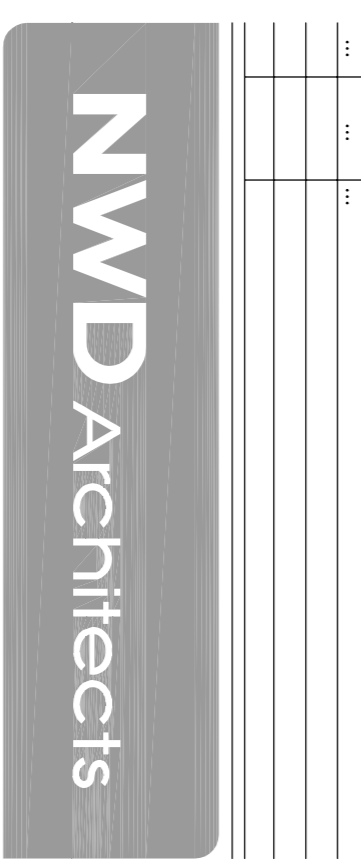


Proposed (Part) Ground Floor Plan



Proposed First Floor Plan

Rev.	Date	Description
...



Old Coach Road, Kelsall, Tarpotley, Cheshire CW6 0QJ
01827 781553 | enquiries@nwdarchitects.co.uk | nwdarchitects.co.uk

CLIENT
Mr. & Mrs. P. Griffiths

PROJECT
**Proposed Rear Extension to
61 Park Road, Meols, Wirral CH47 7BB**

DRAWING TITLE
**Existing & Proposed
Floor Plans & Elevations**

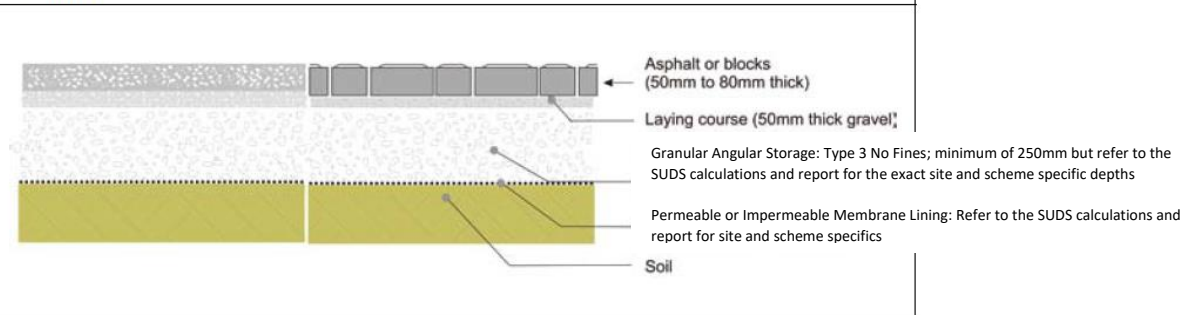
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61PR/010

REVISION
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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	