



**TOPPING
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FLOOD RISK ASSESSMENT

LOCATION:

**Land at Millstones
Oxspring, Sheffield, S36 8WZ**

CLIENT: Yorkshire Land Limited

DOCUMENT REF:
19347-FRA-001

REVISION/DATE:
Revision C

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Revision	Description	Date	Author	Checked
A	First Issue	Oct 2020	T Andrews	T Moorhouse
B	Updated to suit EA comments	Jan 2021	T Andrews	T Moorhouse
C	Updated to suit EA comments	Jan 2021	T Andrews	T Moorhouse

1.0 INTRODUCTION

This Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. The FRA has been produced on behalf Yorkshire Land Limited in respect of a planning application for the proposed residential scheme on the land at Millstones.

Site Name	Land at Millstones
Location	Oxspring, Sheffield, S36 8WZ
NGR (approx.)	427039,402188
Application Site Area (ha)	0.3 ha
Development Type	Residential
NPPF Vulnerability	Low
EA Flood Zone	Flood Zone 1,2 & 3
EA Office	Yorkshire
Local Planning Authority	Barnsley Council

Table 1.1 - Site Summary

1.1 SOURCES OF DATA

The report is based on the following information:

- i. Site Location Plan by mbooth design (Appendix A)
- ii. Site Plan by mbooth design (Appendix B)
- iii. Environment Agency information
- iv. Barnsley Council Strategic Flood Risk Assessment

1.2 EXISTING SITE

The site in question is located in the South Yorkshire Village of Oxspring. More accurately the site is bounded by the River Don to the south and rural land to the north and west.

The River Don lies to the south of the site and is lower than the proposed dwellings.

From the site plan (Appendix B) it can be seen that the site falls towards the river from the north. The highest point of the development area has a level of 180.720 AOD. Contrastingly the lowest region of the development has a level of 174.290 AOD.



Figure 1.1 - Site Location

1.3 PROPOSED DEVELOPMENT

The proposed development is set to consist of a residential scheme along with suitable access and parking areas.

1.4 FLOOD RISK PLANNING POLICY

National Planning Policy Framework

The NPPF sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Planning Practice Guidance is also available online.

The Planning Practice Guidance sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk off site to the wider catchment area.

The Planning Practice Guidance also states that alternative sources of flooding, other than fluvial (river flooding), should also be considered when preparing a Flood Risk Assessment.

This Flood Risk Assessment is written in accordance with the NPPF and the Planning Practice Guidance.

Flood Zones

The Flood Zone Map for Planning has been prepared by the Environment Agency. This identifies areas potentially at risk of flooding from fluvial or tidal sources. An extract from the mapping is included as Figure 1.2.

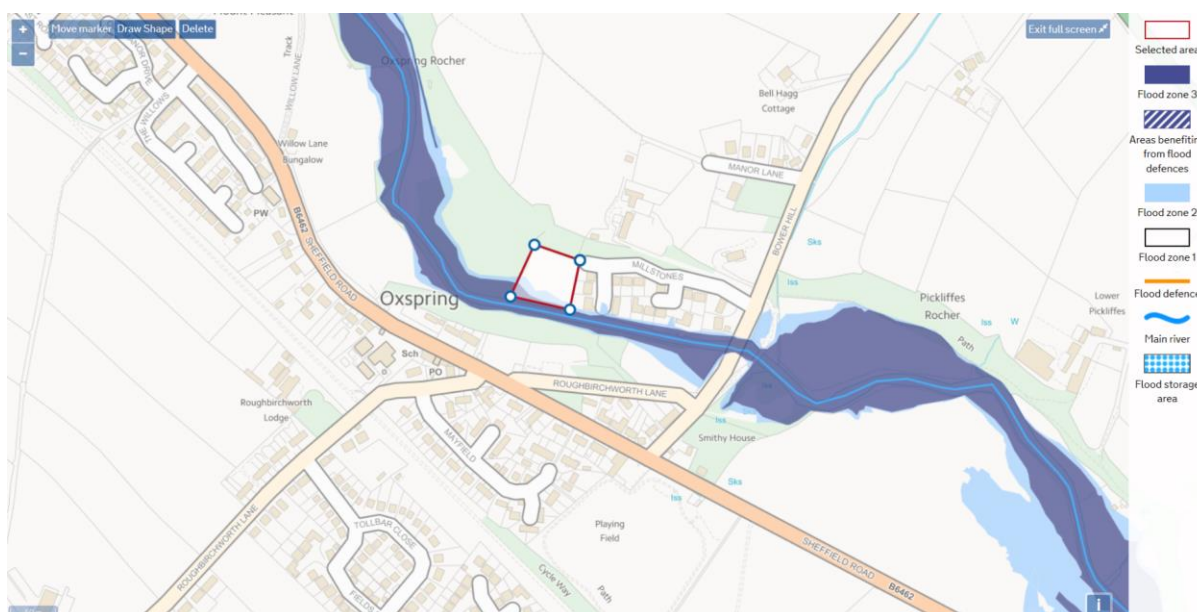


Figure 1.1 - Environment Agency Flood Zone Mapping

The site is shown to be located mainly within Flood Zone 1 (Low Probability) therefore the site is considered to be low risk of flooding. Flood Zone 1 is defined as land assessed as having less than a 0.1% annual probability of flooding from fluvial and tidal sources. However, plots 4 and 5 are shown to be within Flood Zone 2 and 3. Flood zone 2 (Medium Probability) is defined as land assessed as having an annual probability of flooding of 0.1% to 1.0%. Flood Zone 3 (High Probability) is defined as land assessed as having an annual probability of flooding of greater than 1%.

Table 2 of the Planning Practice Guidance classifies land use. Under these classifications the proposed residential scheme is considered to be 'More Vulnerable' to the potential impacts of flooding.

Table 3 of the Planning Practice Guidance identifies that any development is considered appropriate within Flood Zone 1.

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

1.5 OTHER RELEVANT POLICY AND GUIDANCE

Strategic Flood Risk Assessment

The Barnsley Council Flood Risk Assessment (SFRA) was prepared to review flood risks on a much wider scale to assess the potential for new development within the study area.

The SFRA was used as an evidence base for Local Development Frameworks for each Local Planning Authority.

The SFRA therefore aims to bring together all available flood risk information for a variety of sources to provide a robust assessment. The SFRA therefore is useful for this site-specific FRA by highlighting available data and instances of known flooding in the area. Although written under the guidance of Planning Policy Statement 25, the SFRA is still considered to include relevant information.

2.0 POTENTIAL SOURCES OF FLOOD RISK

The table below identifies the potential sources of flood risk to the site, and the impacts which the development could have in the wider catchment prior to mitigation. These are discussed in greater detail in the forthcoming section. The mitigation measures proposed to address flood risk issues and ensure the development is appropriate for its location are discussed within Section 3.0.

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
Fluvial		X			The site is located in flood zone 1,2 & 3.
Tidal				X	There are no tidal influences effecting the site.
Canals				X	None present.
Groundwater			X		Ground conditions are not conducive to fluctuating groundwater levels.
Reservoirs and waterbodies			X		The site is shown to fall inside the area at risk of reservoir flooding.
Sewers			X		The site in question is higher than the surrounding sewers therefore there is a very low risk.
Pluvial runoff		X			An area of the site is within a medium-risk area of surface water flooding.
Effect of Development on Wider Catchment				X	The impermeable area is being increased but this will be attenuated on site.

Table 2.1 - Pre-Mitigation Sources of Flood Risk

2.1 FLUVIAL FLOOD RISK

As previously mentioned, the site is shown to be within Flood Zone 1,2 and 3 and therefore poses a low risk to the proposed development. Plots 4 and 5 are shown to be within the Flood Zone 2 and 3 and therefore are at risk of fluvial flooding.

Mitigation measures to address the residual risk posed by the watercourses surrounding the site are discussed within Section 3.0 of this report.

2.2 GROUNDWATER FLOOD RISK

Subject to completion of site investigation to confirm we would assume that natural ground water level is located well below the site surface and the nature of the strata means it is unlikely that there will be perched water above this level.

We therefore do not consider there is a risk of groundwater flooding affecting the development subject to final confirmation upon completion of suitable site investigation.

2.3 FLOOD RISK FROM RESERVOIRS & LARGE WATERBODIES

Reservoir failure flood risk mapping has been prepared by the Environment Agency, this shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. The map displays a worst-case scenario and is only intended as a guide. An extract from the mapping is included as Figure 2.1.

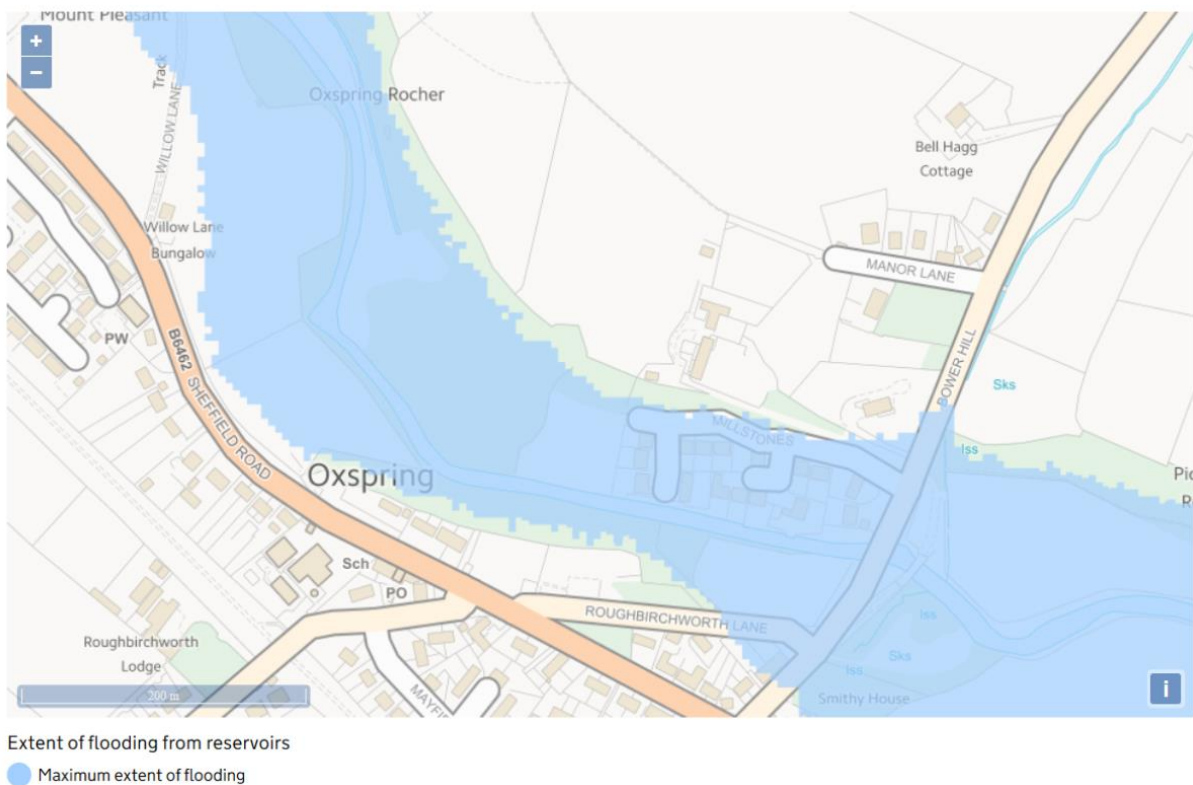


Figure 2.1 - Environment Agency Reservoir Failure Flood Risk Map

Mapping demonstrates the site and possible access routes are within the area at risk of flooding from reservoir flooding. Therefore, the RMA will be consulted if required with regards to mitigation.

2.4 FLOOD RISK FROM SEWERS

The site in question lies above any main roads which is potentially where any Yorkshire Water sewers will lie.

As such, it is considered that there is no risk of flooding from sewers.

2.5 PLUVIAL FLOOD RISK

Risk of flooding from surface water mapping has been prepared by the Environment Agency, this shows the potential flooding which could occur when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead. An extract from the mapping is included as Figure 2.2.



Figure 2.2 - Risk of Flooding from Surface Water Mapping

The mapping produced by the Environment Agency shows that there are no areas of surface water flooding on the site.

As such the risk of surface water flooding is negligible.

2.6 EFFECT OF DEVELOPMENT ON WIDER CATCHMENT

2.6.1 Development Drainage

The current site is considered to be greenfield. This results in the amount of impermeable area on this site being increased. Therefore, it is proposed that the site will be attenuated at greenfield discharge rates. This will also follow the SuDs hierarchy for the disposal of surface water drainage from the site.

3.0 FLOOD RISK MITIGATION

Section 2.0 has identified the sources of flooding which could potentially pose a risk to the site and the proposed development. This section of the FRA sets out the mitigation measures which are to be considered within the proposed development detail design to address and reduce the risk of flooding to within acceptable levels.

3.1 SITE ARRANGEMENTS

3.1.1 Sequential Arrangement

The Flood Zone mapping shows the site to be located within flood zone 1, 2 and 3.

3.1.2 Finished Levels

Given the dwelling's location within Flood Zone 1, 2 and 3 there are requirements for the plot levels to be above flood levels.

On the neighbouring application, it was proposed that floor levels should be above the 176.00 AOD contour, this would result in no flooding within the properties. Appendices B and C show that both plots 4 and 5 are above this contour. This method has previously been accepted and therefore the same pragmatic approach has been taken on this site.

It is proposed that flood resilient building techniques will be implemented for plots 4 and 5, flood proofing to the ground floor up to 800mm. The new building will incorporate some of the following, details of which will be finalised by the Architect at detailed design stage:

- Electricity supply cables to enter building from roof level and wired downwards; electric sockets to be positioned at least 800mm above floor level.
- Anti-flood valves on internal building drainage.
- Watertight external door construction to minimum of 800mm above proposed floor level.
- Ceramic tiles or lime-based plaster should be used on the internal face of the external walls at ground floor level.
- Water resilient ground floor coverings should be considered, such as clay tiles.

In addition to the flood resilient techniques above a safe place of refuge should be provided for the building, the site is situated within an Environment Agency Flood Alert Area. It is recommended that the resident registers with this service. In the event of an extreme storm notification on the alert service the following Flood Management Plan should be put in place:

- Advise all occupiers of staff on the site that a Flood Alert has been issued and they should prepare to vacate.
- Maintain contact with the Environment Agency and Local Authority.

Monitor flood levels of the nearby watercourse, if water levels rise up top of the bank level, retreat to a safe place of refuge on the first floor of the building, reducing the risk to life to low. However, this safe place of refuge will only be viable once the construction of the first floor has begun and therefore the safe place of refuge shall be off site out of flood zone 3. All workers should be made aware of this location before entering the site.

4.0 CONCLUSIONS AND RECOMMENDATIONS

This Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. The FRA has been produced on behalf of Yorkshire Land Limited.

This report demonstrates that the proposed development is not at significant flood risk, and simple mitigation measures have been recommended to address any residual risks that may remain. The identified risks and mitigation measures are summarised within Table 4.1.

Flood Source	Proposed Mitigation Measure
Fluvial	Site is shown to be in Flood Zone 1, 2 and 3.
Impact of the Development	Strategic surface water drainage strategy prepared for wider development will ensure a sustainable approach to surface water management.

Table 4.1 - Summary of Flood Risk Assessment

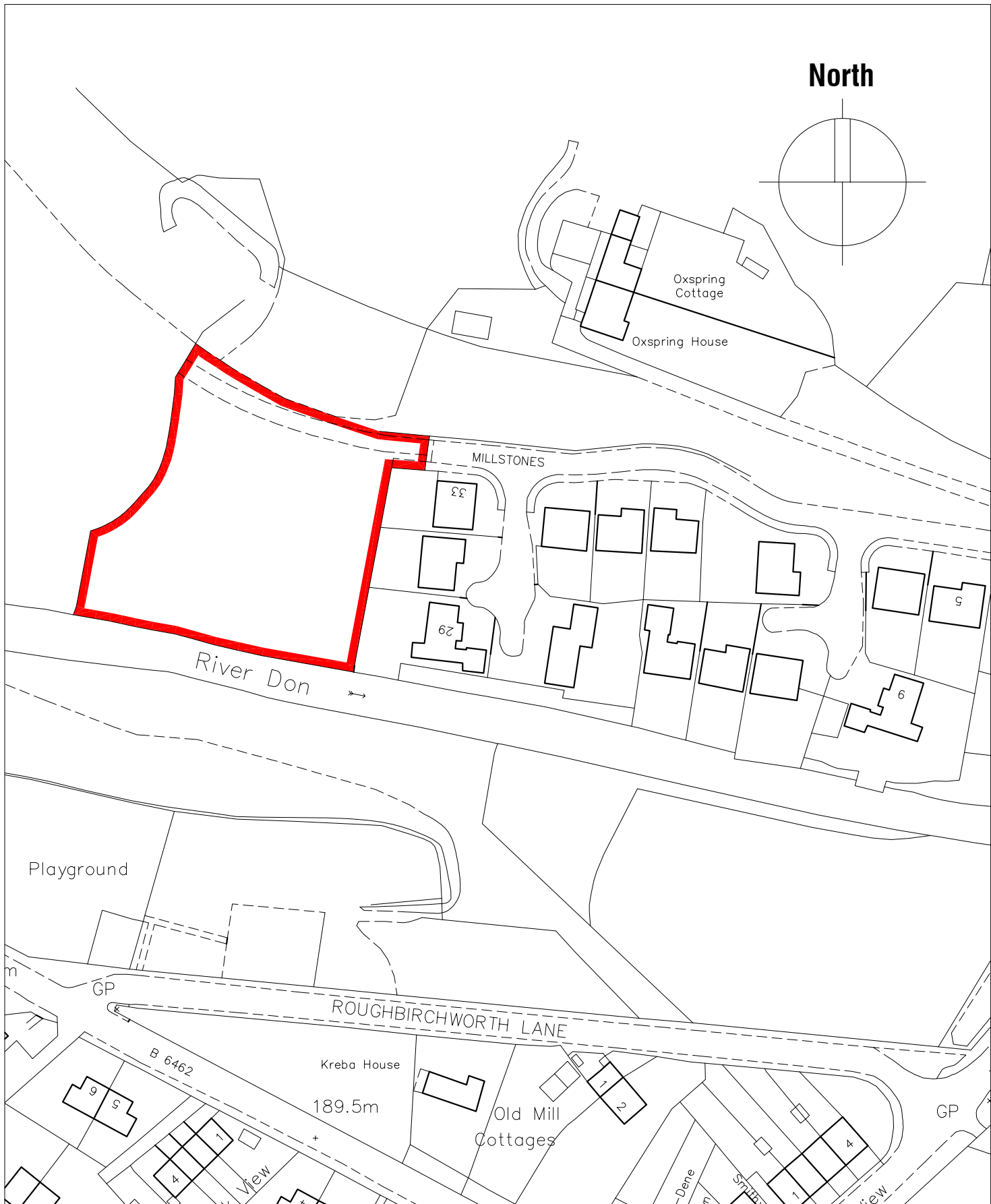
In compliance with the requirements of National Planning Policy Framework, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Moreover, the development will not increase flood risk to the wider catchment area as a result of suitable management of surface water runoff discharging from the site.

5.0 APPENDICES

Appendix A – Site Location Plan

Appendix B – Site Layout

Appendix C – Plot 5 Design



**Land at Millstones
Oxspring
Sheffield**

LOCATION PLAN

Scale 1:1250

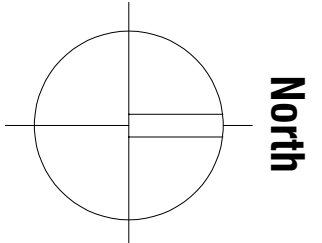
Date May 2019

Ref 18.24

Drwg No **0S1**

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Site Plan 1:200



Key:

- Existing trees - Refer to Arboricultural Report for further information.
- Indicate tree planting subject to detailed arboricultural report.
- Tree to be removed
- Existing tree root protection areas.
- Proposed hedges
- Existing levels
- Termine finish to access road and parking court.
- Parking areas in bonded gravel, dark brown chipings
- Paths where shown in compacted sharp brown chipings
- Good quality artificial stone or natural (Indian) stone paving (then pointed).
- Concrete block paving or stone cobbles (to transition) where shown.
- Foul drainage connecting to existing drain adjacent to access.
- Principal surface water drainage flows with flow restriction and connection to river, refer to Engineers Drainage Strategy drawing ref. DR-C4-0100/P1 for further detailed information.
- Ecological Enhancement:
 - Schwagger Bat tree (R17) located at elevations for details, 30m.
 - Allow for 20m Schwagger general purpose nest box (R18) located in a cluster on T2 as described in Ecology Appraisal.
 - Include 40m Schwagger No.108 swallow nest tower located at high level on internal gable walls to covered parking building.
 - Schwagger Swift nest box at least 5.5m above ground level, 30m.
 - Warren Pro house sparrow nest box, 20m.
 - Allow for 20m Schwagger general purpose nest box (R18) located in existing trees at site perimeter - positions to be agreed.

Residential Development
Land at Millstones
Oxsping
Sheffield

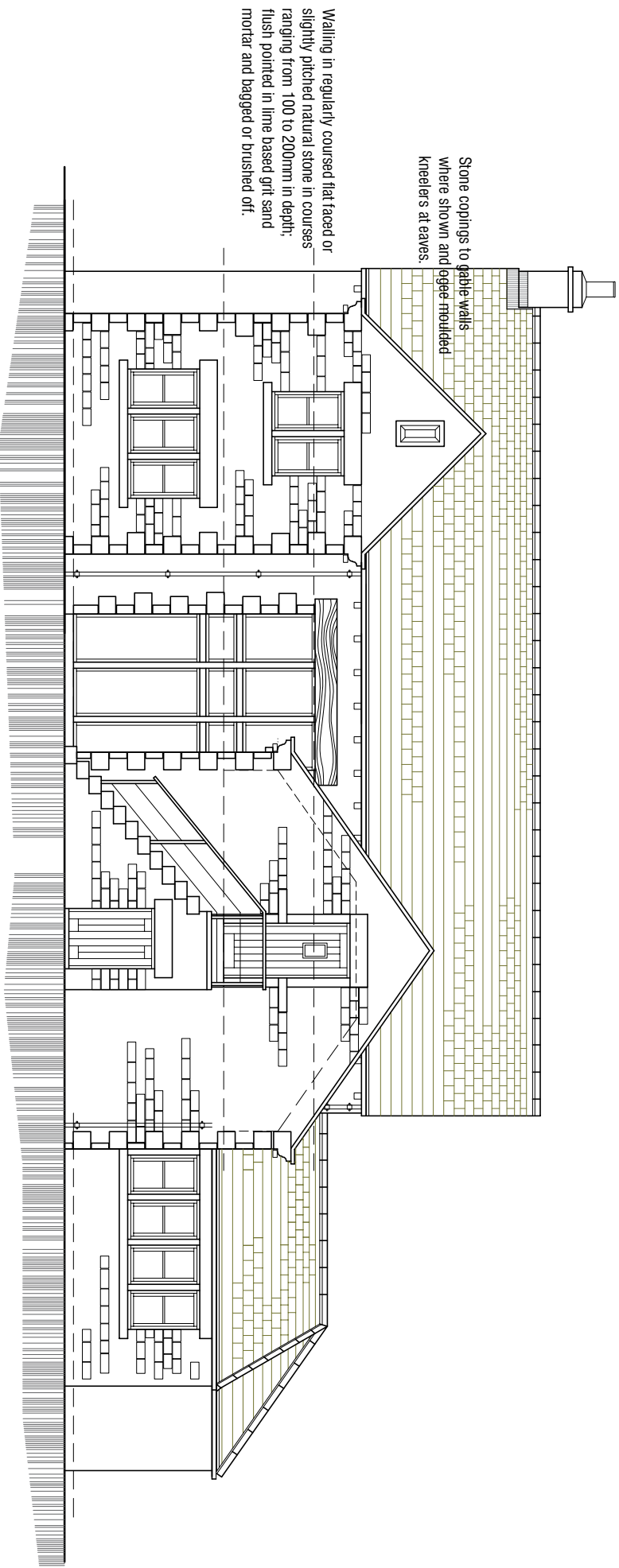
PROPOSALS

SITE PLAN

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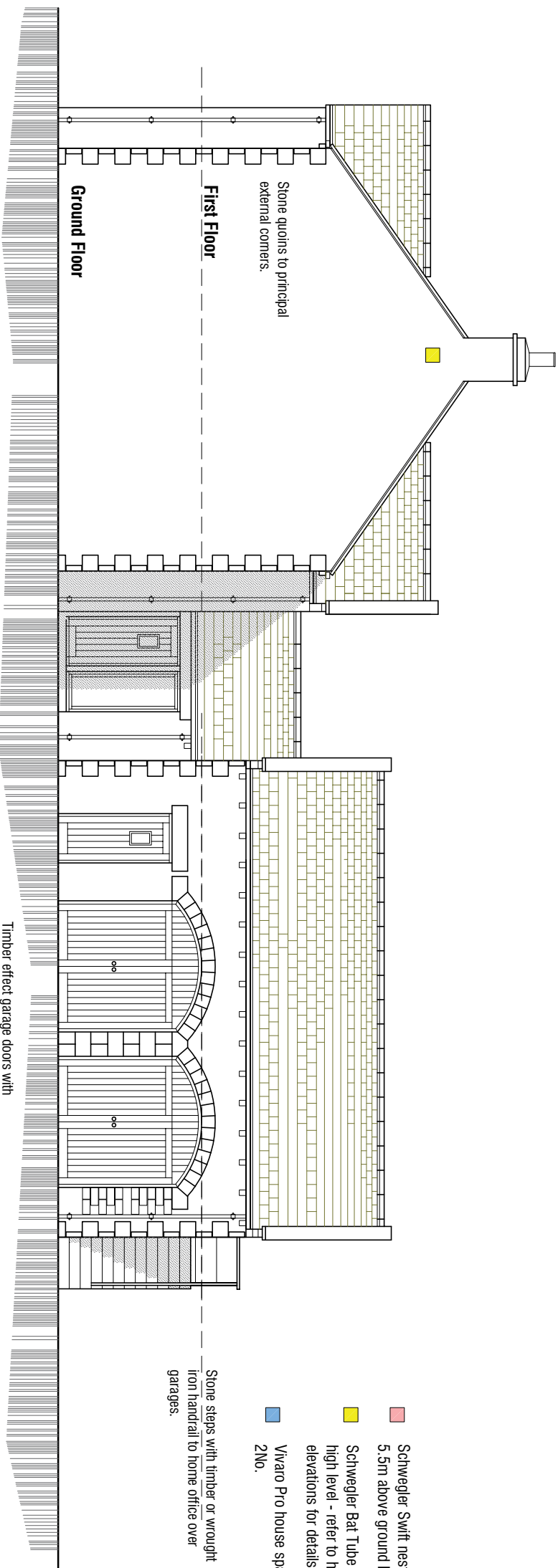
Scale 1:200 @ A1 Drawn MAB
Date JAN 2020 Ref. 18.24
Dwg No. P1 Rev. 6

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Drawings for setting out in existing conditions are to be checked and verified on site.

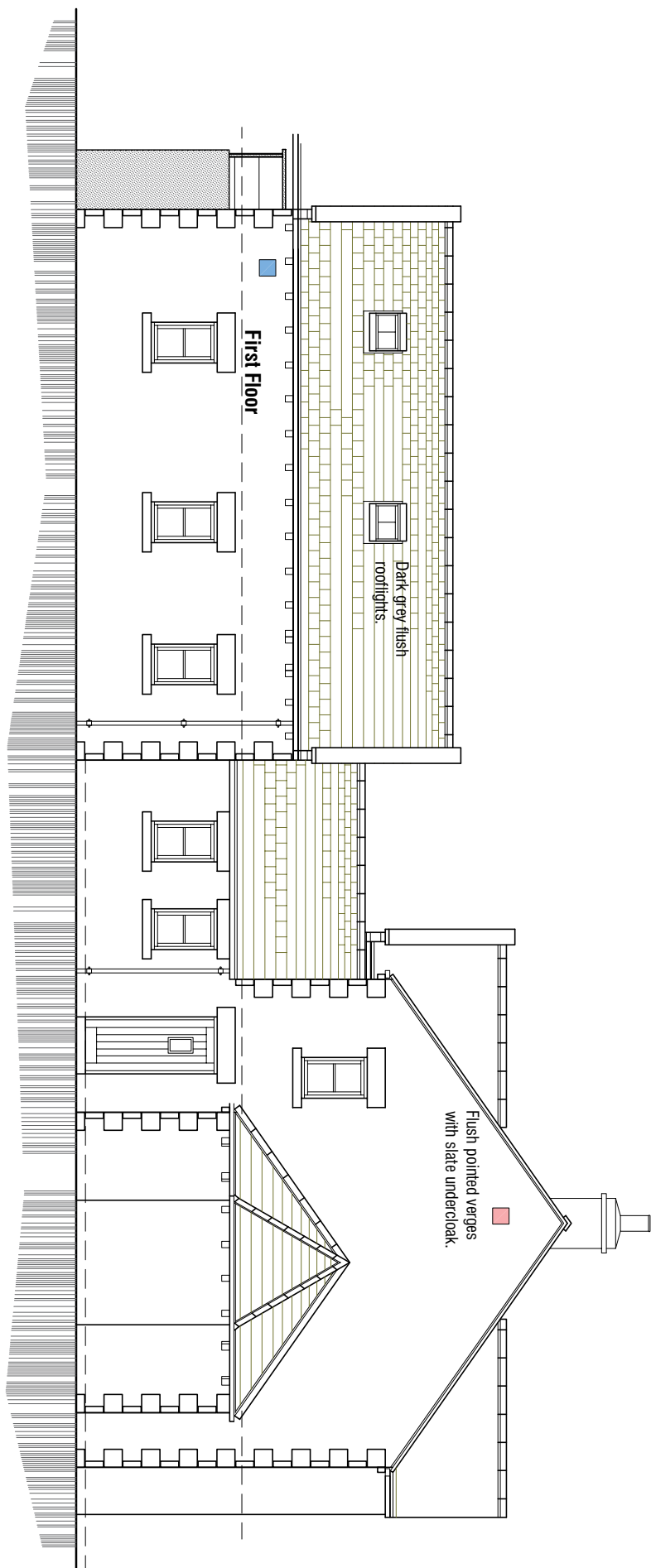


North Elevation

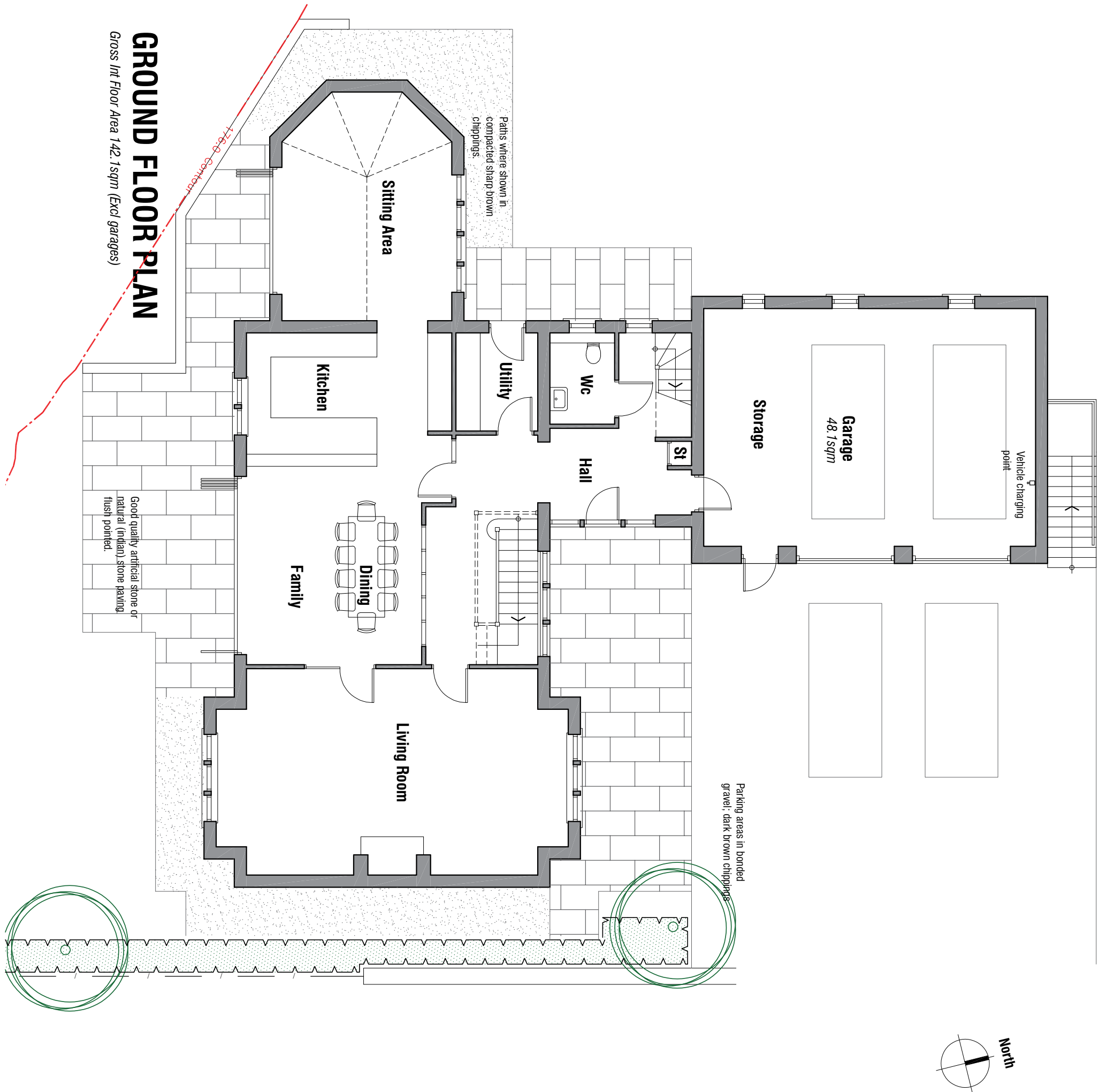
Vertically boarded doors and matching frames in timber with medium oak stain finish.



South Elevation

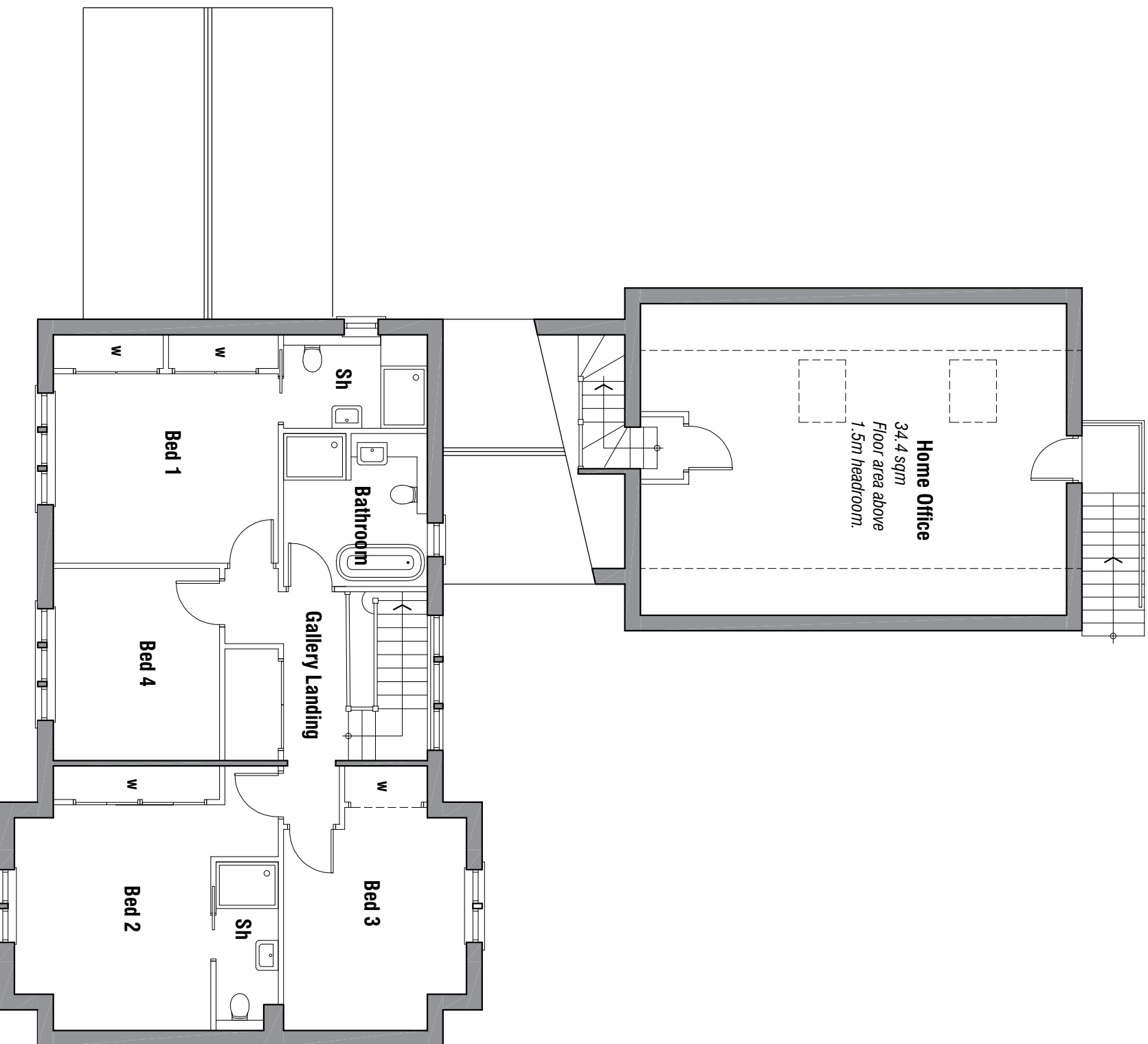


West Elevation



GROUND FLOOR PLAN

Gross Int Floor Area 142.1sqm (Excl porches)



FIRST FLOOR PLAN

Gross Int Floor Area 101.5sqm (Excl Home Office)

PROPOSALS

Unit 5

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Scale 1:100 @ A1 Drawn MAB
Date JUN 2020 Ref. 18.24
Dwg No. P4 Rev. 0

D 18.01.2021 - Amend design to avoid encroachment in to 1776 contour.
C 27.10.2020 - Update plans.
B 04.05.2020 - Clarify Floor Areas.
A 06.02.2020 - Update materials specification.

Residential Development
Land at Millstones
Oxsping
Sheffield

Copyright in intellectual property in all dimensions is retained by the design team. Dimensions for setting out in existing buildings are to be checked and verified on site.