

CHRIS & SARAH MELLISH

MONSON

Structural Engineering
Roads & Car Parks
Traffic & Flood Risk Assessments
Water & Drainage Engineering
Technical Audits & Assessments

**North Hall Cottage
Mallion's Lane
Staplefield,
RH17 6AT**

Proposed Residential Extension

Flood Risk Assessment

Issue	A
Date	04 Apr 2025
Prepared by	C. Lama
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Job No.	25127



Registered No. FS 37624

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1.00 Introduction

- 1.01 Monson Engineering has been instructed to prepare a Flood Risk Assessment for the proposed residential extension in the North Hall cottage at Mallion's Lane in Staplefield, West Sussex, RH17 6AT.
- 1.02 The proposal is for the internal alterations and extension to facilitate a kitchen dining and family bathroom to the east of the North Hall Cottage.



Figure 1: Existing plan

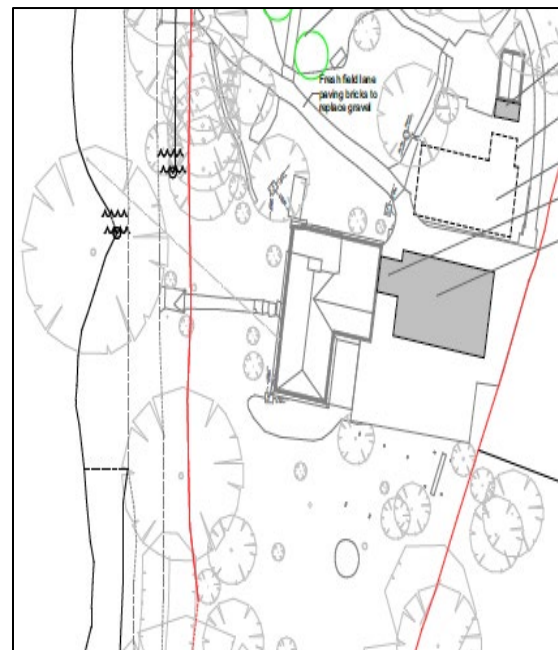


Figure 2: Proposed Extension plan

- 1.03 The proposed extension is situated within flood zone 1 in the ground of flood risk from rivers or the sea; however, the application site is designated as within high risk of surface water flooding; therefore, a national planning policy framework, planning guidelines, and local council policy complaint flood risk assessment are required to submit to support the planning application.
- 1.04 This assessment will conform to the National Planning Policy Framework published in 2012, the last update in February 2025; the National Planning Practice Guidance published in 2016, the last update in 2024 and Mid-Sussex local policies.

2.00 Development Description and Vulnerability Classification

- 2.01 It is proposed to develop a residential extension to facilitate a kitchen dining and common bathroom and some internal alterations.
- 2.02 The approximate National Grid Reference of the site is TQ 27158 26935 (527158E, 126935N). A site location plan and development proposals can be found in **Appendix A**.
- 2.03 The proposed residential extension is located within flood zone 1 on the ground of flood risk from rivers or sea flooding where all types of developments are appropriate according to the Technical Guidance to the NPPF (Table 1).

Flood Risk Vulnerability		Essential Infrastructure	water compatible	highly vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test Required	✓	✓
	Zone 3a	Exception Test Required	✓	X	Exception Test Required	✓
	Zone 3b Functional Flood Plain	Exception Test Required	✓	X	X	X

Table 1: Flood Risk Vulnerability and Flood Zone 'Compatibility' (Table 3; Technical guidance to the NPPF)

Key: ✓ means development is appropriate;
X means the development should not be permitted.

Notes to the above Table:

This table does not show:

- a. the application of the sequential test which guides development to Flood Zone 1, then Zone 2, then Zone 3;
- b. the requirements of FRA
- c. the policy aims for each flood zone

- 2.04 However, the SFRA and Mid-Sussex LLFA highlight that the proposed application location is designated as within high risk of surface water flooding, thus, planning policy compliant flood risk assessment must be submitted to support the application.

Sequential Test

- 2.05 This test aims to steer new development to areas with the lowest risk of flooding from any source as set out in paragraph 162 of the National Planning Policy Framework.
- 2.06 As the proposal is for the extension of a residential dwelling, the sequential test does not apply to this development.

Exception Test

- 2.07 The Exception Test is not required to be implemented according to Table 1.

3.00 Definition of Flood Hazards

Flooding from Rivers and Seas

- 3.01 The EA flood map for planning (Figure 3) shows that the proposal currently lies within flood zone 1, therefore tidal and fluvial flood risk is very low.

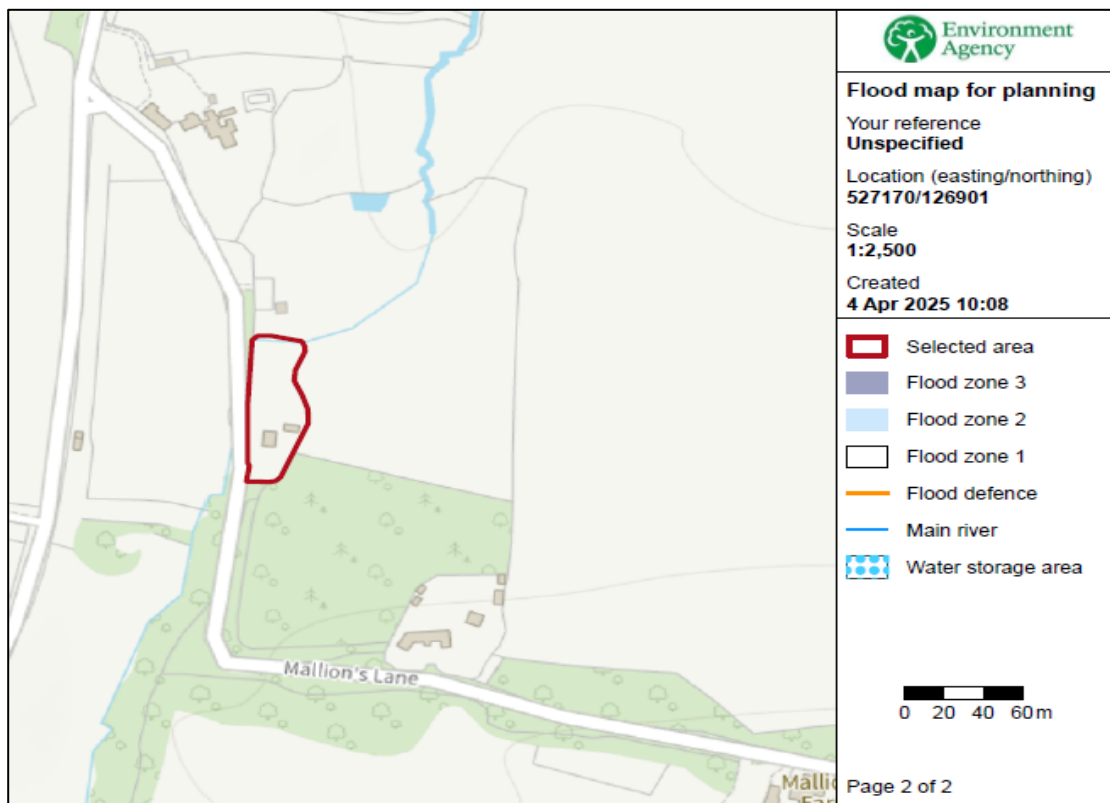


Figure 3: EA flood map for planning

- 3.02 The EA flood map for planning in **Appendix B** confirms that the proposed development site is flood zone 1, with a low probability of flooding from a fluvial/tidal source. This means land has a less than 0.1% chance of flooding from rivers or the sea in any year.
- 3.03 The nearest statutory main river is the River Ouse approximately 600m to the north.
- 3.04 The topographical map in **Appendix C** indicates the general fall of the ground from the south to the north with approximate mean elevations of 61.50mAOD. Thus, the flood risk from tidal and fluvial sources is considered very unlikely due to the topography of the site and its distance from the rivers and sea.

Flooding from Surface Water Run-Off and Overland Flow

- 3.05 Surface water flooding results from excess overland flow and ponding. This can be caused by intense short-duration storms when the water does not have time to soak into the ground or at times when the ground is already saturated, and water cannot soak in at all. Within the built environment surface water will tend to collect more easily because the water cannot infiltrate or drain into the ground like it would do naturally. Poorly maintained drainage systems and blockages can increase the likelihood of surface water flooding and in urban areas, this can include pollutants (particularly sewage).
- 3.06 The nearest watercourse is a ditch which flows from the south of the development to the north along Mallion's Lane and terminates to the northeast along the north boundary.
- 3.07 The long-term flood risk map indicates that the application site has a high risk of surface water flooding along the existing ditch for all potential storm events as shown in Figure 4 below.

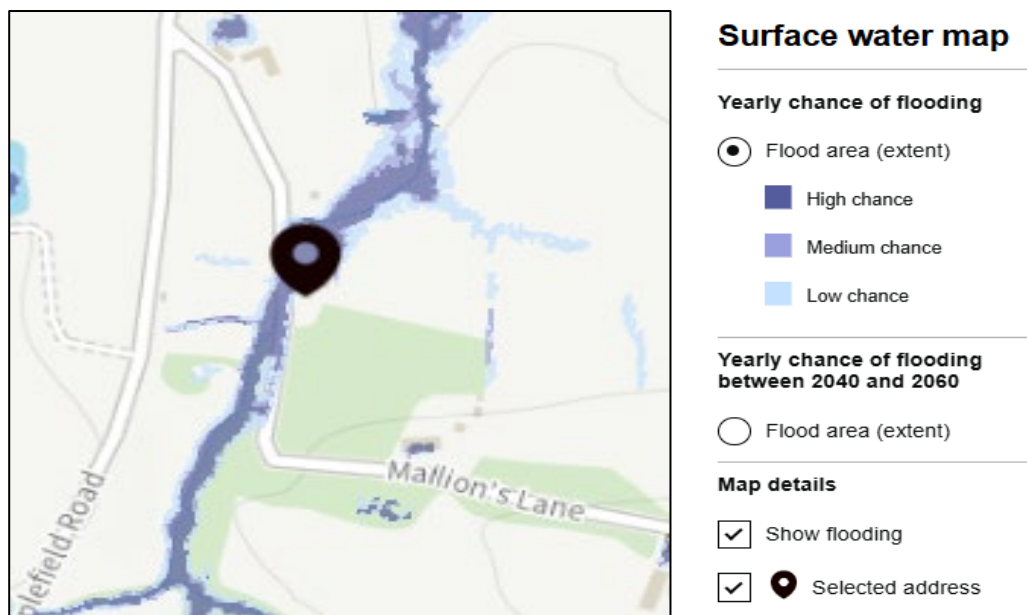


Figure 4: EA long-term flood risk map due to surface water flooding

- 3.08 The Risk of Flooding from Surface Water (RoFSW), EA flood map for planning shows that a high risk (3.3% AEP) of surface water flooding is concentrated along an existing watercourse only. The proposed area of extension is situated circa 2.5m above the level of the ditch indicating a very low risk of flooding at 1 in 100-year storm event which is the lifetime of the proposed development while also in 1 in 1000-year storm event.

- 3.09 The risk of surface water flooding associated with the propped extension for all potential annual exceedance probabilities is included in Figure 5.

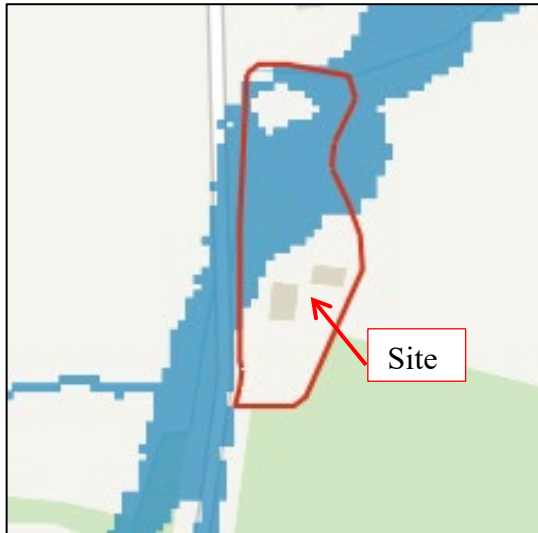


Figure 5: 1 in 30 (0.3% AEP) RoFSW – **Low Risk**

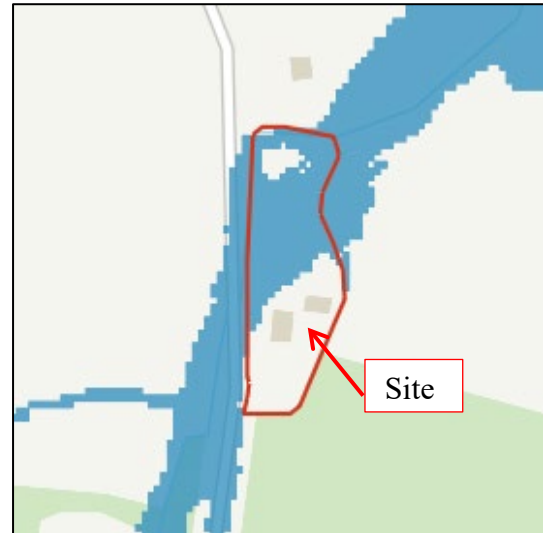


Figure 6: 1 in 100 (1% AEP) RoFSW - **Low Risk**

- 3.10 Any rainfall falling on the proposed development that would have flooded the site will be managed on-site in a sustainable drainage system designed for the 1 in 100-year critical storm event with climate change allowance. The sustainably designed drainage systems will promote the ecological and amenity value as a green solution.
- 3.11 Based on the above findings, the risk of surface water flooding is assessed as very low.

Flooding from Groundwater

- 3.12 Groundwater flooding occurs because water rises from the underlying rock or flows from abnormal springs. This can still occur after much longer periods of sustained high rainfall. Higher rainfall means more water will infiltrate into the ground and cause the water table to rise above normal levels.
- 3.13 Groundwater can still flow from areas where the ground level is high to areas where the ground level is low. In low-lying areas, the water table is usually at shallower depths, but during very wet periods where all the additional groundwater flows towards this area, the water table can rise to the surface causing groundwater flooding.
- 3.14 Groundwater flood risk is assessed through a review and analysis of the bedrock geology, superficial deposits, areas susceptible to groundwater flooding, a strategic scale map for ground, and Source Protection Zones (SPZs).
- 3.15 The British Geological Survey (BGS) shows that the application site is underlain by Weald Clay Formation-Mudstone. The BGS extract is included in **Appendix D**.
- 3.16 The bedrock formation of the Weald Clay is distinguished by dark grey thinly bedded mudstones (shales) and mudstones with subordinate siltstones, fine- to medium-grained sandstones, including calcareous sandstone (e.g. Horsham Stone Member), shelly limestones (the so-called "Paludina Limestones") and clay ironstones.
- 3.17 The SFRA depicts that the site is not designated as within the zone of risk of groundwater vulnerability. The historic flood records in SFRA, do not highlight any flooding issue due to groundwater.
- 3.18 Based on the low likelihood of flooding from the source and minor potential impact, flood risk from this source is assessed to be low.

Artificial Sources: Flooding from Sewers

- 3.19 Sewer flooding events are usually the results of overloaded sewers following heavy rainfall or blockages caused by the misuse of the sewer system.

- 3.20 MapInfo GIS sewer records map (Figure 7) shows no public sewers in the vicinity of the proposal. In addition, any sewer flood will not hinder the intended use of the access and parking/turning area therefore flooding from this source is very low.

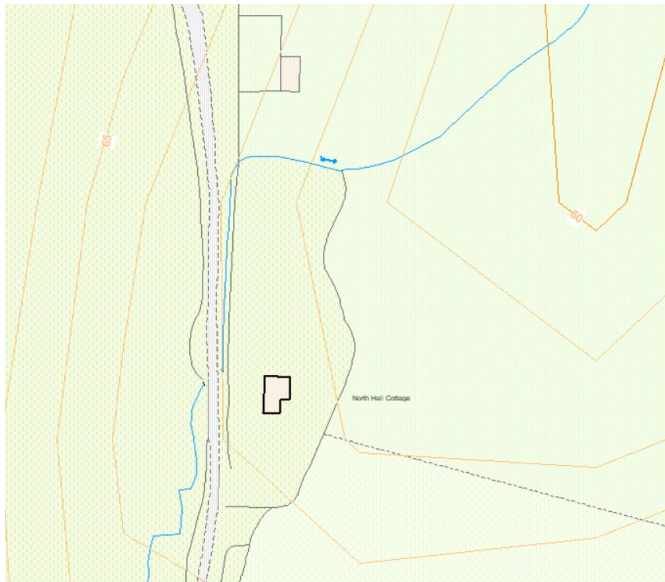


Figure 7: MapInfo GIS Sewer Records

Artificial Sources: Flooding from Reservoirs, Canals and other artificial sources

- 3.21 Reservoirs are artificial bodies of water, where water is collected and stored behind or within a man-made structure and released under control either to reduce the flow magnitudes in downstream channels or to meet a requirement when needed for purposes such as irrigation, municipal needs or hydroelectric power.
- 3.22 The long-term flood risk map for reservoirs shows no risk of flooding.
- 3.23 There are no other sources of flood risk identified.
- 3.24 The EA map and SFRA mention that flooding from these sources is unlikely.
- 3.25 With a very low likelihood of occurring and minor potential impacts, flood risk from these sources is assessed to be very low.

4.00 Probability

- 4.01 The EA flood map for planning indicates that the proposed development site is currently in flood zone 1 which has a low risk of flooding from rivers or the sea.
- 4.02 The EA flood map for planning has been produced in part using a relatively coarse, national scale flood modelling strategy, and in part by detailed modelling. It is important to note that only the potential floodplain is modelled; the mitigating effects of any flood defences currently in place are not considered. For reference, the definition of the NPPF flood risk zones is included below.

Table 2: Definition of the NPPF Flood Zones (Source: Flood Risk and Coastal Change Guidance)

Zone	Description
1	Low Probability: Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b).
2	Medium Probability: Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map).
3a	High Probability: Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea. (Land shown in dark blue on the Flood Map).
3b	The Functional Floodplain: This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of a functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: • land having a 3.3% (1 in 30) or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or • land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

5.00 Climate Change

- 5.01 Climate change is likely to increase the flows in rivers, raise sea levels and increase storm intensity.
- 5.02 Climate change allowance is the prediction of anticipated change for peak river flow, peak rainfall intensity, sea level rise offshore wind speed and extreme wave height.
- 5.03 The proposed extension is currently in flood zone 1. During the desktop study, no map has been found as part of the council's SFRA identifying the effects of climate change on flood zones. Given that the nearest flood zone is approximately 460m northeast of the proposal location with a level difference of over 6 metres (Figure 9), it is reasonable to assume that climate change effects on the flood zone will not impact the application site.

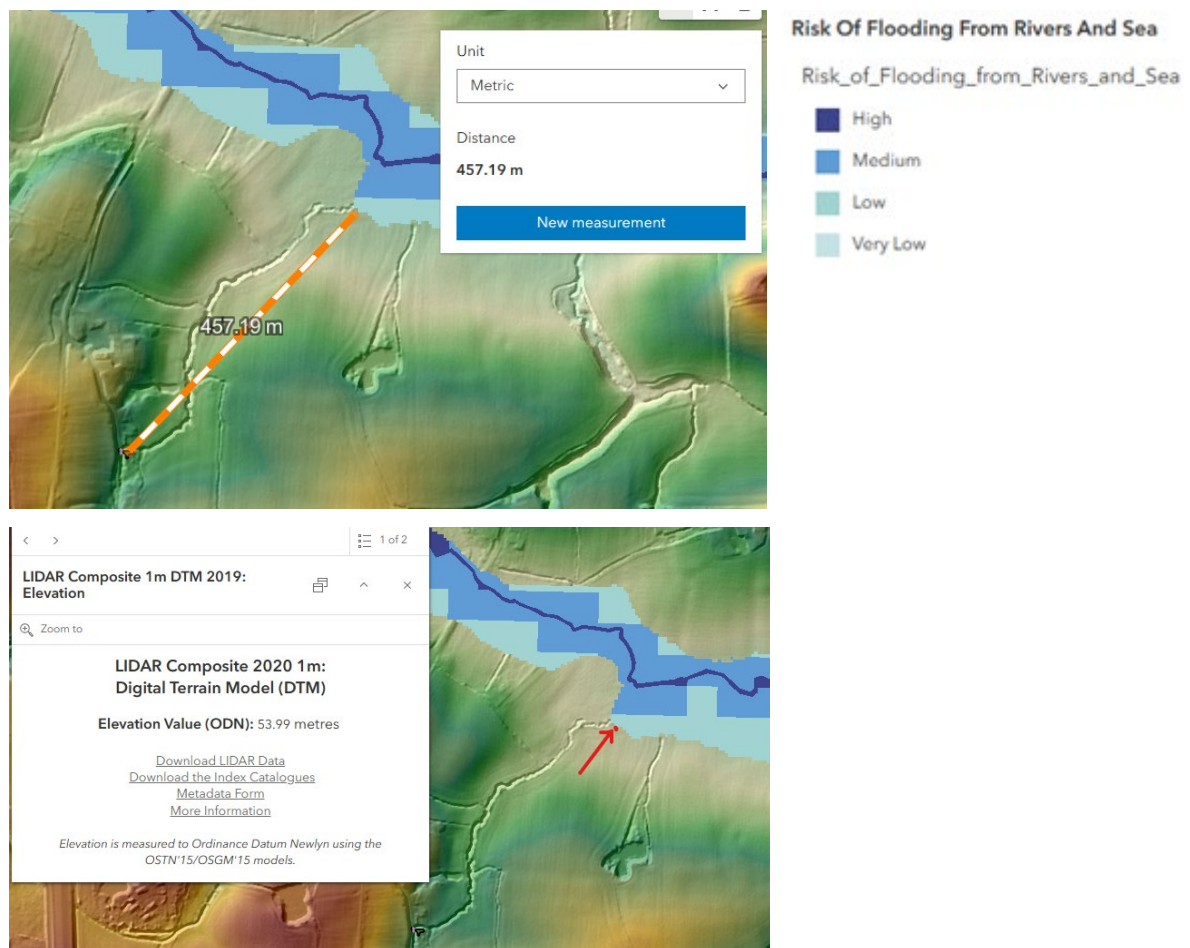


Figure 9: EA flood map for planning (ArcGIS layer)

- 5.04 The site is not located near the coast therefore sea level is not anticipated to be of any concern.

6.00 Off-Site Impacts

- 6.01 Surface water runoff generated by this extension will be managed on-site and therefore there are no foreseen off-site impacts to the people, properties, or the surrounding area because of the proposed development.
- 6.02 The drainage system for extension will be designed adequately to discharge the runoff for 1 in 100-year storm event plus climate change allowance.

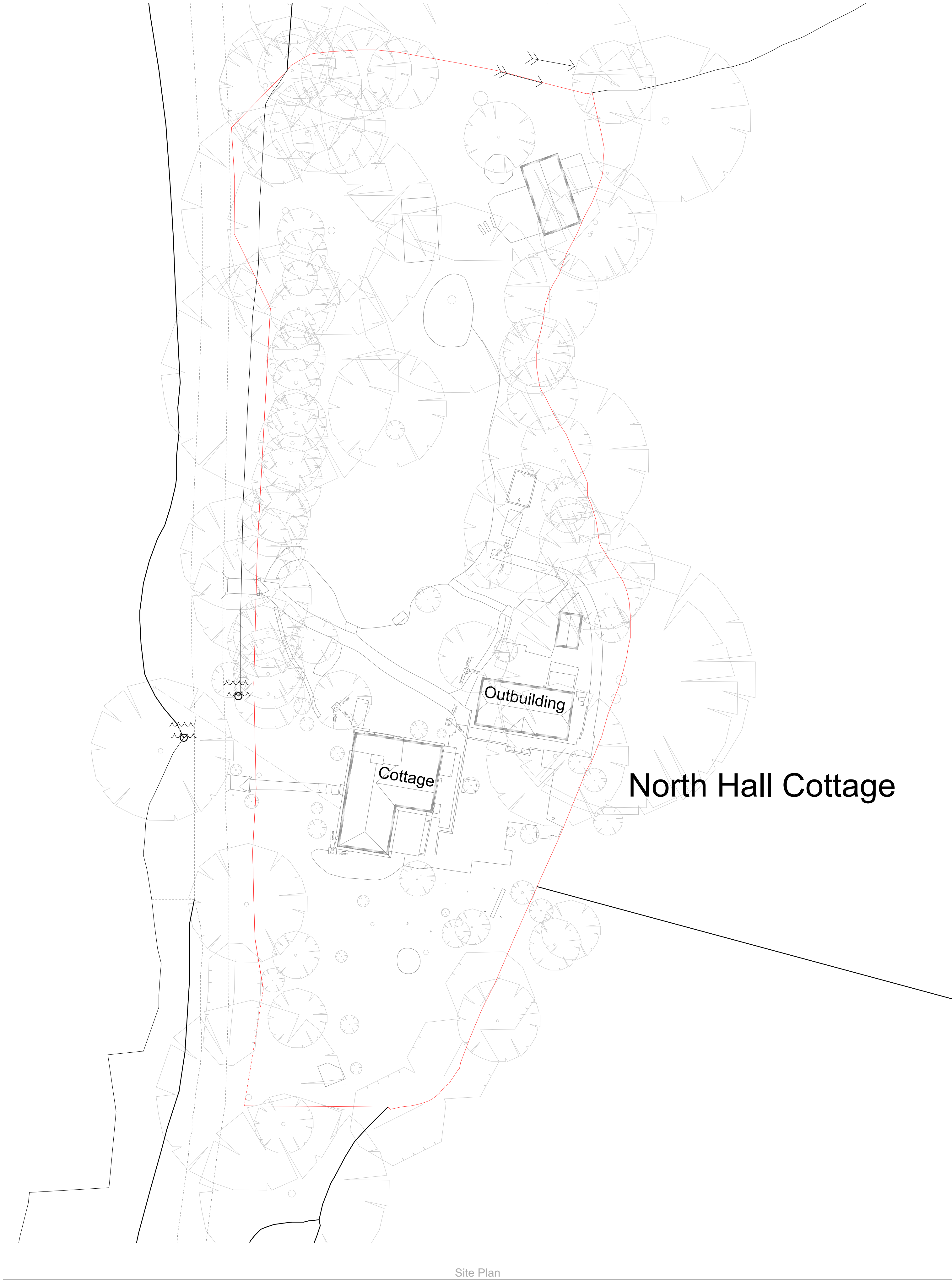
7.00 Residual Risks

- 7.01 Residual risks are those remaining after applying the sequential approach to the location of development and taking mitigating actions. Examples of residual flood risk include:
- A severe flood event that exceeds a flood management design standard, such as a flood that overtops a raised flood defence, or an intense rainfall event that the drainage system cannot cope with.
 - Failure of flood management infrastructure such as a breach of a raised flood defence, blockage of a surface water conveyance system, overtopping of an upstream storage area, or failure of a pumped drainage system.
 - Failure of a reservoir.
- 7.02 Surface runoff generated by the development can be managed on-site, hence no flood risk has been identified because of the proposed development. However, in an extreme rainfall event, the drainage system can't cope with more than the design storm, and as a result, this source may provide a flood risk.
- 7.03 Any exceedance flow of the extreme event will follow the site topography and flow to the southwest direction; however, this runoff can be controlled on-site via the proposed SuDS features- water butts and drainage system, then the system will discharge slowly into the ditch preventing any potential offsite impacts.
- 7.04 The provision of a water reuse scheme, attenuation, infiltration systems, and oversized pipes as SuDS features in the surface water management scheme will help to reduce flood risks.

8.00 Conclusion

- 8.01 Monson Engineering has been instructed to undertake a Flood Risk Assessment for the proposed residential extension to the North Hall cottage at Mallion's Lane in Staplefield, West Sussex, RH17 6AT.
- 8.02 The proposal is for the internal alterations and extension to facilitate a kitchen dining and family bathroom to the east of the North Hall Cottage.
- 8.03 The location of the proposed extension site is within flood zone 1 with respect to flooding from rivers and seas; however, at high risk of flooding from surface water; thus, an NPPF-compliant FRA report is submitted as part of the planning application.
- 8.04 As per the flood risk vulnerability classification chart, this type of development is considered as "More Vulnerable" and is in Flood Zone 1. As defined in Table 2 of the Technical Guidance to the NPPF, this development is appropriate, and an exception test is not required.
- 8.05 All sources of flood risk have been assessed based on the EA's latest data and level 1 & 2 SFRA 2015 of Mid Sussex District Council.
- 8.06 As per EA Flood Map and SFRA records the proposed site is designated at flood zone 1, the risk from the rivers is very unlikely for all potential flood events plus climate change. The flood risk from the tidal source is also assessed as very low as the site is not near the coast and has a higher elevation.
- 8.07 The risk associated with surface water flooding is recorded but no risk is identified at the location where the extension is to be proposed. Other sources of flood risk to the proposed development have been considered from available information reviewed in the desktop study and none has highlighted any major flood risk concern to the proposed development.
- 8.08 The sustainable drainage system for this development will also help to manage flood risk on site and therefore prevent any off-site flood impacts.
- 8.09 Based on the findings of this report, the proposed extension is suitable on the grounds of flood risk.

Appendix A – Site Location Plan and Development Proposals

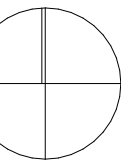


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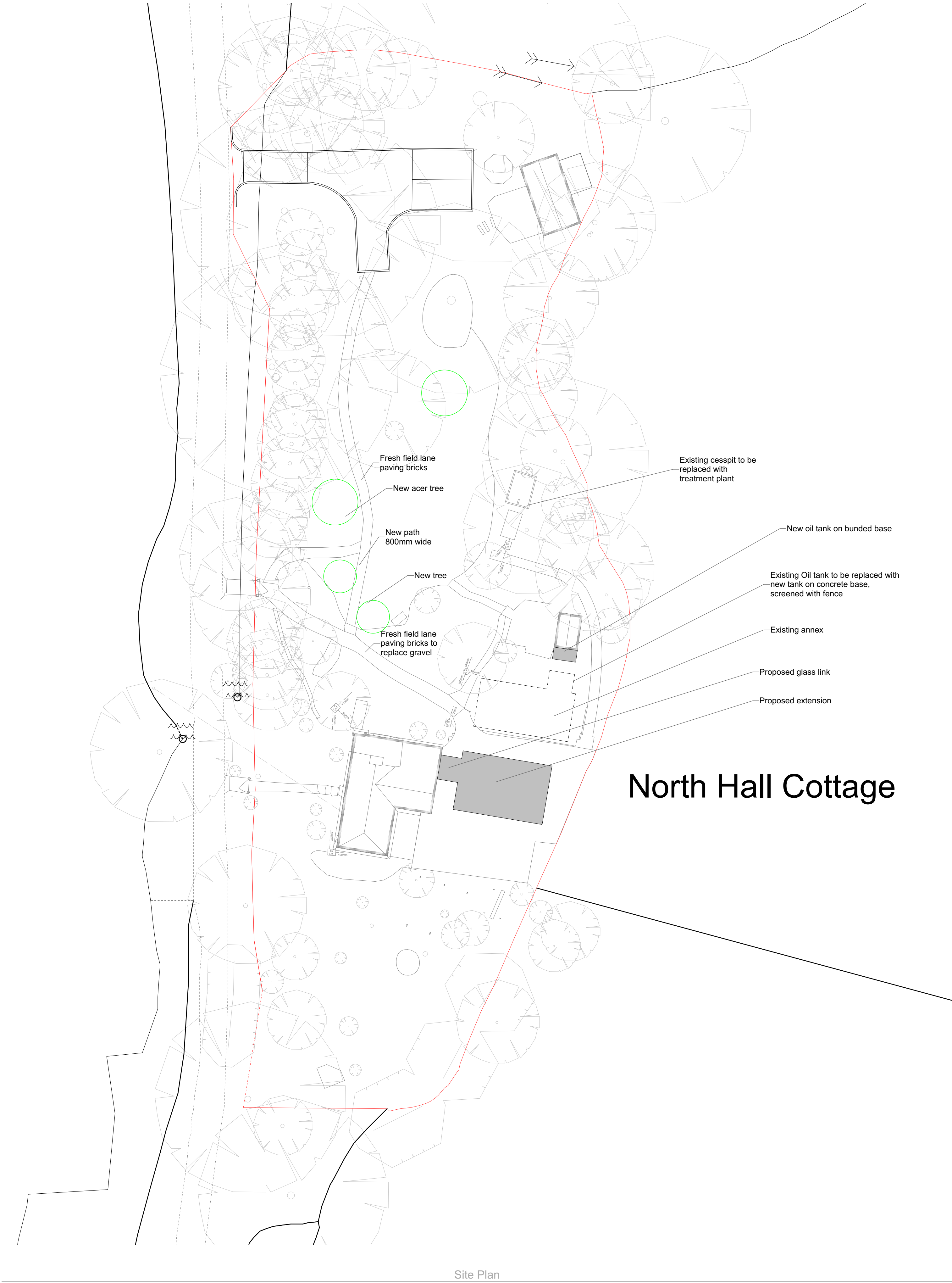
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Client: Chris and Sarah Mellish

Address: North Hall Cottage
Mallions Lane
Staplefield
RH17 6AT

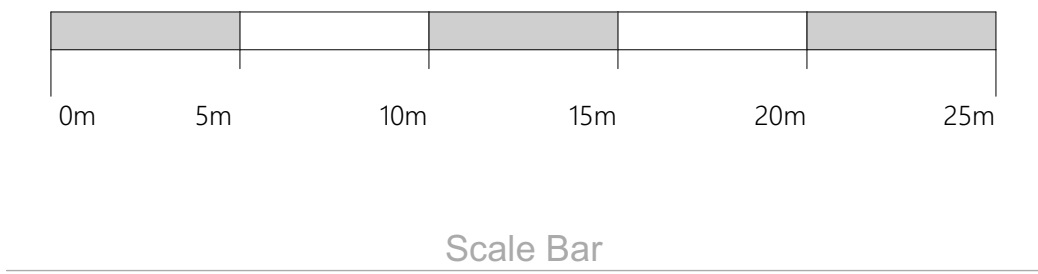
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Site Plan



Scale Bar



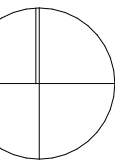
Location Plan

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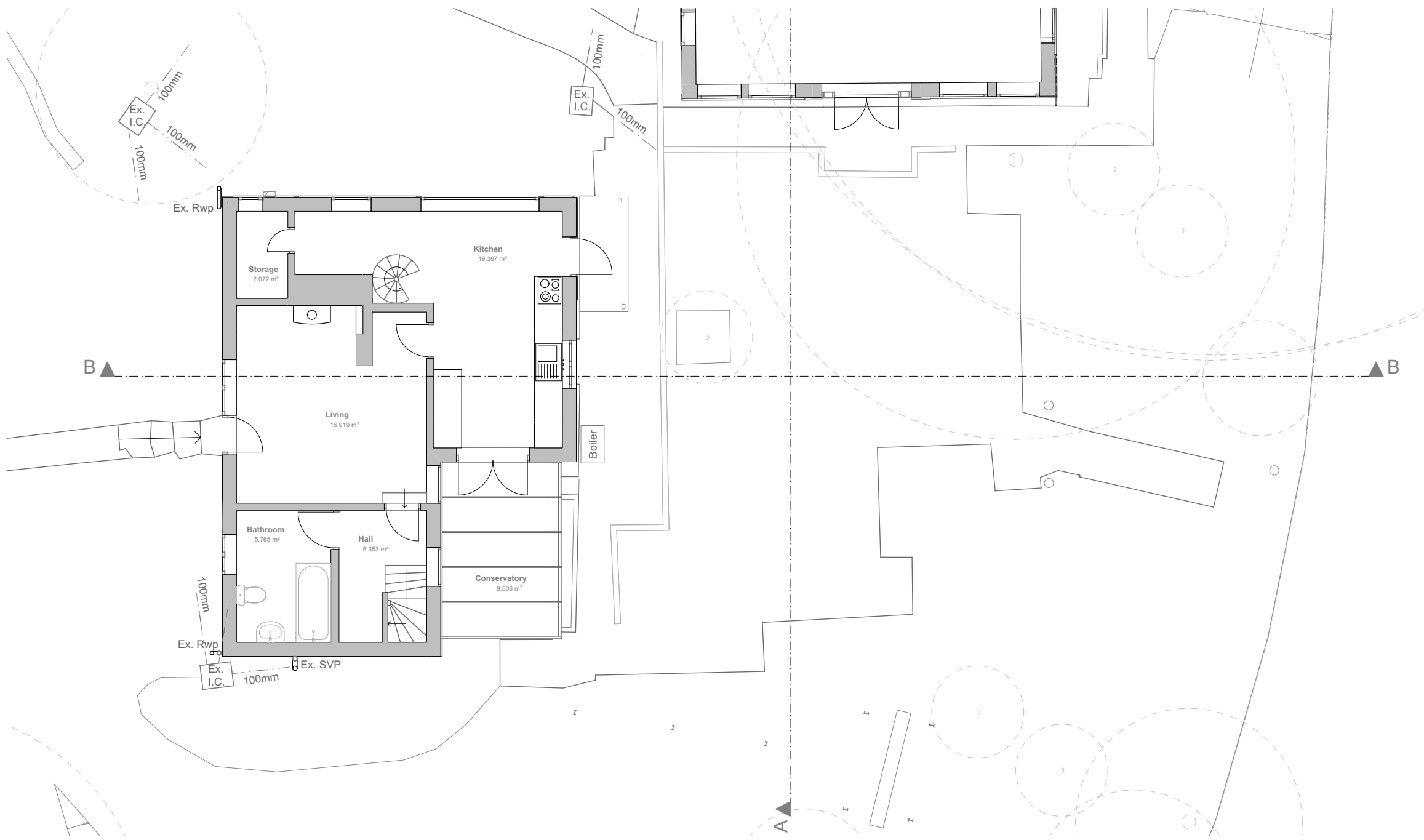
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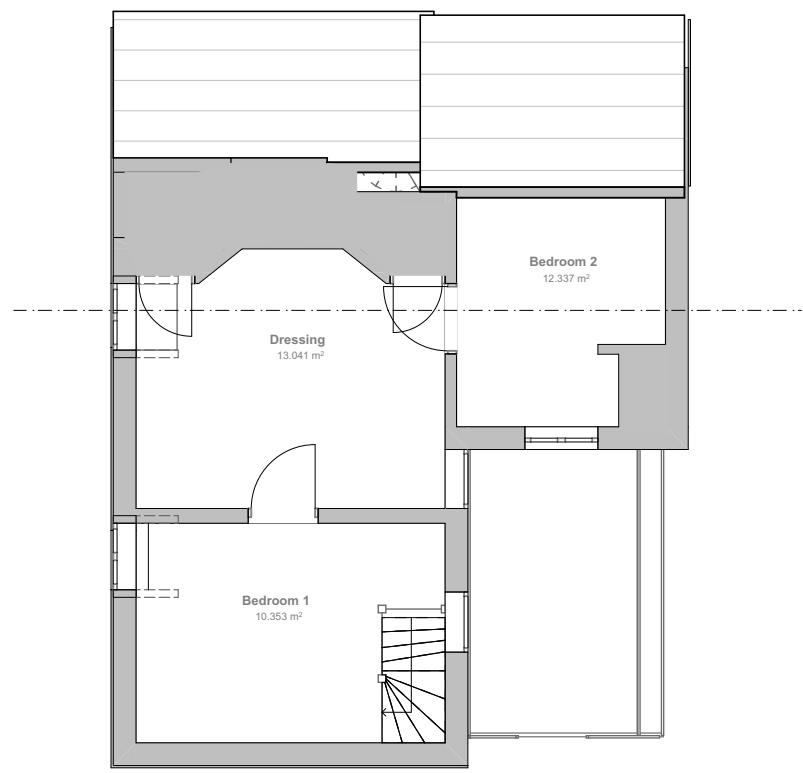
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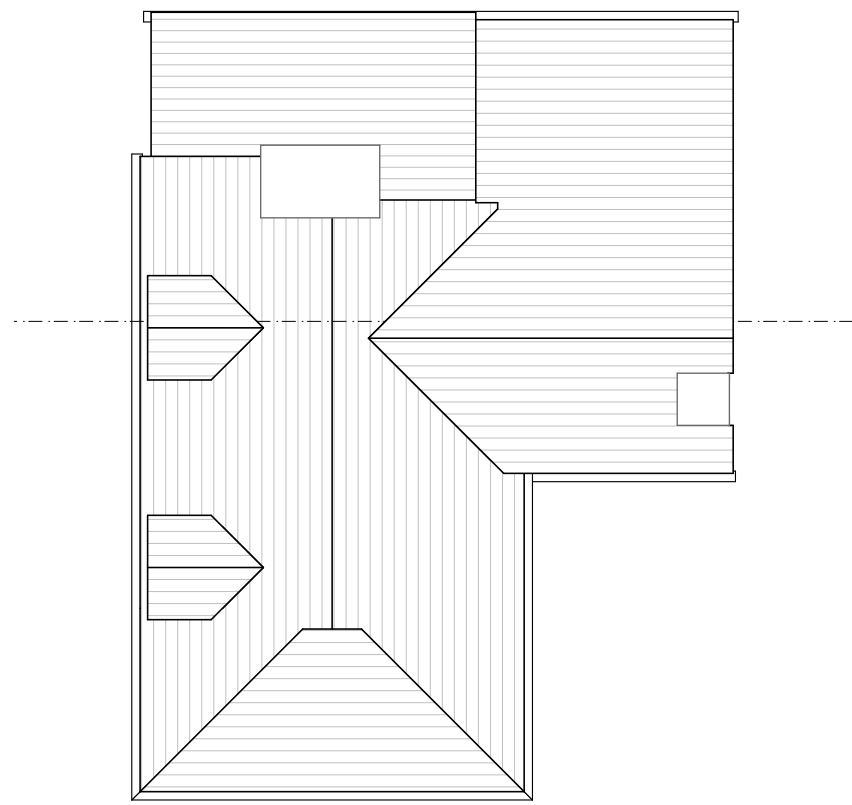
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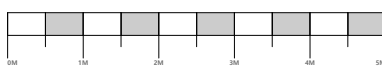
Ground Floor Plan



First Floor Plan

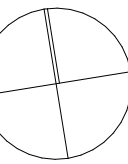


Roof Plan



Scale Bar

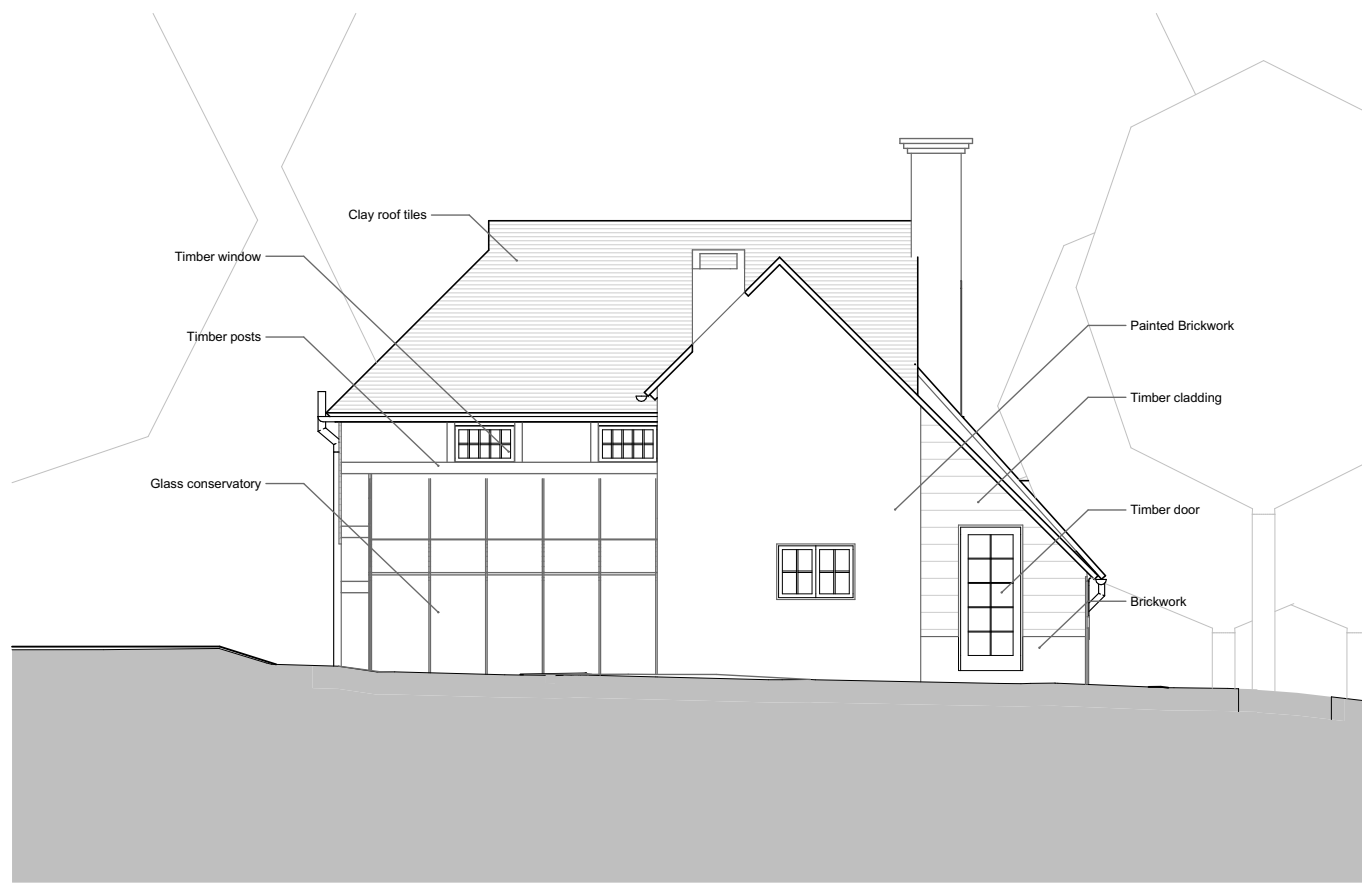
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Section BB



South Elevation



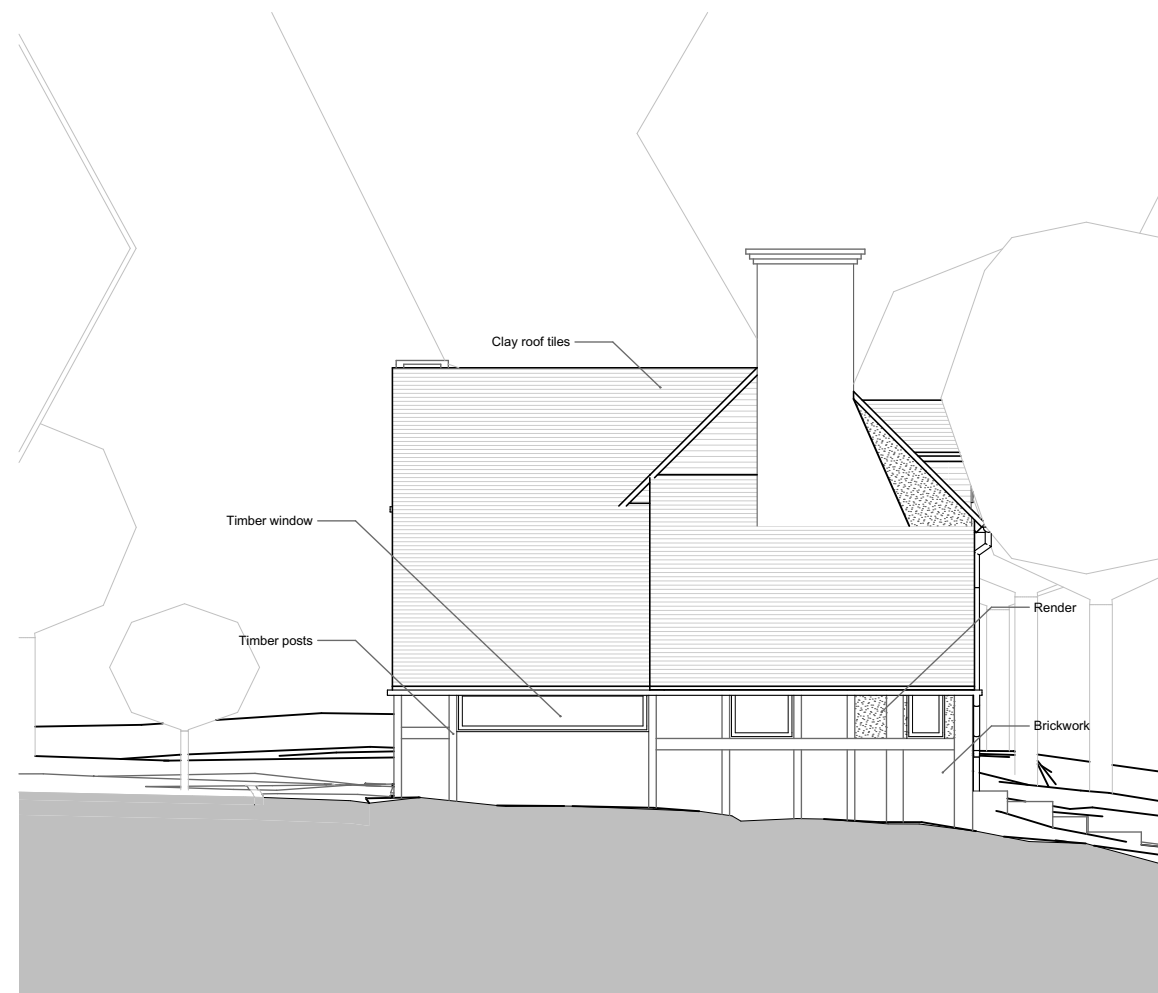
East Elevation



Section AA



West Elevation



North Elevation

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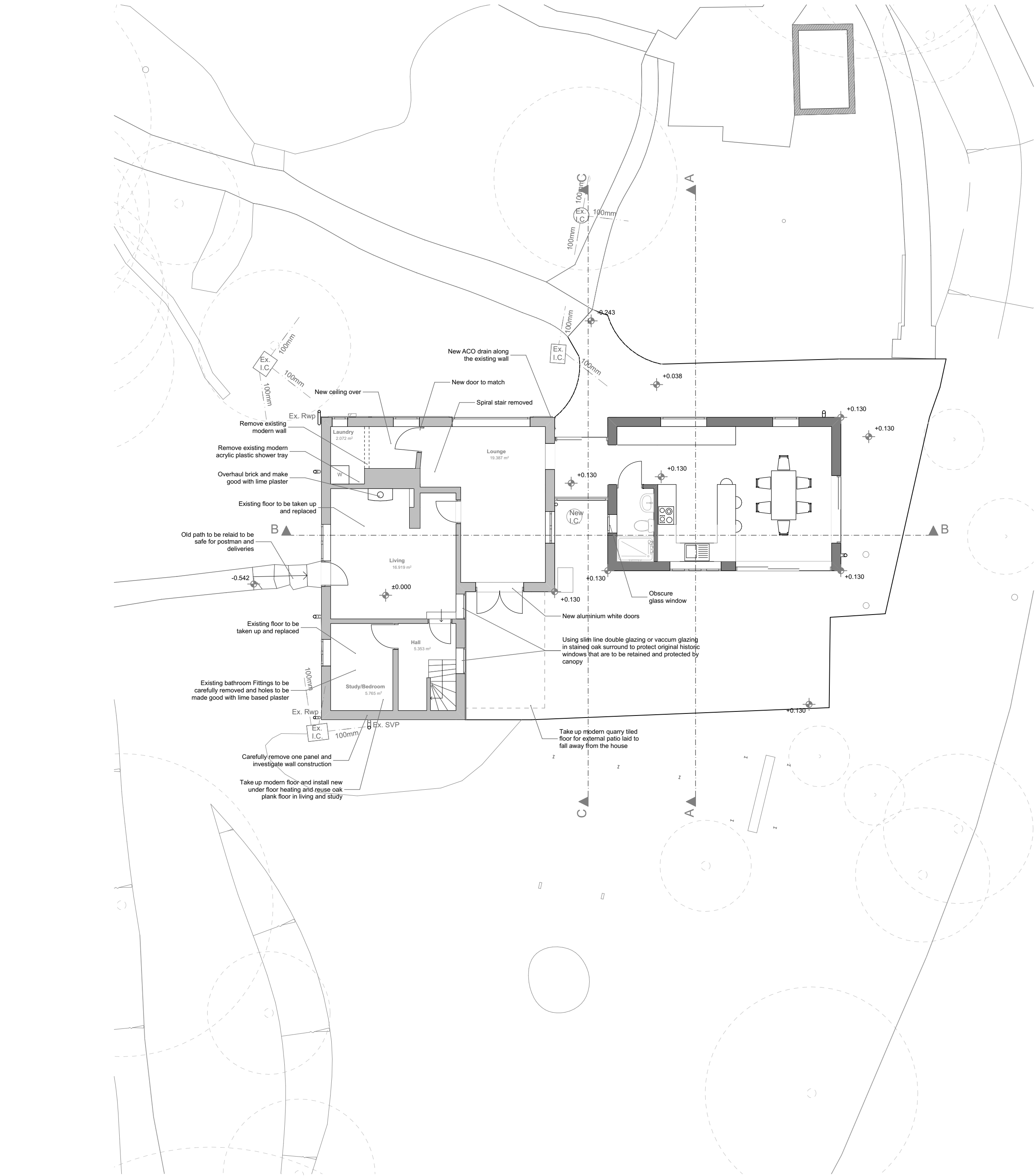
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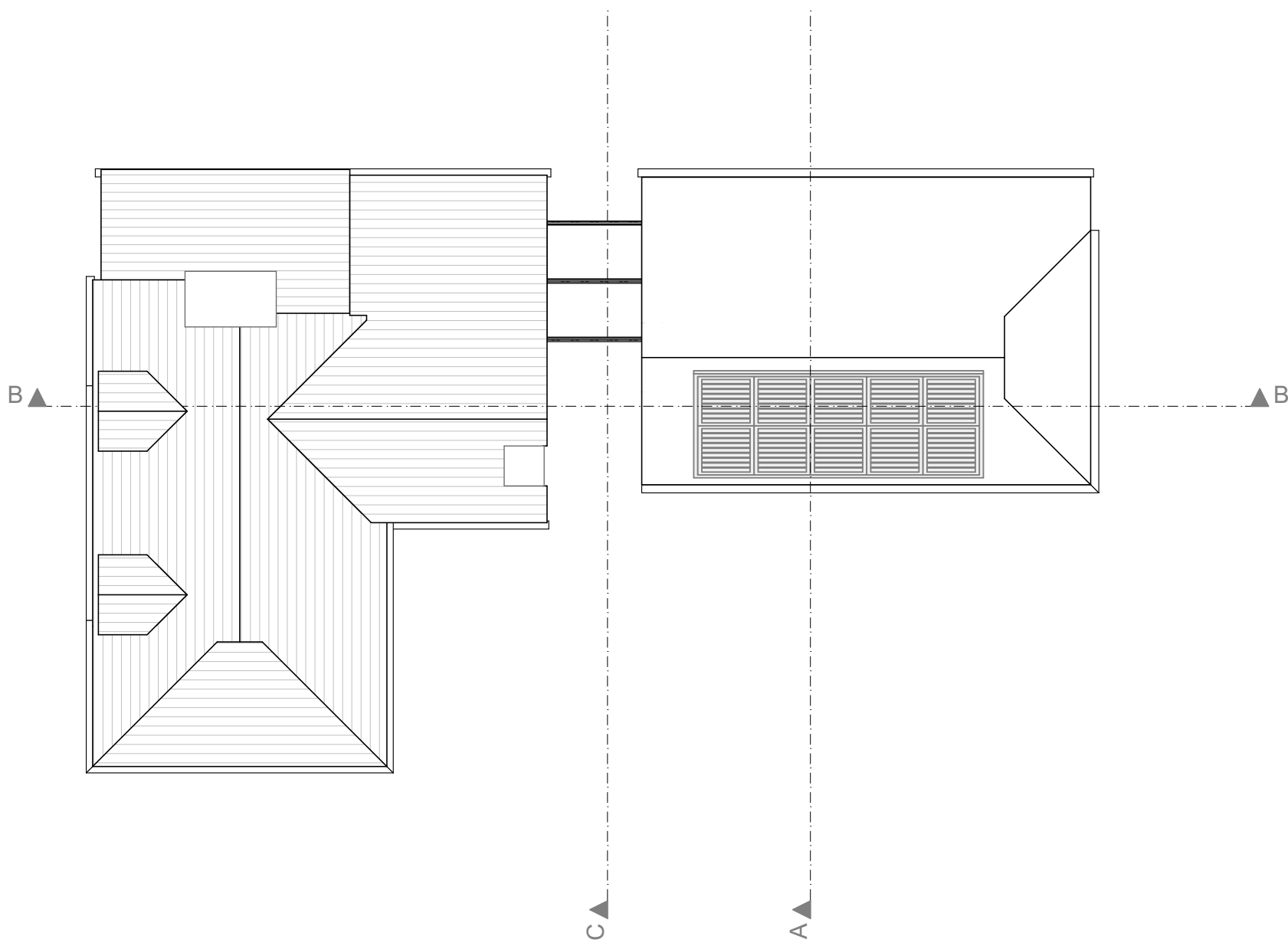
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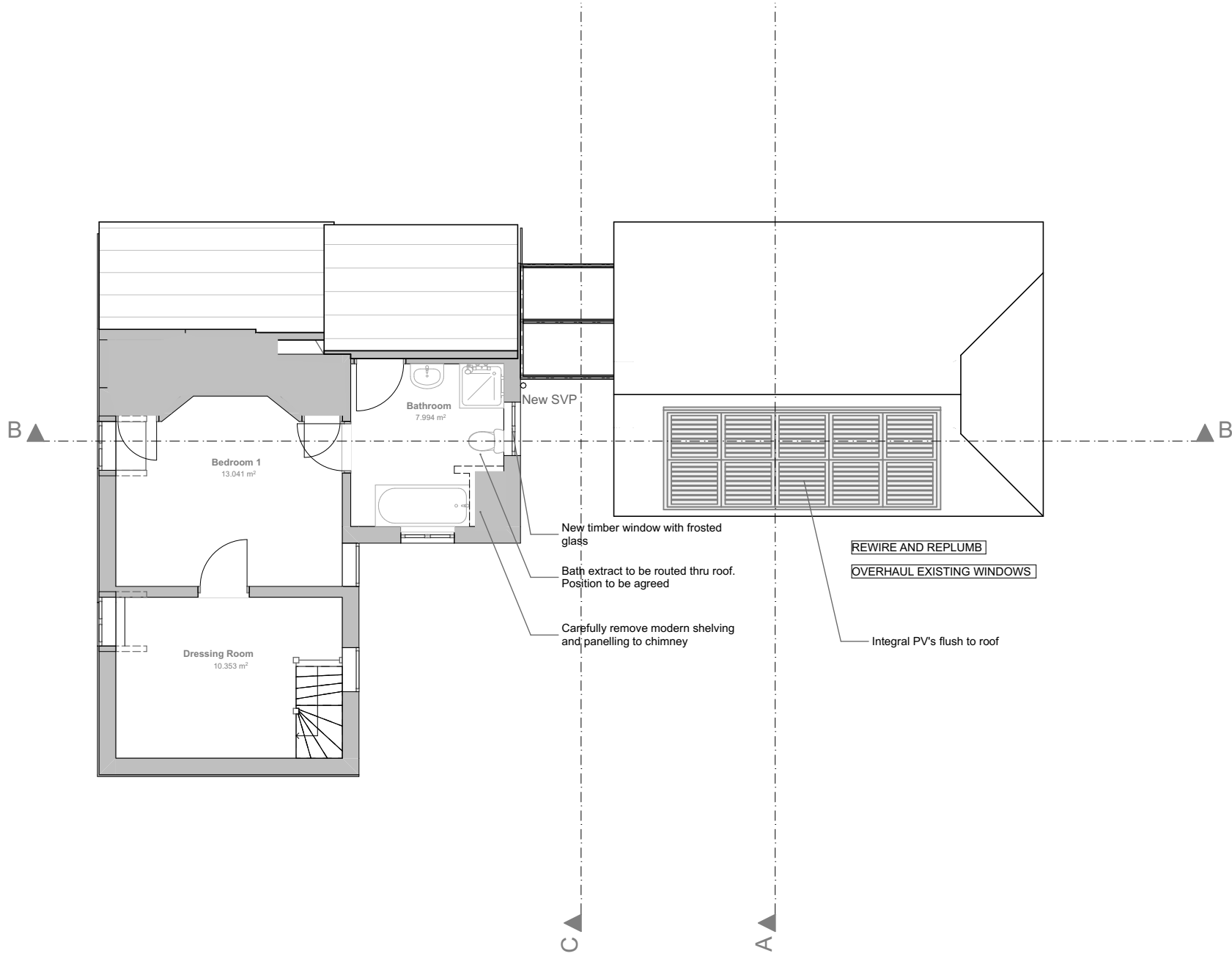
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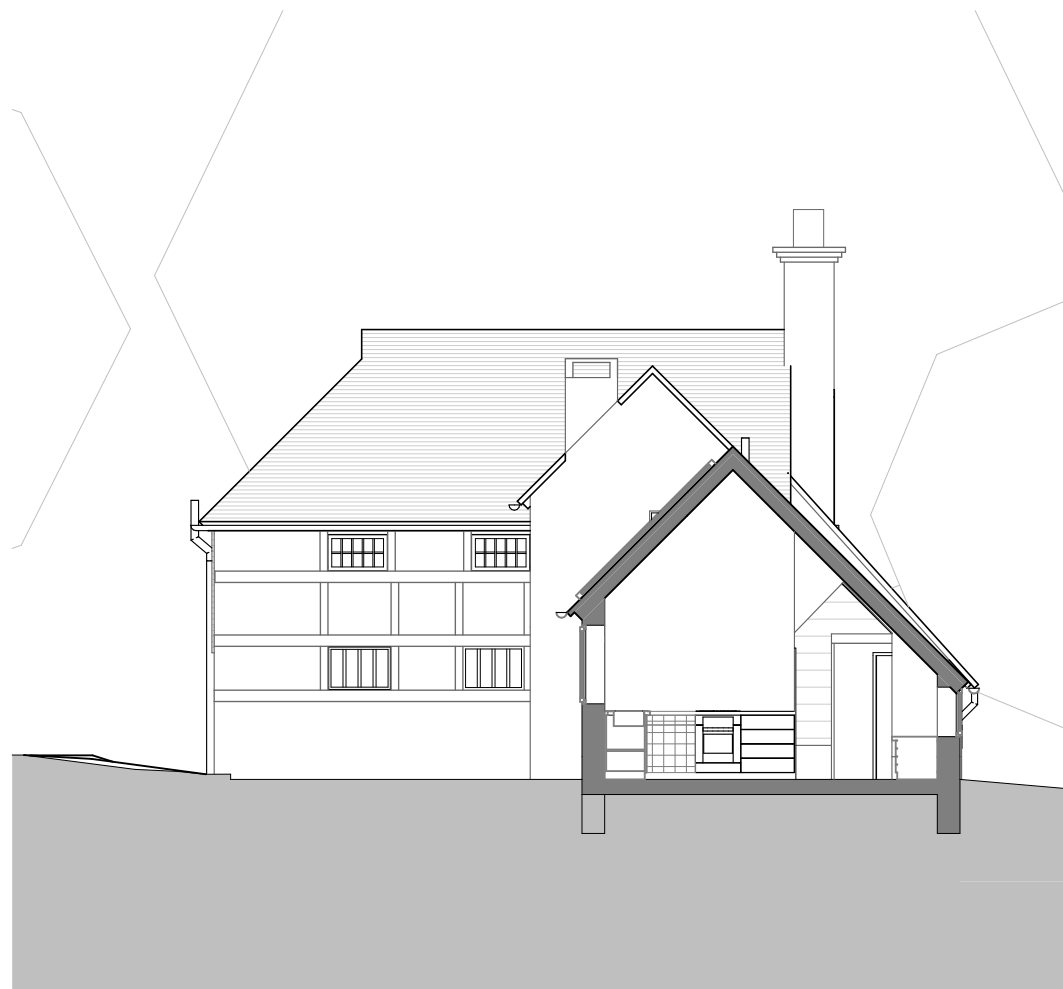
Ground Floor Plan



Roof Plan



First Floor Plan



Section AA



Section BB

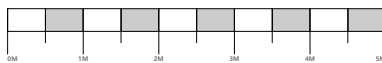


Section CC

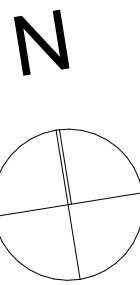
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Scale Bar



Notes:

All Existing black Upvc gutters and downpipes to be replaced with heritage black round downpipes and deep flow gutters

Green oak feather edge boarding to extension 200 wide

Existing wooden plank floor to annex to be used to replace living room and former bathroom floors

All existing casement windows to be repaired to match existing

Brickwork to extension plinth

Extension doors and windows to be PC Aluminium Black

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Address: North Hall Cottage
Mallions Lane
Staplefield
RH17 6AT

Description: Proposed cottage plans and sections

Scale: 1:100 Date: Jun'23
Drawn: CH Checked: JS

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Appendix B – Flood Map for Planning

Flood map for planning

Your reference
Unspecified

Location (easting/northing)
527170/126901

Created
4 April 2025 10:08

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following**:

- bigger than 1 hectare (ha)
- in an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3>

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Flood map for planning

Your reference

Unspecified

Location (easting/northing)

527170/126901

Scale

1:2,500

Created

4 Apr 2025 10:08

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area

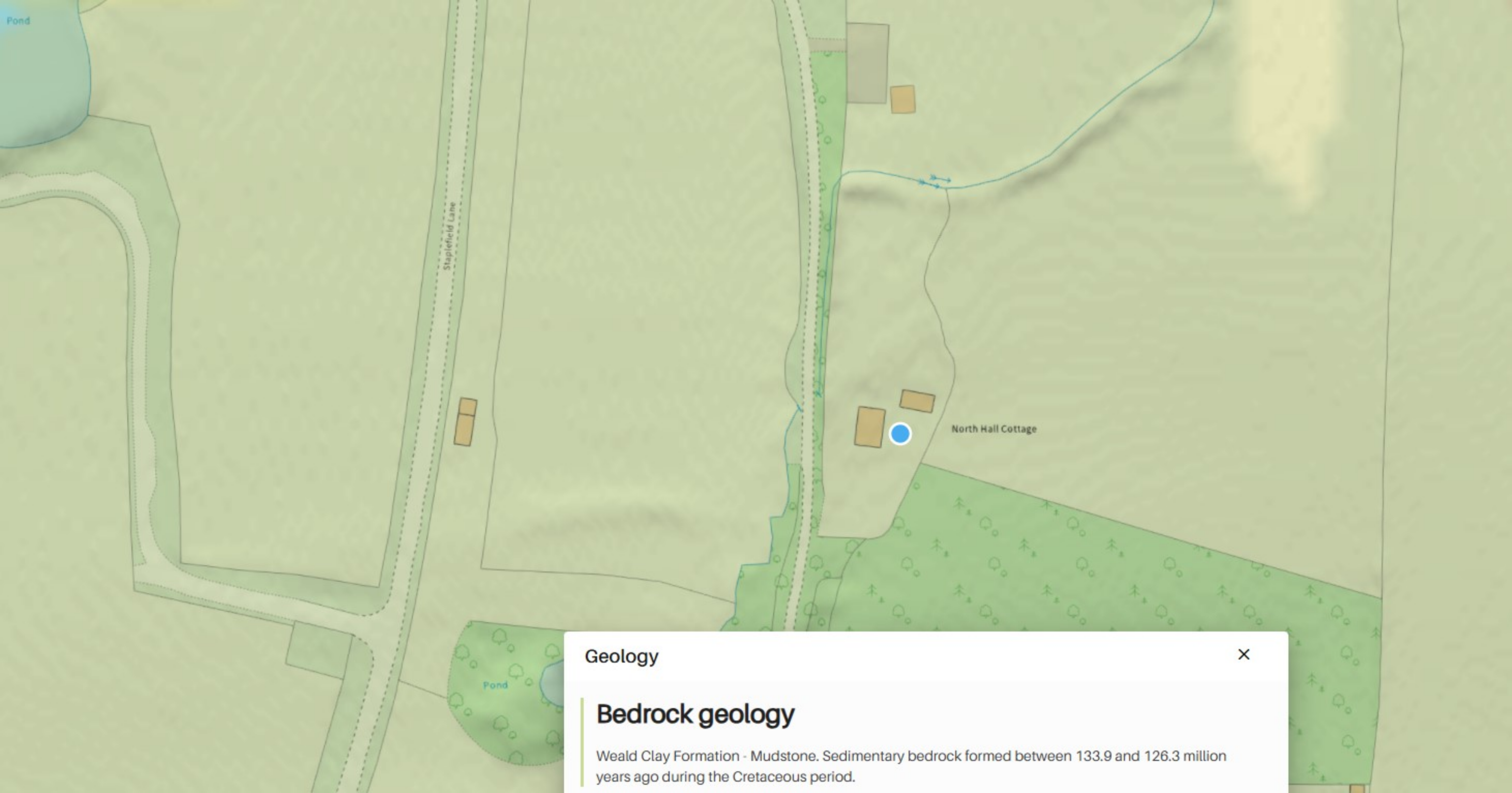


0 20 40 60m

Appendix C – Topographic Survey



Appendix D – BGS Extracts



Geology



Bedrock geology

Weald Clay Formation - Mudstone. Sedimentary bedrock formed between 133.9 and 126.3 million years ago during the Cretaceous period.