FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
BAULKIN'S DROVE, SUTTON ST JAMES

FINAL REPORT

ECL1307/ALEXANDRA DESIGN

DATE JULY 2024

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1.0 INTRODUCTION

This Flood Risk Assessment has been prepared in accordance with National Planning Policy Framework (NPPF) and supporting planning practice guidance (PPG) on Flood Risk and Coastal Change.

In areas at risk of flooding or for sites of 1 hectare or more, developers are required to undertake a site-specific Flood Risk Assessment to accompany an application for planning permission. This Flood Risk Assessment has been produced on behalf of Mr & Mrs West in respect of a development that consists of a proposed travellers plot at Baulkin's Drove, Sutton St James.

A planning application for the proposed development is to be submitted by Alexandra Design.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located at land south of The Stables, Baulkin's Drove, Sutton St James, Wisbech, PE12 0JU. The National Grid Reference of the site is 53953/31754.

The location of the site is shown in Figure 1.



Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is on the western side of Baulkin's Drove. This site consists of an area of agricultural land. The site is surrounded by agricultural land. The area of development is approximately 0.5 hectares.

Environment Agency LiDAR shows that the site is flat with ground levels typically between +1.6m OD and +1.9m OD. Baulkin's Drove carriageway to the east of the site is at a level of +2.3m OD.

The site is in the North Level Internal Drainage Board (IDB) District. Surface water at the site would naturally drain through soakaway and hence to the IDB drain system. There is a riparian drain on the eastern boundary of the site alongside Baulkin's Drove and Baulkin's Drove Drain, an IDB Drain, is 200m west of the site.

The online British Geological Survey maps indicate that the site is likely to be underlain by Ampthill Clay Formation Mudstone. The bedrock is shown to be overlain with superficial deposits of clay and silt.

2.3 Proposed Development

The proposed development consists of a traveller plot that will consist of a mobile home, dayroom and stables. Details of the proposed development are provided in Attachment 1.

2.4 Local Development Documents

The South East Lincolnshire Local Plan 2011 – 2036, adopted in March 2019, is the Local Plan for the district. Policy 4: Approach to Flood Risk states the requirements for flood risk reduction.

The South East Lincolnshire Level 1 and Level 2 Strategic Flood Risk Assessment (SFRA) was prepared in June 2017.

The Joint Lincolnshire Flood Risk and Drainage Management Strategy has been prepared by Lincolnshire County Council as the Lead Local Flood Authority. The purpose of the Strategy is to increase the safety of people across Lincolnshire by reducing the number of people at risk of flooding, increasing the resilience of local communities, and reducing the impact of flooding.

2.5 Flood Zones

The site is located within Flood Zone 3, an area with a high probability of flooding, of the Environment Agency Flood Maps for Planning as shown in Figure 2.

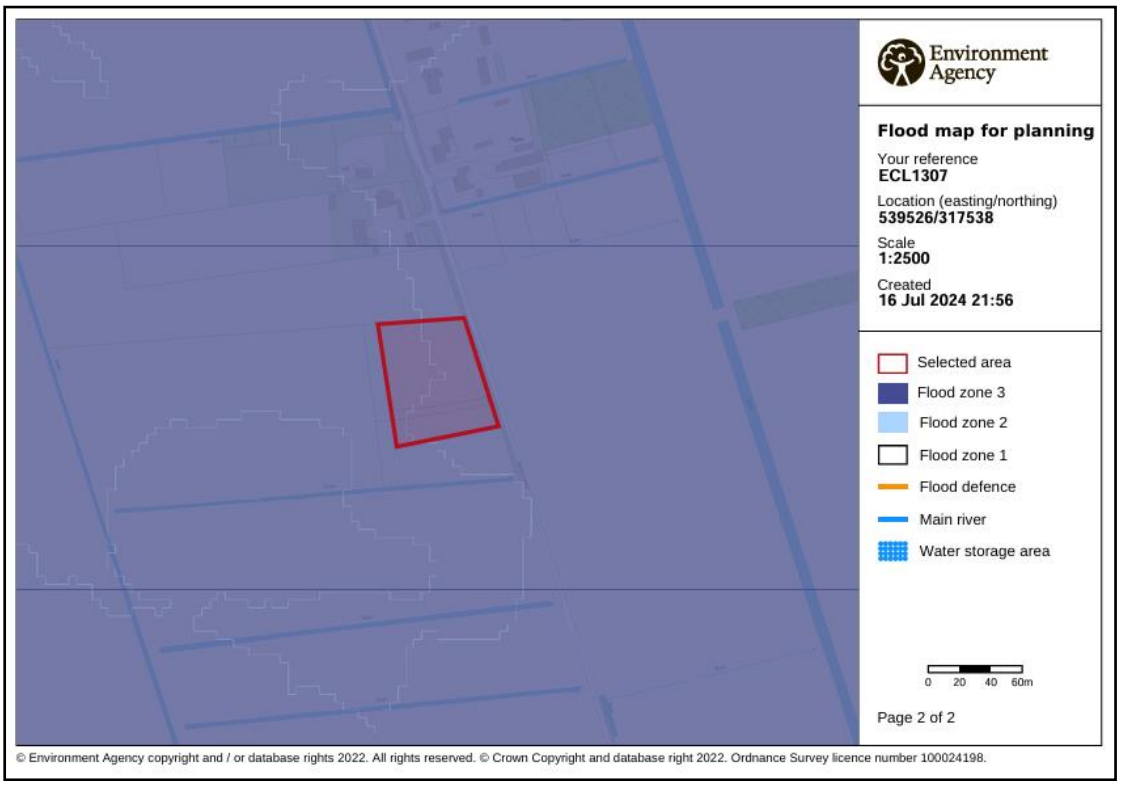


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site has a low risk of flooding from rivers or the sea (annual probability between 0.1% and 1%);
- the site has a very low risk of surface water flooding (annual probability of less than 0.1%); and
- the site is not within an area at risk of reservoir flooding.

Table 1 shows the level of risk at the site within the South East Lincolnshire SFRA.

SFRA Map	Present Day	2116
Residual Flood Hazard Map for the 1% fluvial and 0.5% tidal event	The site is outside the 'Low Hazard' area	The site is outside the 'Low Hazard' area
Residual Peak Depth Map for the 1% fluvial and 0.5% tidal	The site is outside the area at risk	The site is outside the area at risk

Table 1 – Flood Risk within SFRA Maps

3.0 FLOOD RISK VULNERABILITY

3.1 The Sequential and Exception Test

The NPPF requires the application of a Sequential Test to ensure that new development is in areas with the lowest probability of flooding.

The Exception Test is a method to demonstrate and help ensure that flood risk to people and property will be managed, while allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.

3.2 Vulnerability Classification

Table 2 of the PPG Flood Risk and Coastal Change categorises different types of uses and development according to their vulnerability to flood risk. The development is covered by the description of mobile homes intended for permanent residential use and is classified as 'Highly Vulnerable'.

Table 3 of the PPG Flood Risk and Coastal Change sets out Flood Risk Vulnerability and flood zone 'compatibility'. The site is in Flood Zone 3 and the development is 'Highly Vulnerable' therefore the development is inappropriate. Section 3.3 describes the reasons why, in this case, the development could be permitted.

PPG Flood Risk and Coastal Change defines that the lifetime of the development in terms of flood risk and coastal change is 100 years.

3.3 Application of the Sequential and Exception Test

It is for the Local Planning Authority, using the evidence provided and taking advice from the Environment Agency as appropriate, to consider whether an application passes the Sequential Test.

The application of the Sequential Test at this site, which must show that there are no other reasonably available sites at a lower flood risk in the district, should consider:

- the decision (ref H06-0233-19) for a change of use of land to provide five gypsy traveller pitches at Green Acres Park, Ropers Gate, Spalding;
- the extent of land within flood zone 2 and 3 that surrounds the site; and
- the defences that protect the site.

The decision (ref H06-0233-19) for the land at Green Acres Park was for a similar development with a change of use of land to a residential use for caravans. The principle for the approval of highly vulnerable development in Flood Zone 3 has been set the by the approval at Green Acres Park.

Large parts of the South Holland district between the River Welland and River Nene lie within Flood Zone 2 or Flood Zone 3. As such opportunities for a site within Flood

Zone 1 are limited. The defences provide protection during the 0.5% annual probability (1 in 200 chance each year) event and therefore the 'actual risk' of flooding at the site is low.

Based upon the availability of alternative sites with a lower flood risk, the level of protection at the site and the similarities between the proposed development and the site at Green Acres Park, it is considered that the Sequential Test has been met.

The Exception Test requires consideration of the wider sustainability benefits of a development and that the development would be safe and residual risks managed.

The development provides wider sustainable benefits. The provision of a traveller pitch will contribute to meeting the need for gypsy / traveller sites within the district.

Section 5 of this Flood Risk Assessment describes the flood mitigation measures and the management of the residual risks, demonstrating that this development will be safe and not increase flood risk elsewhere. The development is considered to pass the Exception Test.

4.0 SITE SPECIFIC FLOOD RISK

4.1 Local Flood Assets

The site is 7.0km west of the tidal River Nene. The site is protected by the River Nene tidal defences between Wisbech and Sutton Bridge. The River Nene is the responsibility of the Environment Agency.

There is a long-term strategy for the maintenance of the Environment Agency defences which is reviewed and updated periodically.

There is an extensive local drainage network managed by North Level IDB. There is an IDB Drain, Baulkins Drove Drain, approximately 200m west of the site. The site and the surrounding land are within the Tydd catchment and drain to Denhams Pumping Station and hence via the North Level Main Drain to Tydd Pumping Station. The Tydd Pumping Station discharges to the tidal River Nene.

During the operation and maintenance of its pumping stations, associated structures and channel systems, the IDB seeks to maintain a general standard capable of providing flood protection to its district. A routine maintenance programme is in place to ensure that the Boards assets are commensurate with the standard of protection that is sought.

Current maintenance standards of the North Level Internal Drainage Board and the Environment Agency are generally good.

4.2 Sources of Flooding

A summary of the sources of flooding is provided in Table 2.

Source of Flooding	Level of Risk
Drainage Network Flooding	The risk is assessed in Section 4.3.
Surface Water Flooding	Based upon the EA maps the risk is very low.
Fluvial Flooding	The risk is assessed in Section 4.3 and 4.5.
Tidal Flooding	The risk is assessed in Section 4.3 and 4.5.
Reservoir Flooding	Based upon the EA maps the site is not at risk of flooding from reservoirs.
Groundwater Flooding	There is no evidence to suggest the site is at risk of groundwater flooding.

Table 2 – Sources of Flooding

4.3 Probability of Flooding

The probability of flooding associated with blockages in the North Level IDB drainage system is low due to the maintenance standards achieved and managed by the IDB. Failure of Denhams Pumping Station would lead to an increased level of risk in the catchment.

Through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard capable to providing flood protection to agricultural land and developed areas of 1 in 20 years and 1 in 100 years, respectively. The risk associated with flood events that exceed the standard of protection provided is lowered due to the North Level IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

The site benefits from defences on the River Nene that provide protection during a 0.5% annual probability (1 in 200 chance each year) tidal event and a 1% annual probability (1 in 100 chance each year) fluvial event.

4.4 Historic Flooding

During the preparation of this assessment, no evidence was discovered of the site being flooded.

4.5 Climate Change

Climate change is likely to impact the site through increased rainfall intensity and duration affecting the local drainage network and increased flood levels in the River Nene.

The River Nene tidal defences have been designed to include an allowance for climate change.

In summary the existing systems and defences are appropriate for the design life of the development (i.e., 100 years).

4.6 Residual Risk

There is a residual risk of flooding in the vicinity of the site should a breach of the tidal defences occur. The South East Lincolnshire SFRA includes maps demonstrating the residual peak depth in 2116. An extract from this map is shown in Figure 3 below. When climate change allowances are applied to the 1% annual probability (1 in 100 chance each year) fluvial event and 0.5% annual probability (1 in 100 chance each year) tidal event the site is not at risk during a breach.

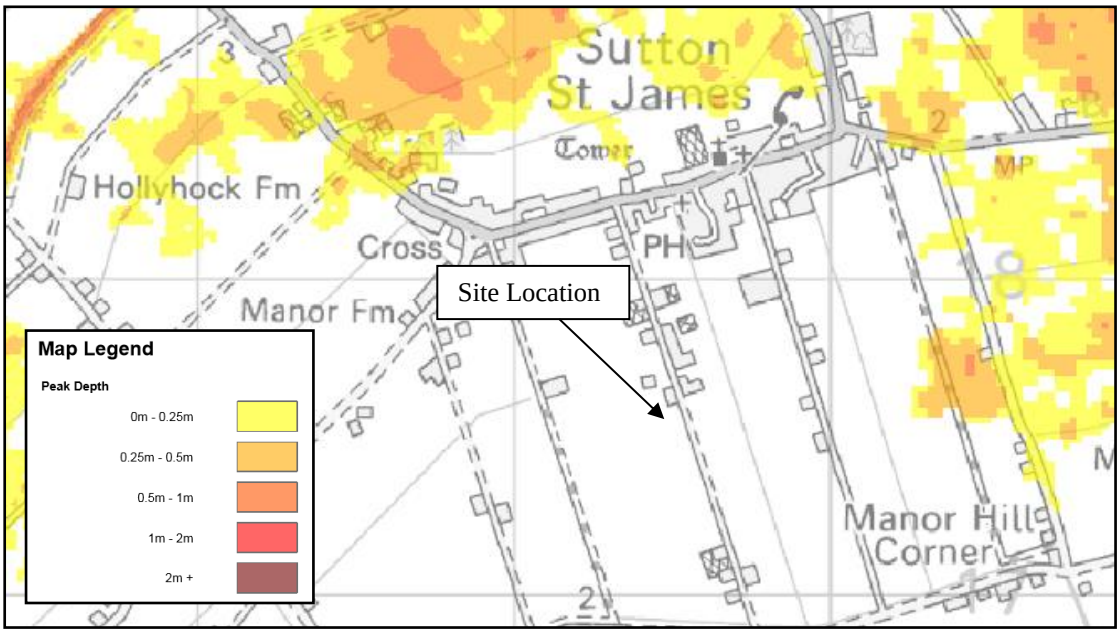


Figure 3 – SFRA 2116 Residual Peak Depth Map

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low. Failure of Denhams Pumping Station could lead to an increased level of risk at the site.

The probability of the site flooding from any Environment Agency system is less than 1% annual probability (1 in 100 chance each year) because of the standards of the existing flood defences. Over time there will be a gradual increase in risk to the site due to climate change. During the design life of the development, it is not anticipated that the site would flood.

The SFRA considers the residual risk associated with overtopping and a breach in the defences in 2116. The maps show that the site is not at risk.

The development increases the impermeable area and therefore has the potential to increase flood risk elsewhere.

5.2 Mitigation Measures

The site has a low 'actual risk' of flooding. The development has a floor level that is more than 0.3m above the ground. This is considered an appropriate finished floor level to mitigate the risk.

The developer should ensure that occupier of the site is sufficiently aware of the risk of flooding, and the standard of the existing defences. The Environment Agency operates a flood warning system for properties at risk of flooding to enable householders to protect life or take actions to manage the effect of flooding on property. Floodline Warnings Service is a national system run by the Environment Agency for broadcasting flooding warnings. The occupier of the site should register to receive flood warnings.

Should there be a failure of Denhams Pumping Station and conditions were such to put properties and land at risk of flooding, the Internal Drainage Board would take emergency action to maintain the drainage level of service by utilising temporary pumping equipment.

It is recommended that surface water run-off is managed so that stormwater from the site will not affect any adjoining properties or increase the flood risk elsewhere.

6.0 CONCLUSIONS

As a result of the assessment, the following conclusions have been reached.

- The proposed development consists of a traveller plot that will consist of a mobile home, dayroom and stables at land south of The Stables, Baulkin's Drove, Sutton St James.

- The site is located within an Internal Drainage Board catchment and through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard capable to providing flood protection to agricultural land and developed areas of 1 in 20 and 1 in 100 years, respectively.

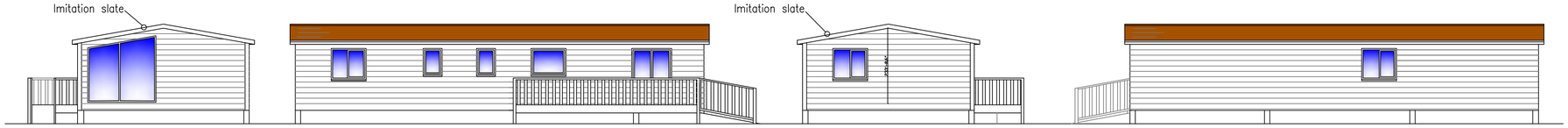
- The proposed development is in Flood Zone 3. The site benefits from defences on the tidal River Nene that provide protection during the 0.5% annual probability (1 in 200 chance each year) tidal event including an allowance for climate change. The site is not at risk during a breach of the tidal defences.

- The finished floor level of the dwelling will be more than 0.3m above the surrounding ground levels. It is recommended that the occupant receives Flood Warnings.

- The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

ATTACHMENT 1

LOCATION PLAN, SITE PLAN & FLOOR PLAN
(Dwg PL01)

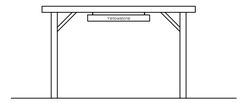


Proposed Side Elevation 1:100

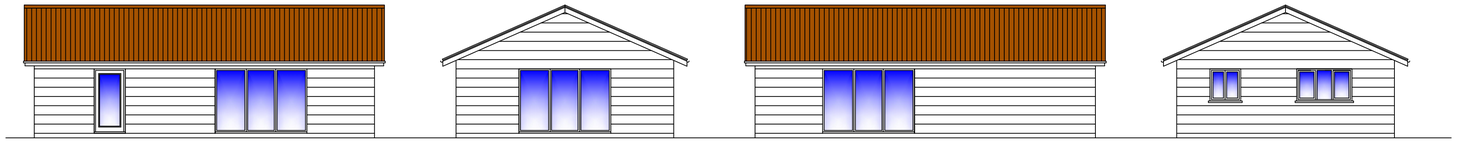
Proposed Front Elevation 1:100

Proposed Side Elevation 1:100

Proposed Rear Elevation 1:100



Proposed entrance 1:100



Proposed Front Elevation 1:100

Proposed Side Elevation 1:100

Proposed Rear Elevation 1:100

Proposed Side Elevation 1:100

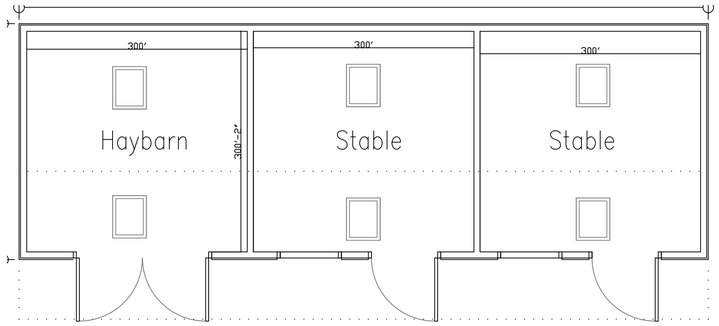


Proposed Front Elevation 1:100

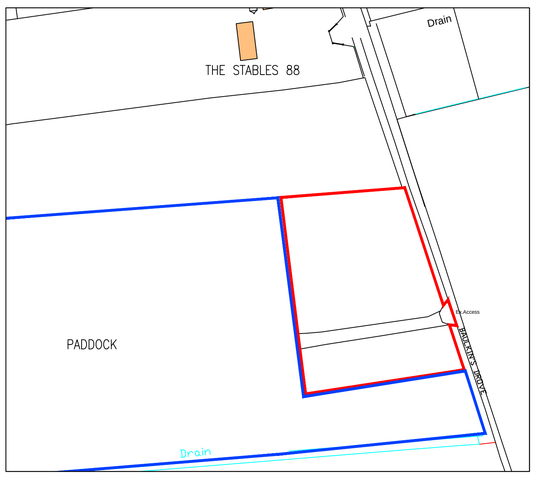
Proposed Side Elevation 1:100

Proposed Rear Elevation 1:100

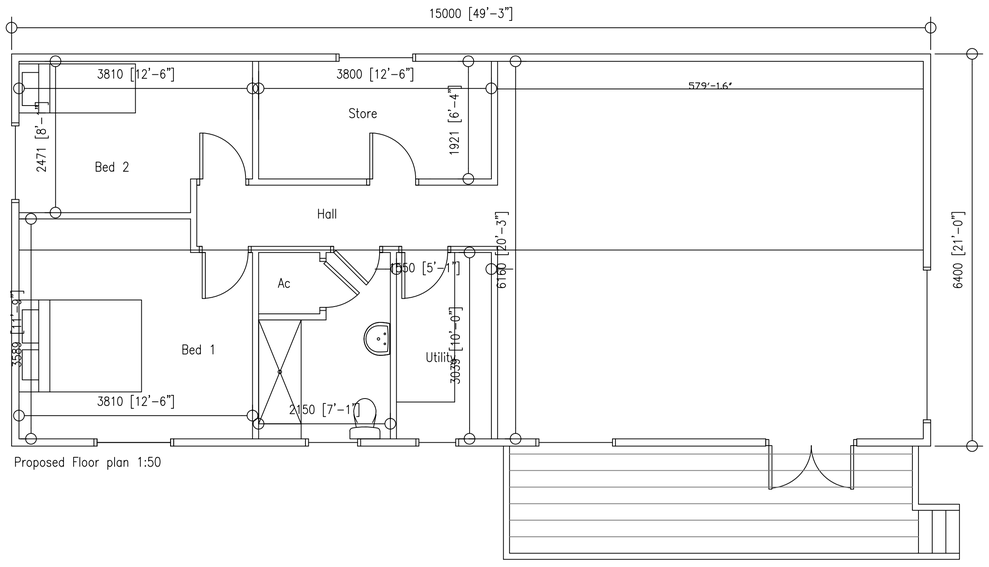
Proposed Side Elevation 1:100



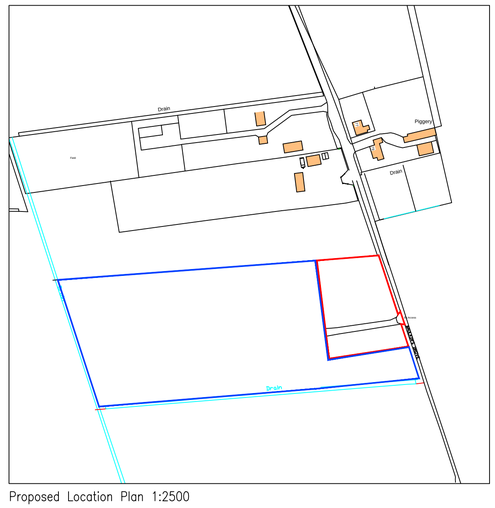
Proposed Stables Floor plan 1:50



Existing Site Plan 1:1250



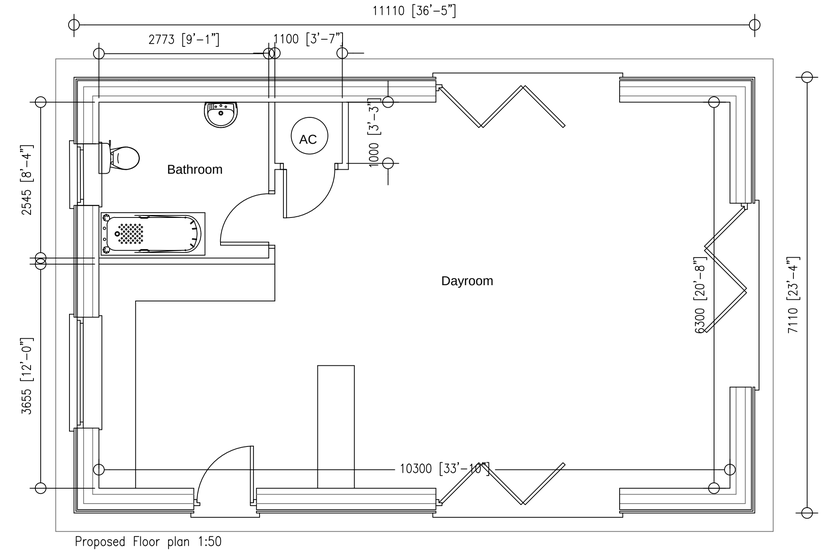
Proposed Floor plan 1:50



Proposed Location Plan 1:2500



Proposed Site Plan 1:1250



Proposed Floor plan 1:50

General Notes:

-Dimensions on all drawings are shown in "mm".
-The contractor,sub-contractor and supplies must verify all dimensions before commencement of any works on site.
-This drawing is to be read in conjunction with any relevant engineers and specialist sub-contractor drawings and specifications.

Reference:	Pages:
PL01	1

Scale:
as shown

Project:
Proposed traveller plot for disabled couple with stable and day room

Site Address:
Land South of The Stables
Baulkins Drove
Sutton st James

Client:
Mr and Mrs West
Land South of The Stables
Baulkins Drove
Sutton st James

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