



BURTON, MERE, CLASS Q

Wiltshire, BA12 6BR

FLOOD RISK ASSESSMENT

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Control Sheet

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1 INTRODUCTION

1.1 Background

1.1.1 Calibro has been appointed to undertake a Flood Risk Assessment (FRA) for the change of use from an agricultural building to three residential dwellings. The proposals are to be considered as part of a 'Class Q' planning application.

1.1.2 The National Planning Policy Framework (NPPF) requires that the planning system takes full account of flood risk. This requires that:

- Within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
- The development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;
- It incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;
- Any residual risk can be safely managed;
- Safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

1.1.3 The NPPF states that a site-specific FRA will be required for proposals:

- a) that are greater than 1 hectare in area within Flood Zone 1;
- b) that are located in Flood Zones 2 and 3;
- c) in an area within Flood Zone 1 which has critical drainage problems;
- d) in an area within Flood Zone 1 identified in a Strategic Flood Risk Assessment as being at flood risk now or in the future;
- e) in an area in Flood Zone 1 that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

1.1.4 The site falls within Flood Zone 1 and is less than 1ha but falls within an area identified by Wiltshire Council as having mapped groundwater flooding potential. It is for this reason that the Local Planning Authority (LPA) has requested the proposals are supported by an FRA.

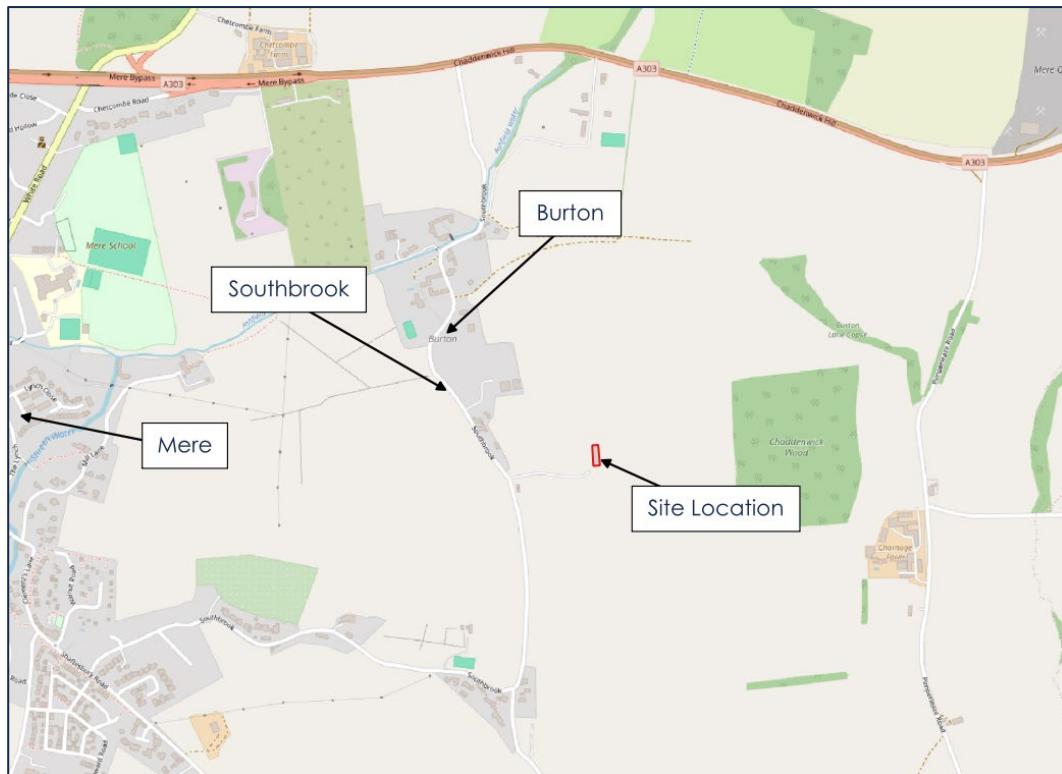
1.1.5 This assessment considers the risks of all types of flooding to the site for the lifetime of the development and assesses if there would be an impact of flooding to third parties, recommending mitigation if a risk is identified.

2 EXISTING SITE AND HYDROLOGY CHARACTERISTICS

2.1 Site Description

- 2.1.1 The site is located to the east of the town of Mere, Wiltshire and to the south of Burton, Wiltshire. Access to the site is available via Southbrook to the west of the site. The approximate coordinates at the centre of the site are 382760, 132140 and the closest postcode is BA12 6BR. Figure 2-1 shows the local context of the site.

Figure 2-1 Local Context

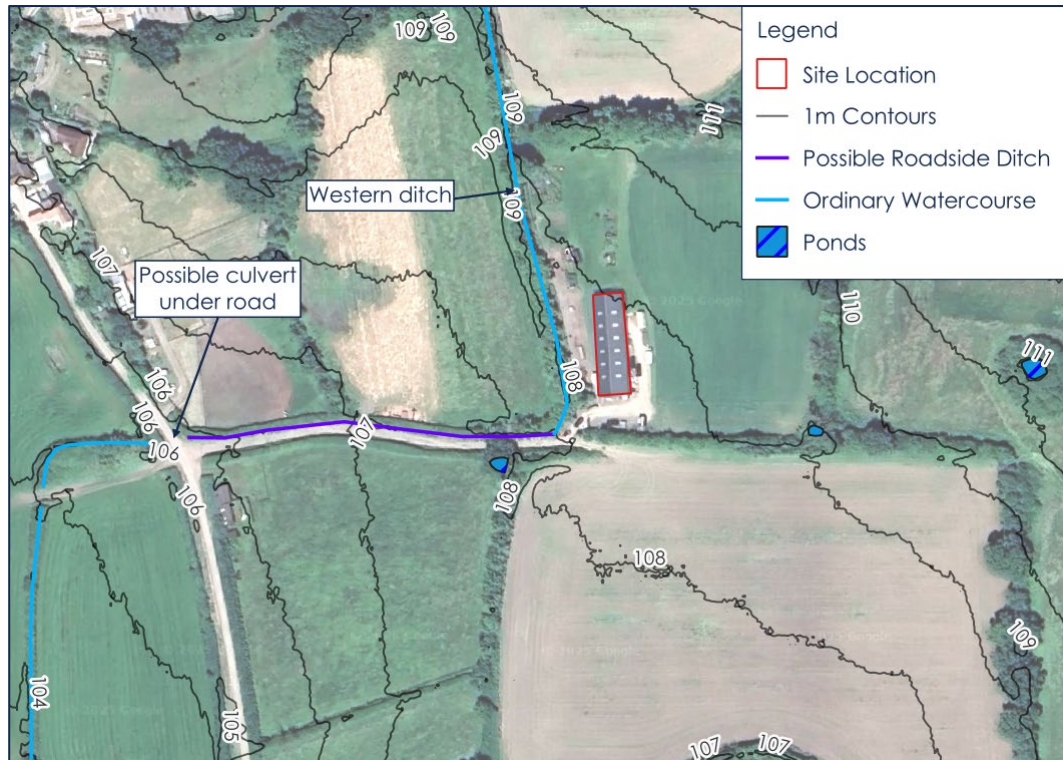


- 2.1.2 The site comprises an agricultural barn which measures approximately 490m² in area.

2.2 Hydrology and Topography

- 2.2.1 The nearest watercourse to the site is a small Ordinary watercourse located to the west of the site. This appears to flow into a roadside ditch along the access track to the site. There are multiple ponds that have been identified by OS mapping within the vicinity of the site, as shown in Figure 3-2.

Figure 2-2 Hydrology



- 2.2.2 In the absence of a topographic survey of the site, readily available LiDAR data has been used to establish the site topography, which is demonstrated in Figure 2-3
- 2.2.3 As shown in Figure 2-3, most of the site is relatively flat but with a gentle gradient to the southwest, with levels close to ranging between 109mAOD and 108.5mAOD. The land surrounding the site also slopes gently to the southwest.

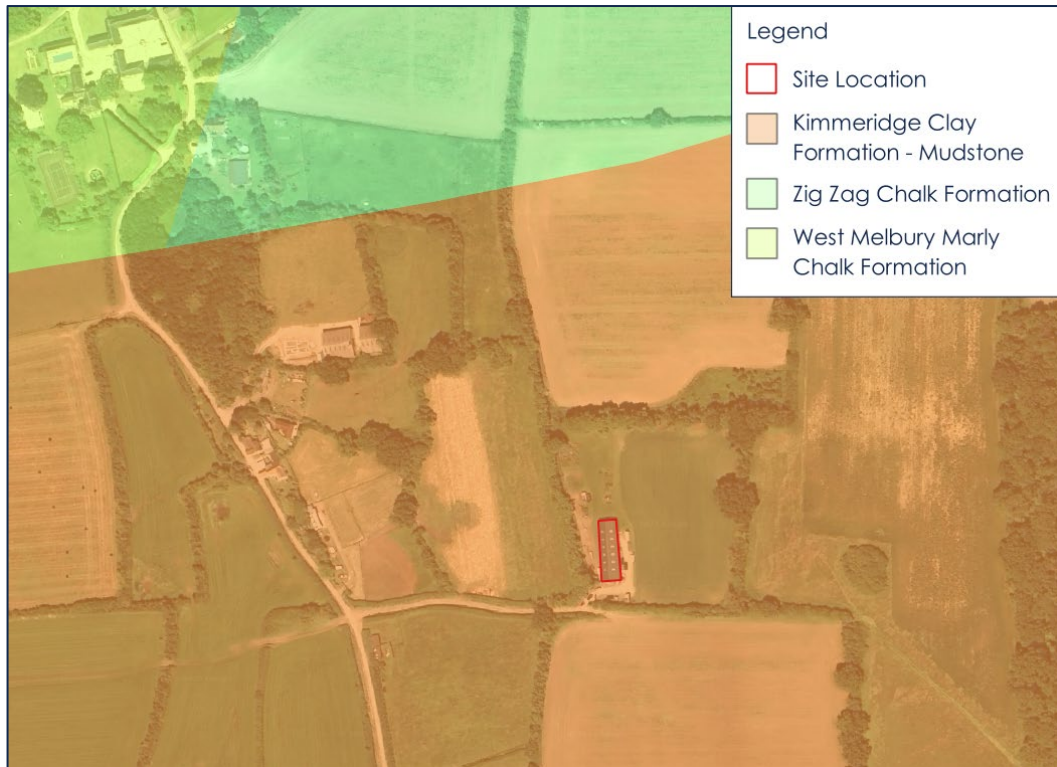
Figure 2-3 Topography



2.3 Geology and Soils

- 2.3.1 Regarding bedrock geology, data held by the British Geological Survey (BGS) shows that the entirety of the site is underlain by 'Kimmeridge Clay Formation - Mudstone' bedrock. Bands of 'Zig Zag Chalk Formation' and 'West Melbury Marly Chalk Formation' bedrock are located to the north of the site. Figure 3-4 shows the bedrock geology at the site.

Figure 2-4 BGS Geology



- 2.3.2 The BGS Hydrogeology aquifer classification (625k) records the bedrock geology under the site and immediate surrounding areas being 'Rocks with essentially no groundwater'.
- 2.3.3 BGS Superficial Deposits mapping shows that the site is underlain by a band of 'River Terrace Deposits (Undifferentiated) – Sand and Gravel' deposits, with areas to the north of the site being underlain by 'Head – Clay, Silt, Sand and Gravel' superficial deposits. Figure 2-5 shows the superficial geology.

Figure 2-5 BGS Superficial Deposits



- 2.3.4 No springs are identified by relevant OS mapping within the vicinity of the site or the transition between geologies adjacent. This provides evidence the aquifer does not yield significant volumes of groundwater in this location.
- 2.3.5 SoilScapes Mapping records the soil type beneath the site as being 'Freely draining lime-rich soils'.

3 PROPOSED DEVELOPMENT

3.1 Site Proposals

- 3.1.1 The proposals are for a 'Class Q' application to change of use from an agricultural barn to three residential dwellings. The works will comprise the refurbishment and modernisation of the building and its interior. No basement accommodation is proposed.
- 3.1.2 It is presumed that there are no proposed changes to the external hardstanding at the site.
- 3.1.3 Site proposals are included in Appendix A.

3.2 Development Vulnerability

- 3.2.1 Table 2 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) defines which types of development are acceptable in each flood zone and is reproduced in Table 4-1. In accordance with Annex 3 of the NPPF, the proposals are considered to be More Vulnerable. All forms, including More Vulnerable, of development are appropriate in Flood Zone 1.

Table 4-1 Flood Risk Vulnerability

Flood Zone	Flood Risk Vulnerability				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1	✓	✓	✓	✓	✓
2	✓	Exception Test Required	✓	✓	✓
3a	Exception Test Required	✗	Exception Test Required	✓	✓
3b	Exception Test Required	✗	✗	✗	✓

- 3.2.2 The Class Q nature of the proposals negates the need to apply the Sequential Test.

4 FLOOD RISK

4.1 National Planning Policy Framework (NPPF)

4.1.1 In accordance with the NPPF, this FRA considers the following sources of flooding:

1. Tidal Flooding – from the sea;
2. Fluvial Flooding – from rivers and streams;
3. Surface Water Flooding – from intense rainfall events;
4. Groundwater flooding – from elevated groundwater levels or springs;
5. Flooding from sewers – from existing sewer systems; and
6. Artificial sources – from reservoirs, canals etc.

4.2 Flood Zones

4.2.1 The Flood Zones are based on the assessed probability of the site flooding from rivers and the sea, ignoring the presence of flood defences. The flood zone classifications from the PPG are presented in Table 5-1 below.

4.2.2 The Flood Map for Planning defines the site as falling entirely within Flood Zone 1, meaning the site is at Low risk of fluvial flooding. The site is well beyond any tidal limits.

Table 5-1 Flood Zone Classification

Flood Zone	Risk	Fluvial Flooding Chance	Tidal Flooding Chance
1	Low	> 1 in 1,000 year	
2	Medium	Between 1 in 100 and 1 in 1,000 year	Between 1 in 200 and 1 in 1,000 year
3	High	Up to 1 in 100 year	Up to 1 in 200 year
3b	Functional Floodplain	Land where water has to flow or be stored in times of flood. This is defined in the relevant SFRA.	

4.3 Recorded Flooding

4.3.1 The EA 'Recorded Flood Outlines' dataset records no historic flood events in the vicinity of the site.

4.3.2 A search of British Hydrological Society's Chronology of British Hydrological Events (CBHE) yielded no relevant flood records.

4.4 Surface Water Flooding

- 4.4.1 The Risk of Flooding from Surface Water (RoFSW) dataset indicates areas where surface water is likely to flow and accumulate. The dataset predicts that the site is at Very Low risk of surface water flooding, as shown in Figure 5-1.

Figure 4-1 RoFSW

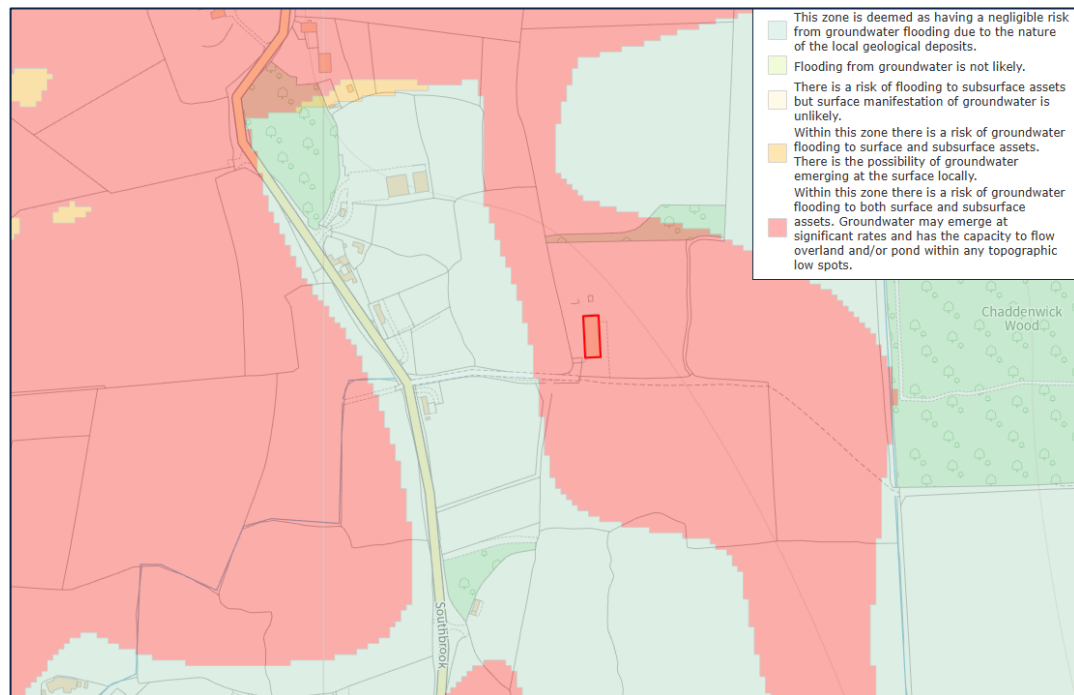


- 4.4.2 As shown above, there is surface water flooding shown along the western ditch to the west of the site and the access road to the site, this is likely due to the western ditch and roadside ditch not being properly represented in surface water modelling. It is likely that surface water extents would not exceed the banks of the roadside ditch.

4.5 Groundwater Flooding

- 4.5.1 The Wiltshire SFRA contains mapping showing groundwater emergence within the area, the mapping predicts that the site is located in an area of mapped risk of groundwater flooding. Figure 4-3 shows the Wiltshire SFRA groundwater emergence mapping.

Figure 4-2 Wiltshire SFRA Groundwater Mapping



4.5.2 Cross comparison of the superficial deposits shown in Figure 2-5 and the groundwater risk areas shown in Figure 4-3 shows that the high risk band for groundwater flooding correlates with a band of 'River Terrace Deposits (Undifferentiated) – Sand and Gravel' superficial deposits. It is likely that these deposits are permeable and would allow the vertical migration of water if they were to become engaged with groundwater. However, as explained in Section 2.3, the bedrock beneath the site and surrounding areas is unproductive and therefore unlikely to generate sufficient groundwater to rise through the permeable deposits.

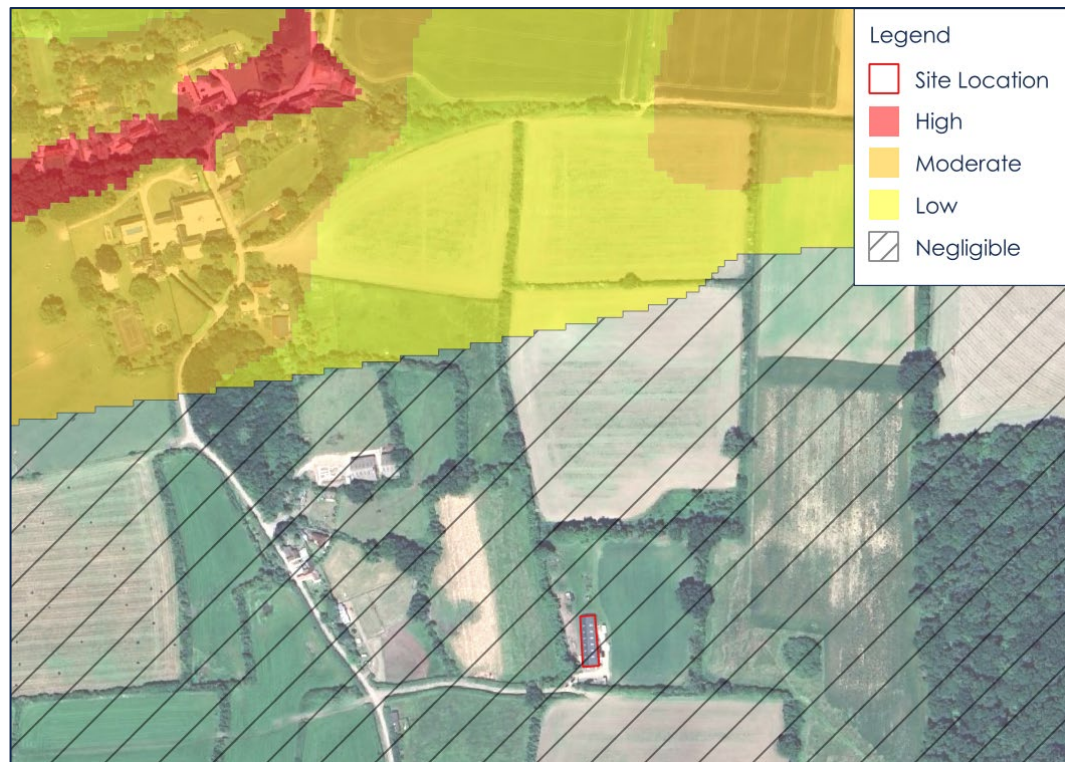
4.5.3 However, to employ a precautionary approach and refine the assessment of groundwater flooding, the GeoSmart Groundwater Flood Risk Map has been obtained for the site.

4.6 GeoSmart Groundwater Flood Risk Map

4.6.1 In order to inform this assessment and given that the groundwater consultation area mapping may misrepresent the actual risk of flooding, the GeoSmart Groundwater Flood Risk Map has been obtained for the site.

4.6.2 GeoSmart data considers topographical and groundwater level data to inform the assessment, together with bespoke hydrogeological and risk models to provide a more accurate assessment of the likely risk of groundwater flooding. The model is calibrated and validated using a national database of recorded groundwater flood events collated by GeoSmart from various sources. The outputs at the site are shown in Figure 4-3.

Figure 4-3 GeoSmart Groundwater Flood Risk



- 4.6.3 The GeoSmart data shows the site and immediate vicinity lies within a large area of Negligible risk.
- 4.6.4 GeoSmart defines the Negligible risk band as having 'a Negligible risk of groundwater flooding in this area and any groundwater flooding incidence has an annual probability occurrence of less than 1%'.
- 4.6.5 There is an area of mapped groundwater risk located to the north of the site, comparison of the risk area shown in Figure 4-4 and the bedrock geology shown in Figure 2-4 indicates that the area of risk is associated with a transition in the geology between the mudstone bedrock beneath the site and the chalk bedrock to the north of the site. This area of risk is far from the site and consequently the risk from groundwater flooding posed to the site is assessed as being Negligible, with no specific mitigation required.

4.7 Flooding from Sewers

- 4.7.1 The area upstream of the site is predominantly rural and therefore unlikely to be served by a significant sewer network. Given the raised topology and rural setting of the site, the risk of sewer flooding is therefore considered to be Very Low.

4.8 Flooding from Artificial Sources

- 4.8.1 The Environment Agency 'Reservoir Flood Extents – Wet Day' national dataset does not predict flooding from a reservoir breach at the site. No other artificial sources of flood risk have been identified in the vicinity of the site.
- 4.8.2 The risk of flooding from artificial sources is concluded to be Negligible.

5 IMPACT ON LOCAL DRAINAGE

- 5.1.1 The proposals are for a change of use only with negligible change to the impermeable footprint of the site. This would also have negligible impact on local drainage.
- 5.1.2 In order for the site to achieve a betterment in terms of runoff generated, it is proposed that the existing roof area would drain to raised bed SuDS planters.
- 5.1.3 According to the CIRIA SuDS Manual, typically the surface area of bioretention areas such as SuDS planters should be 2 – 4% of the roof area it is draining. The proposals measure a total of approximately 43m² and therefore, the total combined surface area of the planters should total 19.6m² (4% of the total area).
- 5.1.4 If space allows, water butts could be installed to provide further betterment, promoting the reuse of water collected from rainstorms in order to maintain garden areas. However, the capacity provided in water butts cannot be relied upon to provide attenuation storage as they may be at capacity when storms occur.
- 5.1.5 The planters are proposed to discharge as per the existing site.
- 5.1.6 The proposed planters would be a betterment compared to the existing drainage situation of the barn and therefore align strongly with the core aims of the NPPF.
- 5.1.7 The specific distribution and location of the SuDS planters is subject to detailed design considerations. For example, they will need to be located so as to not impede access.

5.2 Design for Exceedance

- 5.2.1 The proposed planters would provide more storage and would result in betterment even in exceedance events when compared to the existing site. In the unlikely event the capacity of the SuDS planters and filter drain was exceeded, water would gradually flow onto surrounding landscaped areas where it would percolate to the ground, as per the existing site and antecedental conditions.

5.3 Water Quality

- 5.3.1 The SuDS Manual (CIRIA C753) states that the design of surface water drainage should consider minimising contaminants in surface water runoff discharged from the site. The level of treatment required depends on the proposed land use, according to the pollution hazard indices. To provide adequate treatment, the SuDS mitigation indices for the development must be equal to, or exceed, the pollution hazard indices.
- 5.3.2 Surface water runoff from 'residential roofs' are considered by Table 26.3 of the SuDS Manual to present a Very Low hazard to water quality (see Table 6-1).

- 5.3.3 Table 26.4 of the SuDS Manual provides SuDS mitigation indices for various SuDS methods discharging to the ground, as summarised in Table 5-1. This shows that the bioretention system (SuDS planters) will provide sufficient mitigation of the likely pollutants expected alone.

Table 5-1 Water Quality Indices (as per C753 The SuDS Manual)

		Pollution Hazard Level	Total suspended solids	Metals	Hydro-carbons
Land Use	Residential roofs	Very Low	0.2	0.2	0.05
SuDS Mitigation Indices	Bioretention system	-	0.8	0.8	0.8

5.1 Operation and Maintenance

- 5.1.1 Maintenance of the proposed drainage infrastructure is essential for their operation. The maintenance responsibility will lie with the site owner. The proposed maintenance activities outlined below in Table 5-2 has been sourced from the CIRIA SuDS Manual.

Table 5-2 Planter Maintenance

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Inspect surface for silting or ponding, assess outflow and overflow for evidence of blockage	Quarterly
	Assess plants for disease infection, poor growth, invasive species etc. and replace as needed	Quarterly
Occasional Maintenance	Remove litter, surface debris and weeds	Quarterly/as required
	Replace plants to maintain density	Quarterly/as required
Remedial actions	Seek advice as to remediation techniques suitable for the type of performance issue and location.	As required if above does not improve performance
	Replace damaged or clogged media or geotextiles	As required
	Repair or improve erosion controls if required	As required

Monitoring	Initial inspection should be provided as post construction survey.	Immediately after construction
	Inspect for evidence of poor operation via water level and if required, take remedial action	3 monthly, 48 hours after large storms in first 6 months
	Inspect silt/debris accumulation rates and establish appropriate sediment/debris removal frequencies	Annually

6 SUMMARY

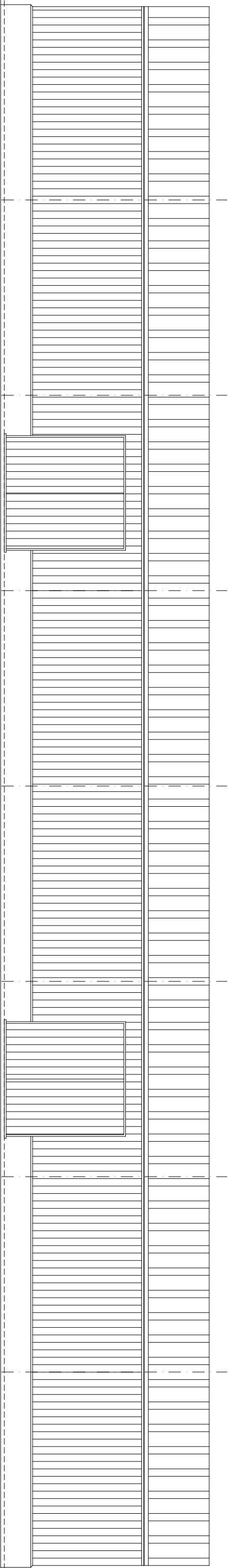
- 6.1.1 The proposals are for a 'Class Q' application to change of use from an agricultural barn to three residential dwellings. The works will comprise the refurbishment and modernisation of the building and its interior with negligible change to external areas nor the impermeable footprint of the site.
- 6.1.2 The Class Q nature of the proposals means the Sequential Test would not apply.
- 6.1.3 The site is situated on relatively flat greenfield land.
- 6.1.4 The site is located in Flood Zone 1 and outside of areas predicted to be at risk of surface water flooding. Due to the rural position of the site, together with absence of nearby artificial water bodies, it is at negligible risk from sewers or artificial sources.
- 6.1.5 The bedrock beneath the site is defined by BGS data to be 'Kimmeridge Clay Formation - Mudstone', which is unproductive.
- 6.1.6 Groundwater mapping provided by the Wiltshire Council SFRA predicts that the site is located in an area of groundwater flooding.
- 6.1.7 A comparison of the SFRA groundwater risk mapping and superficial deposits mapping indicates that the area of elevated groundwater risk is associated with a band of 'River Terrace Deposits (Undifferentiated) – Sand and Gravel' superficial deposits.
- 6.1.8 As a result of the above, GeoSmart groundwater mapping was obtained for the site. The mapping indicates that the site and its surrounding areas are located in an area of Negligible groundwater risk.
- 6.1.9 The GeoSmart data demonstrates the site is at Negligible risk of groundwater flooding.
- 6.1.10 Raised SuDS planters have been proposed to accommodate runoff generated from the entirety of the roof of the proposed dwelling. The planters would provide betterment in comparison to the drainage situations of the current roof. The planters are proposed to have a total combined surface area of 19.6m² which equates to 4% of the proposed extension roof area. This approach is in accordance with guidance set out in the CIRIA SuDS manual.
- 6.1.11 The outflow from the SuDS planters would discharge to the existing drainage arrangements for the site.
- 6.1.12 It is presumed that there are no changes proposed to the external hardstanding at the site.
- 6.1.13 Water butts may also be installed to provide further sustainability benefits.

6.1.14 This Flood Risk Assessment shows that the development will be safe for its lifetime, whilst having a betterment on runoff rates elsewhere, and therefore meets the requirements of the NPPF.

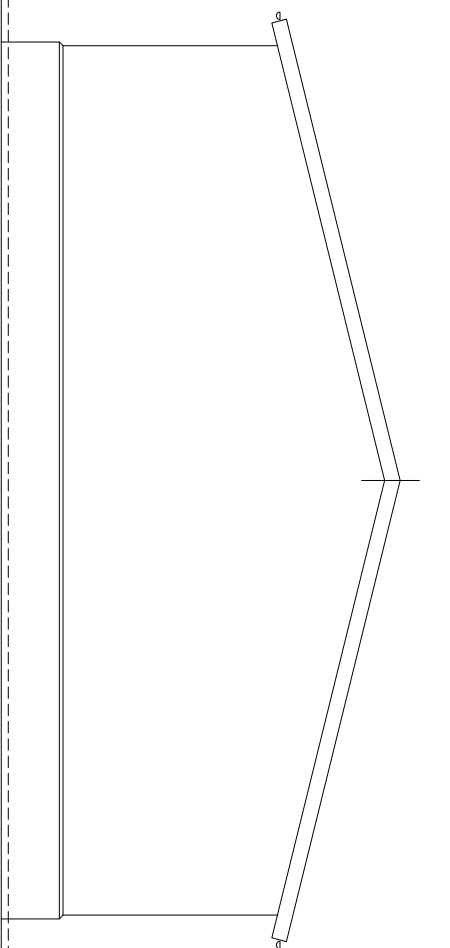
APPENDICES

APPENDIX A

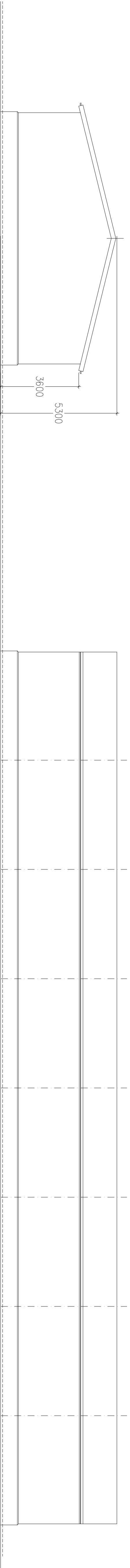
Site Proposals



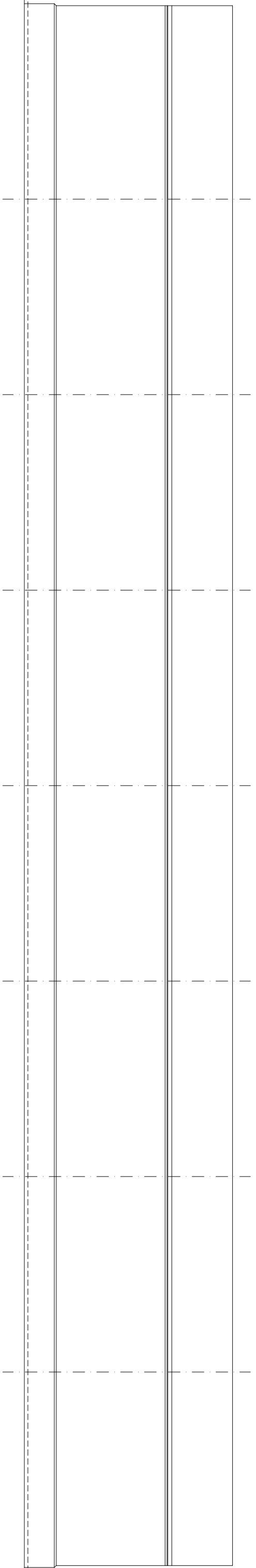
EAST 1:100



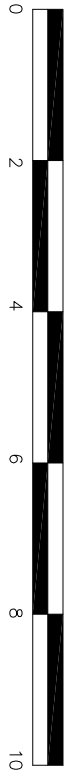
NORTH



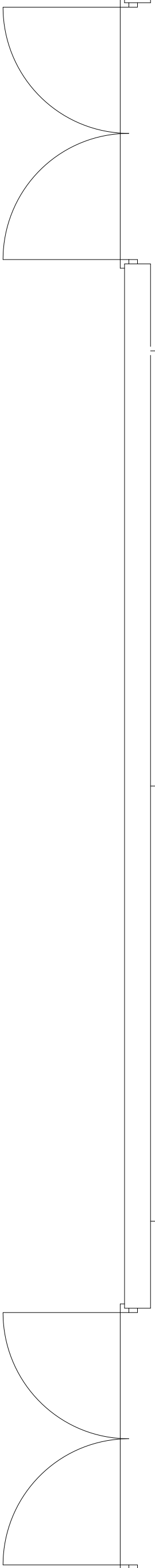
SOUTH 1:100



WEST



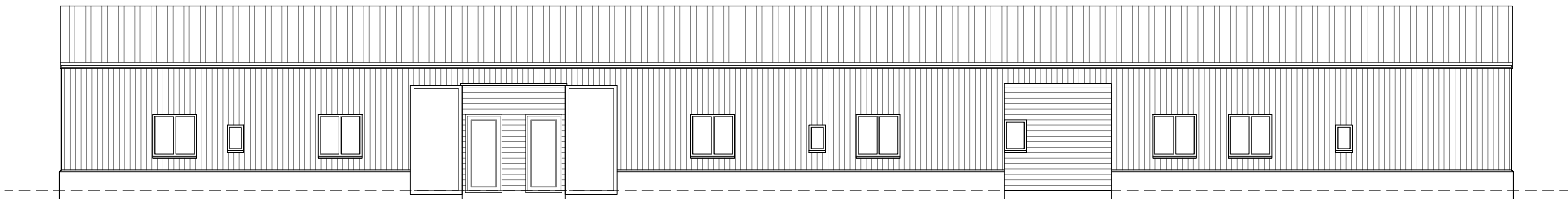
GROUND FLOOR PLAN



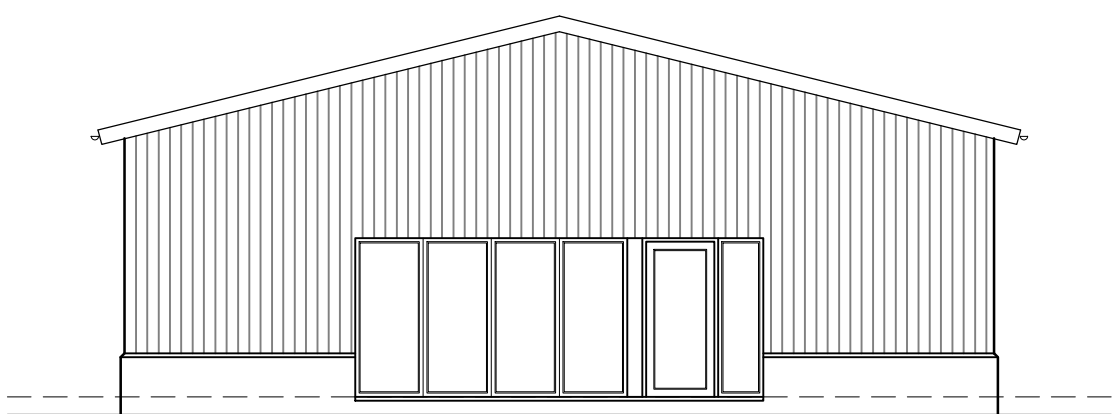
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PROPOSED BUILDING
LAND AT BURTON, MERE
WILTSHIRE, BA12 6BR

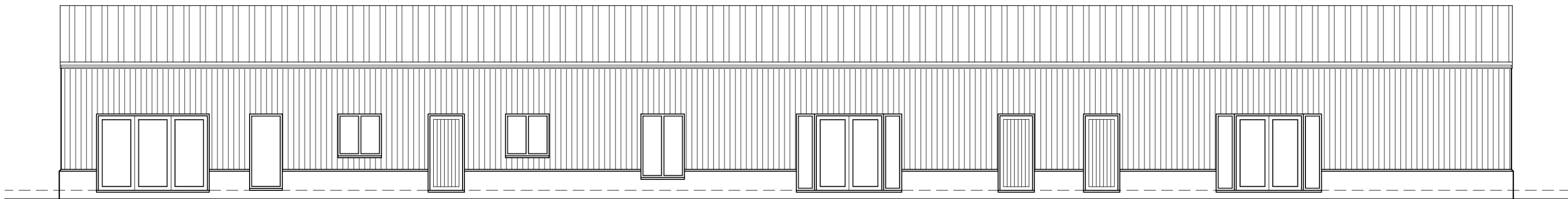
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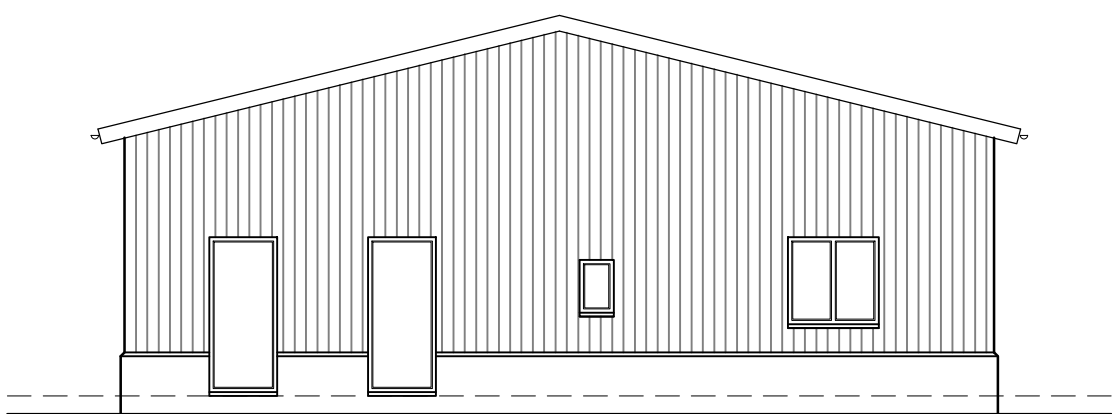
East Elevation



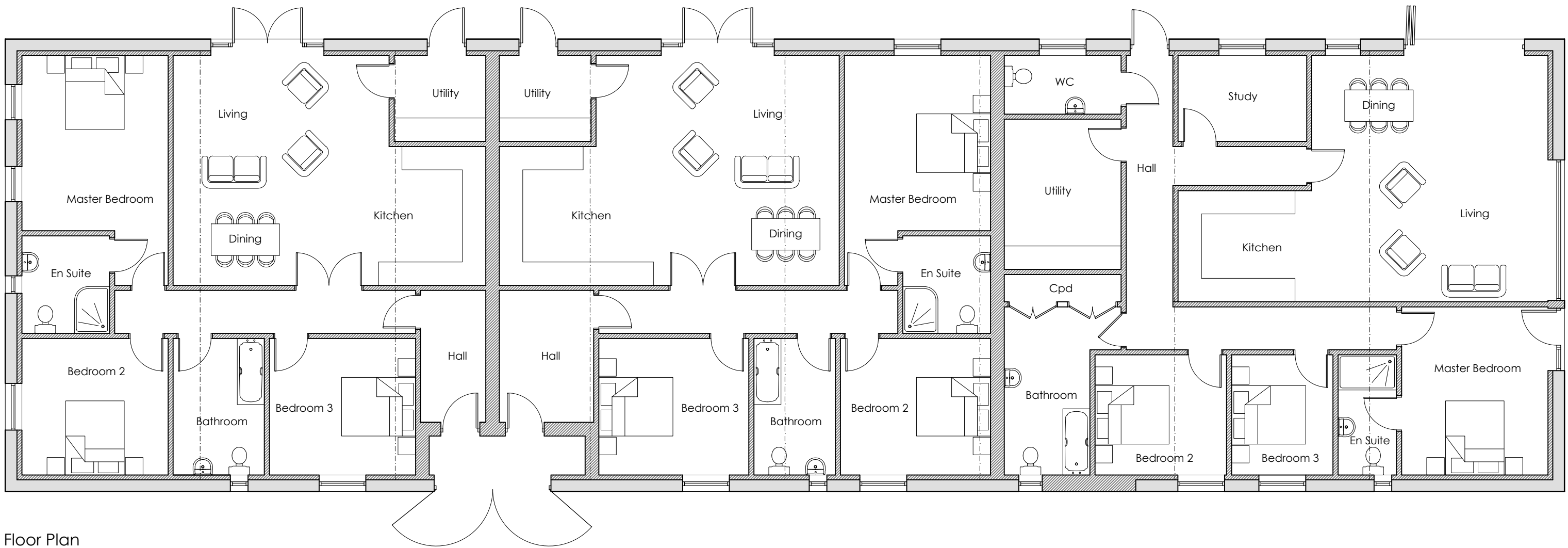
North Elevation



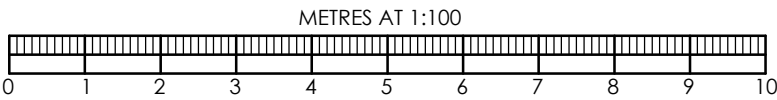
West Elevation



South Elevation



Floor Plan



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PROJECT

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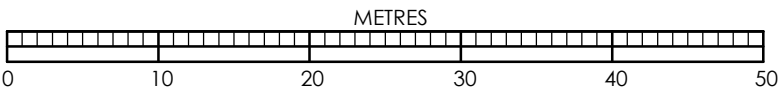
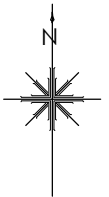
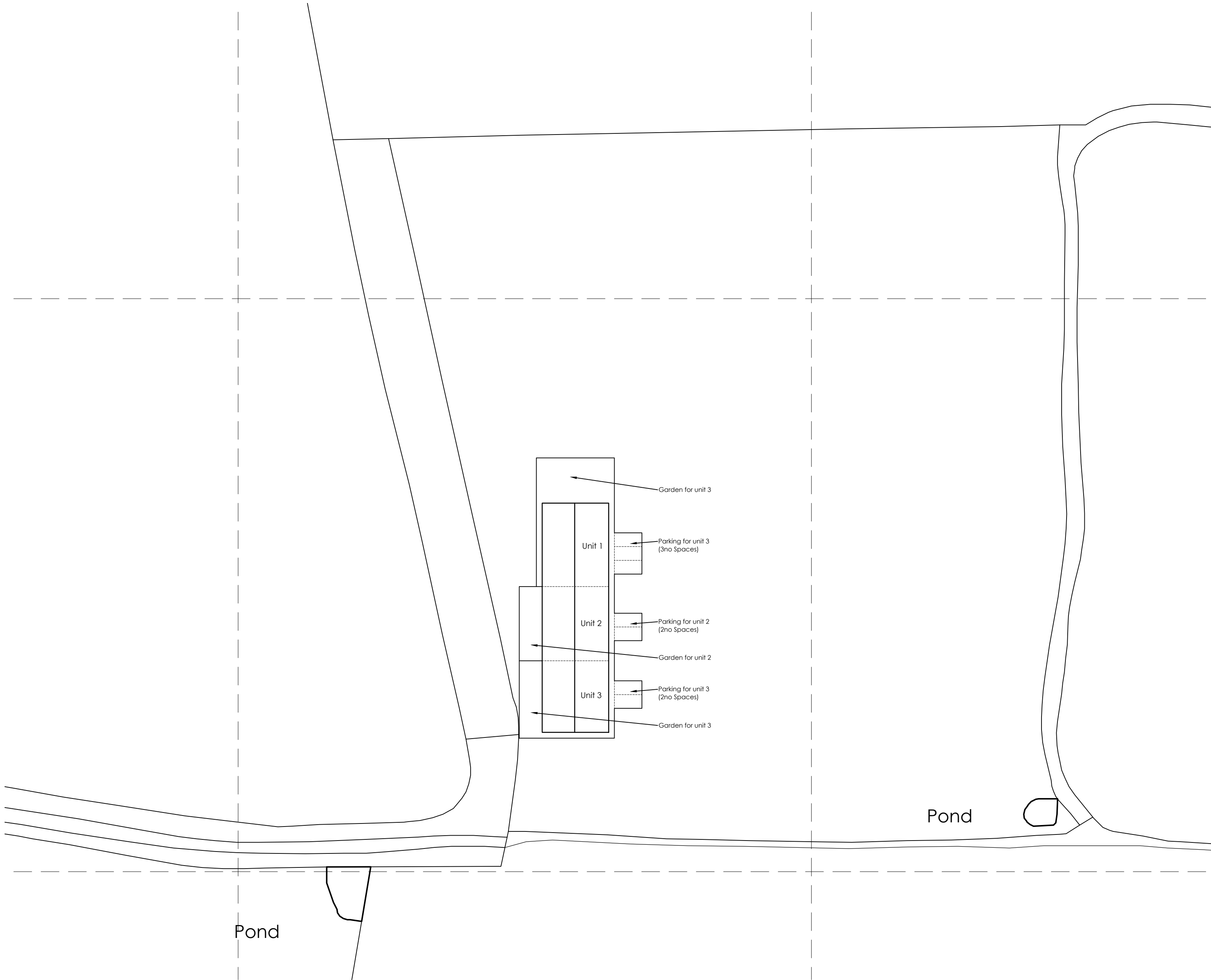
DRAWING

Proposed Floor Plan and Elevations

SCALE 1:100 @ A1

DRAWING ORIGINATOR DWR	DRAWING No.	REVISION
DATE 08.07.25	25038-1	

Rev	Drm	Date	Description
-	-	-	-



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PROJECT
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Warminster,
BA12 6BR

DRAWING
Proposed Block Plan

SCALE
1:500 @ A2

DRAWING ORIGINATOR DWR	DRAWING No.	REVISION
DATE 08.07.25	25038-2	



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