FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
THE GOLDEN LION, MOULTON SEAS END

FINAL REPORT

ECL0500a/G R MERCHANT LTD

DATE APRIL 2025

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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 G R Merchant Ltd in respect of a development that consists of one residential dwelling at The Golden Lion, Seas End Road, Moulton Seas End.

A planning application for the proposed development is to be submitted by G R Merchant.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located at The Golden Lion, Seas End Road, Moulton Seas End, Spalding, Lincolnshire, PE12 6LD. The National Grid Reference of the site is 53216/32712.

The location of the site is shown in Figure 1.

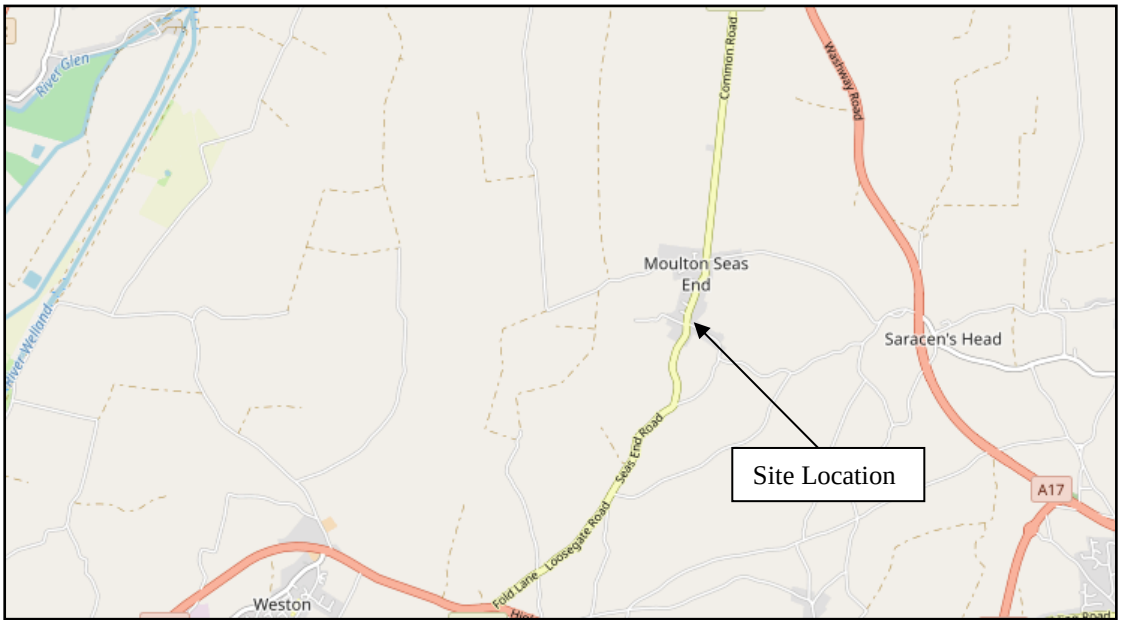


Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is located on the eastern side of Seas End Road within the curtilage of The Golden Lion public house. The site is part of the car park of the public house and is to the north of the existing building. The area of development is approximately 0.02 hectares.

Environment Agency LIDAR show that site levels vary between +3.8m OD and +3.9m. The level of Seas End Road adjacent to the site is +3.9m OD.

The site is in the South Holland Internal Drainage Board (IDB) District. Surface water at the site naturally drains through soakaway and hence to the IDB drain system. There is a riparian drain approximately 80m east of the site. The nearest IDB Watercourse is 250m east of the site.

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

2.3 Proposed Development

The proposed development consists of one new dwelling. The dwelling will have two storeys. 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

An extract from the Environment Agency Flood Map for Planning is shown in Figure 2. The site is located within Flood Zone 2, an area with a medium probability of flooding.

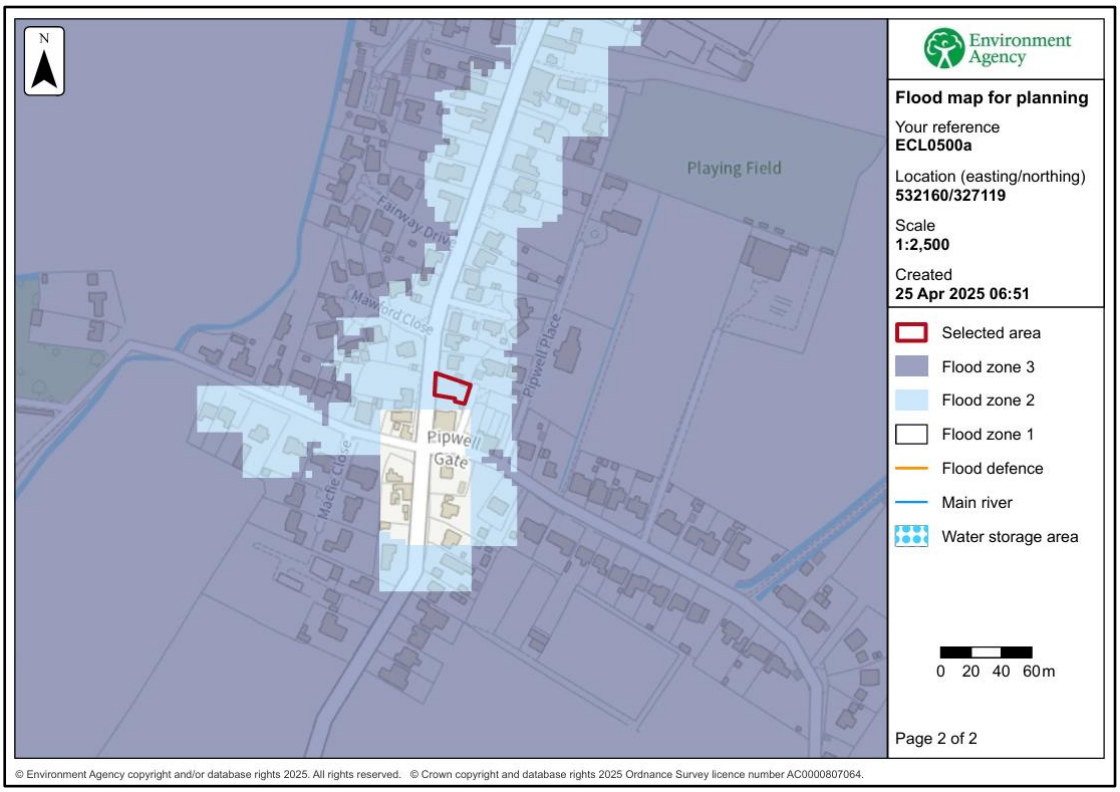


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps provide an indication of the risk from the primary sources of flooding. The details provided with these maps are summarised in Table 1. The fluvial design flood to be considered within a Flood Risk Assessment is the 1% annual probability event. As such the depths of flooding identified is the maximum depth that occurs during a low chance (between 0.1% and 1% chance each year) event.

	Present Day		2050 Epoch	
	Risk of Flooding	**Depth (Low chance)**	**Risk of Flooding**	**Depth (Low chance)**
Rivers and the Sea	The site has a medium chance (between 1% and 3.3% chance each year)	No data available	No data available	No data available
Surface Water	The site is outside the area with a low risk (between 0.1% and 1% chance each year)	Not at risk	The site is outside the area with a low risk (between 0.1% and 1% chance each year)	Not at risk
Reservoir	Outside of the area at risk.			

Table 1 – Environment Agency Long Term Flood Risk Maps

Table 2 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 event	The site is outside the area at risk of flooding.	The site is outside the area at risk of flooding.

Table 2 – 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 proposed development is covered by the description of buildings used for dwellings and is classified as 'More 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 2 and the development is 'More Vulnerable' therefore it is not necessary to complete the Exception Test.

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 Test

It is for the Local Planning Authority, taking advice from the Environment Agency as appropriate, to consider the Sequential Test.

Large parts of the South Holland district between the River Welland and River Nene lie within Flood Zone 3. As such, opportunities to undertake the development at an alternative site with a lower flood risk are limited.

The SFRA states that as it is necessary to use the refined flood risk information (hazard and depth maps) to assist with the application of the sequential test. The refined flood risk information contained within the SFRA demonstrates the site is not at risk during the present day 1% annual probability fluvial and 0.5% annual probability tidal event. The site therefore has a low probability of flooding and is considered to pass the Sequential Test.

4.0 SITE SPECIFIC FLOOD RISK

4.1 Local Flood Assets

The development site within the South Holland Internal Drainage Board is protected by the River Welland tidal defences between Spalding and Fossdyke. The defences are 4.3 km north west of the site and minimum embankment levels of +7.0m OD.

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 South Holland IDB. There is an IDB Ordinary Watercourse 250m east of the site. The site and the surrounding land are within the Lords catchment and drain in a northerly direction to discharge to the River Welland at Lords Sluice Outfall.

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 South Holland 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 3.

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 not at risk of fluvial flooding.
Tidal Flooding	The risk is assessed in Section 4.3, 4.5 and 4.6.
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 3 – Sources of Flooding

4.3 Probability of Flooding

The probability of flooding associated with blockages in the South Holland IDB drainage system is low due to the maintenance standards achieved and managed by the IDB.

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 South Holland IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

The site is within an area benefitting from defences. The River Welland tidal defences provide protection during a 0.5% annual probability (1 in 200 chance each year) event.

4.4 Historic Flooding

During the preparation of this assessment, no evidence was discovered of the site being flooded. Previous historic rainfall events of 1968 and 1978, estimated to be greater than 1% annual probability (1 in 100 chance each year), caused no flooding to any residential properties.

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 tide levels.

The flood level in the River Welland at Fossdyke during the 0.5% annual probability (1 in 200 chance each year) event inclusive of climate change to 2069 is estimated to be 6.41m AOD. The minimum defence level of the River Welland embankments is 7.0m AOD.

In summary the site is not at risk for the design life of the development (i.e., 100 years).

4.6 Residual Risk

The South East Lincolnshire SFRA includes maps demonstrating the impact of climate change in 2116. The Residual Peak Depth maps within the SFRA indicate the maximum flood depths associated with a breach of the tidal defences. These show that when the climate change allowances are applied to the combination of a 1% annual probability (1 in 100 chance each year) fluvial event and a 0.5% annual probability (1 in 100 chance each year) tidal event the site is not at risk.

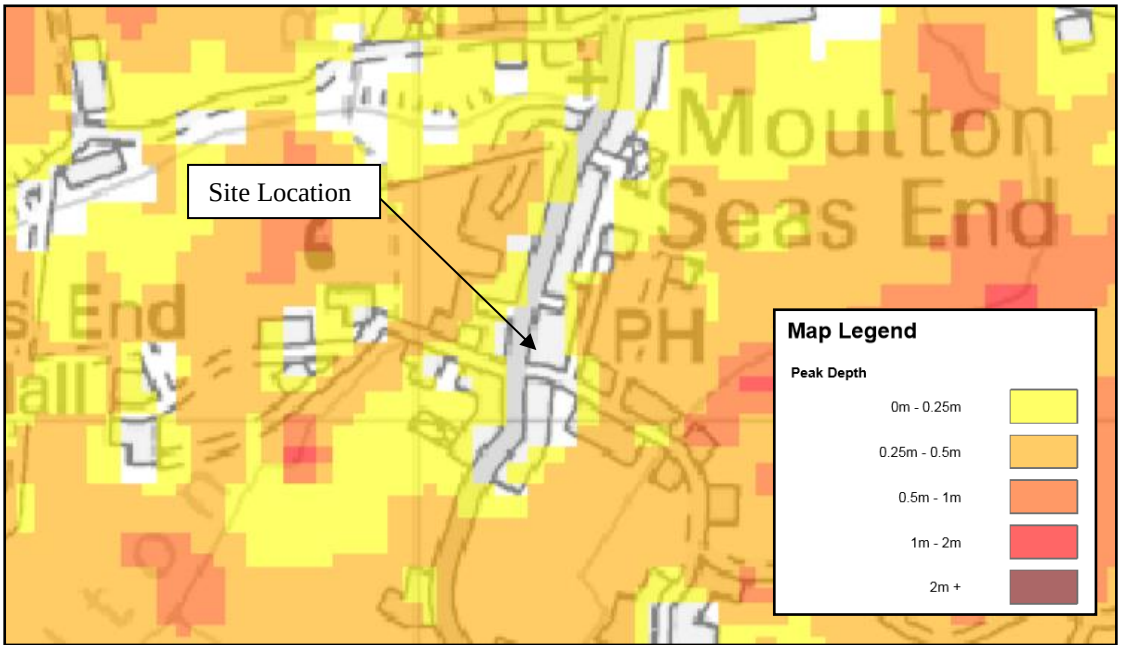


Figure 3 – SFRA 2115 Residual Peak Depth Map during the 1% fluvial and 0.5% tidal Annual Probability Event

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low. Failure of Lords Sluice Outfall 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 0.5% annual probability (1 in 200 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 from overtopping of the defences.

The SFRA considers the residual risk associated with a breach in the defences. The maps show that the site is not at risk of flooding during the 1% annual probability (1 in 100 chance each year) fluvial event and 0.5% annual probability (1 in 200 chance each year) tidal event.

The proposed development increases the impermeable area and therefore has the potential to increase the rate of surface water runoff from the site.

5.2 Mitigation Measures

The site has a low 'actual risk' of flooding. Based upon the information available during the preparation of this flood risk assessment, it is recommended that the floor level of dwelling is 0.3m above surrounding site levels. It is recommended that there is flood resilient construction to a height 0.3m above finished floor level.

The risk of flooding is also mitigated by the proposed development having two storeys. Sleeping accommodation will be on the first floor above the potential flood level.

The developer should ensure that the eventual occupier of the dwelling 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 dwelling should register to receive flood warnings.

During an exceedance event it is anticipated that sufficient time would be available to take precautionary actions to limit the potential impact of flooding.

Should there be a failure of Lords Sluice Outfall 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 using temporary pumping equipment.

It is recommended that surface water run-off is managed so that stormwater from the development 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 one 2 storey residential dwelling at the Golden Lion, Seas End Road, Moulton on Sea.

- 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.

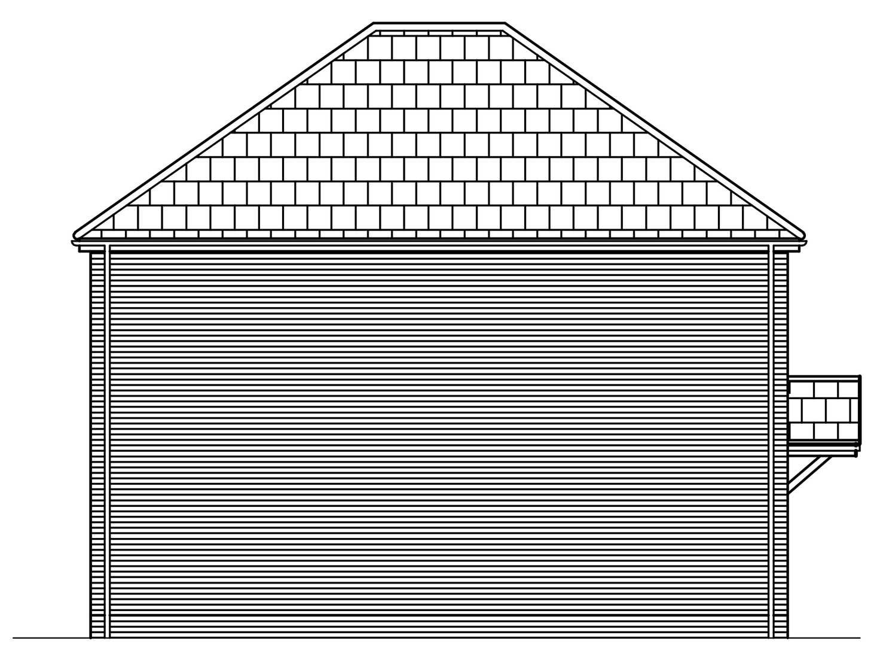
- The proposed development is in Flood Zone 2. The site benefits from defences on the River Welland which provide protection during the 1% annual probability (1 in 100 chance each year) fluvial event and 0.5% annual probability (1 in 200) tidal event including climate change. The site is not at risk during a breach of the defences.

- It is recommended that the finished floor level of the dwelling is 0.3m above surrounding site levels and there should be 0.3m of flood resilient construction above finished floor level.

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

ATTACHMENT 1

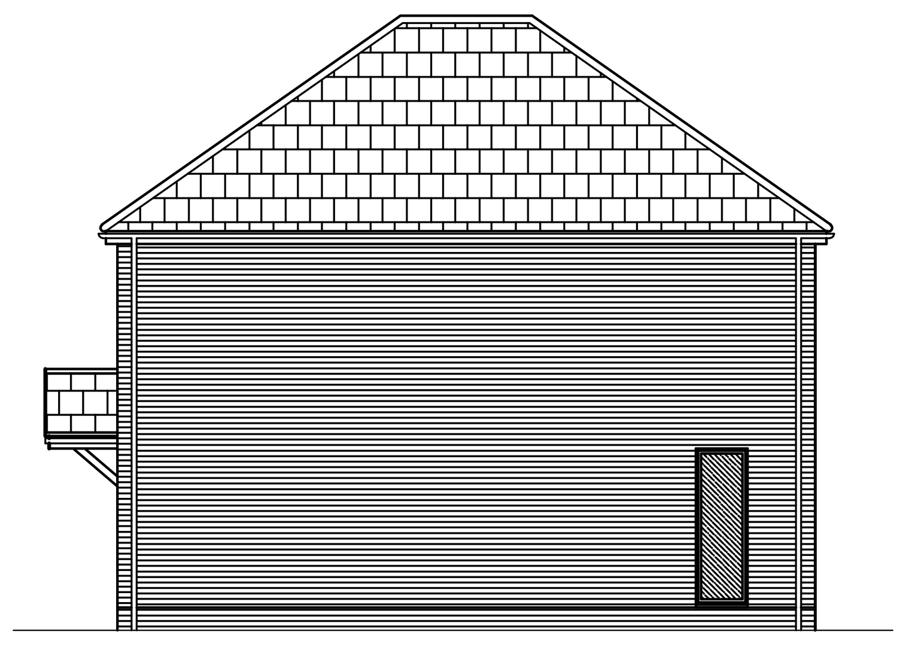
FLOOR PLANS AND ELEVATIONS, SITE AND LOCATION PLAN (Dwg 3840-21-01C)



SIDE ELEVATION

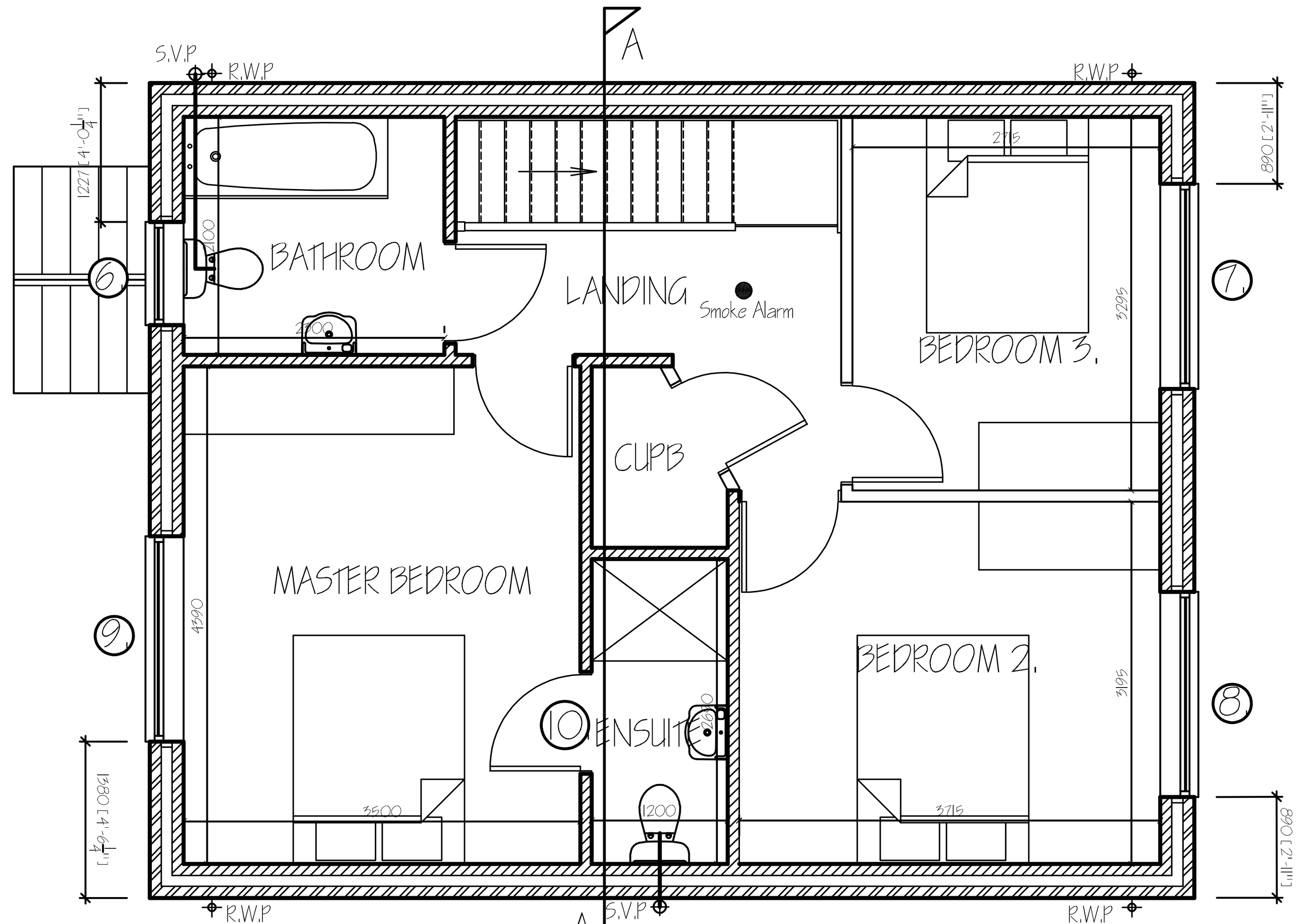
REAR ELEVATION

FRONT ELEVATION

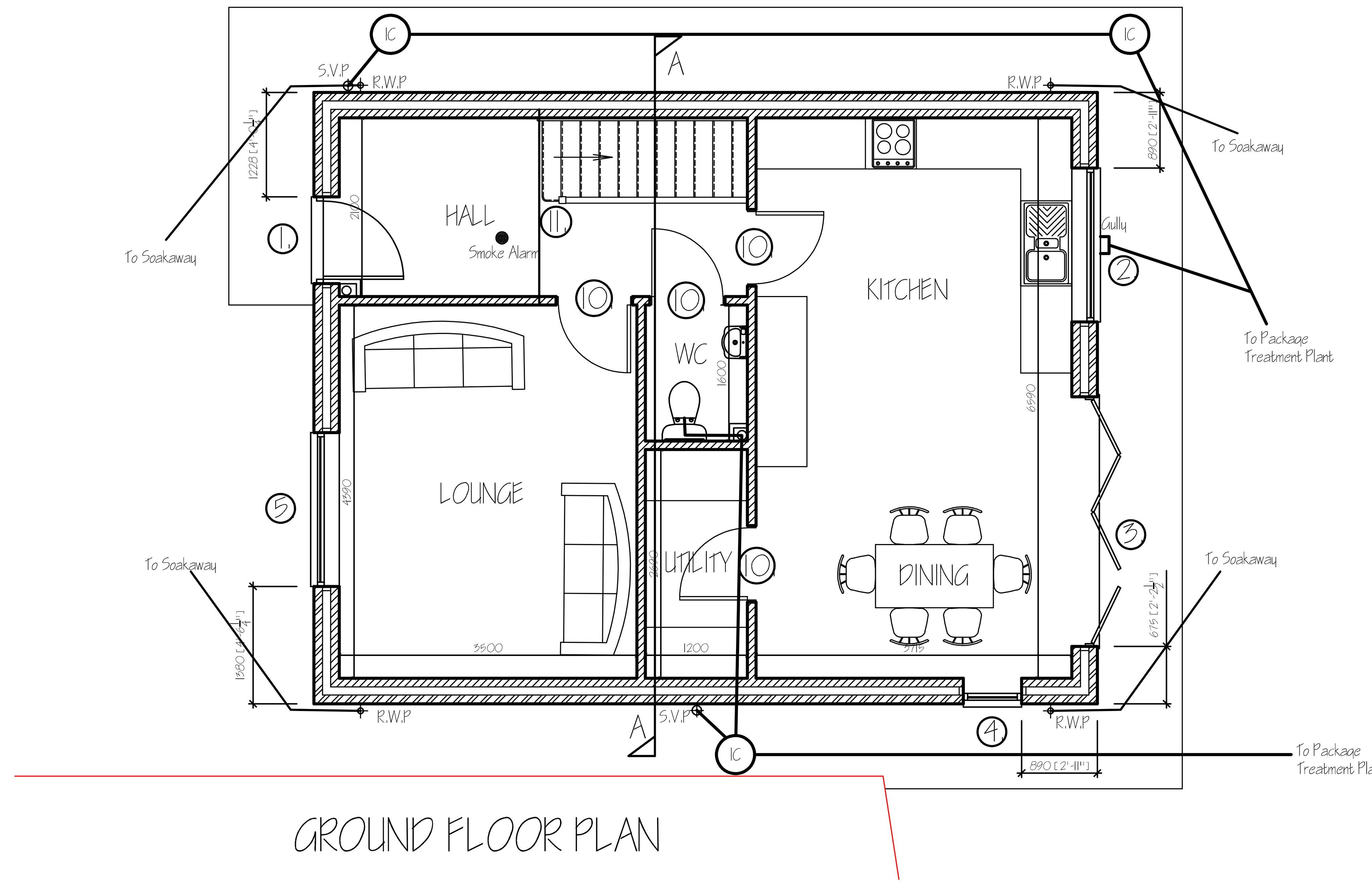


SIDE ELEVATION

LOCATION PLAN 1:1250



FIRST FLOOR PLAN



GROUND FLOOR PLAN

LANDSCAPING, TREE PLANTING & FENCING SCHEME.

- A - Existing frontage wall & pillars
- B - Existing wall increases in height
- C - Existing 1.8m high close boarded fence
- D - Proposed 1.8m high close boarded fence
- E - Shrubbery areas with native species
- F - Gravel driveway and turning area
- G - Slabbed patio and footpath
- H - Flowering Cherry (Prunus Accolade) - Feathered

All planting to be in accordance with BS 4428:1989 and amendment No. 1 (1991)

All trees to be planted with minimum 0.6m plastic mulch mat and to be staked, tied and tubed.

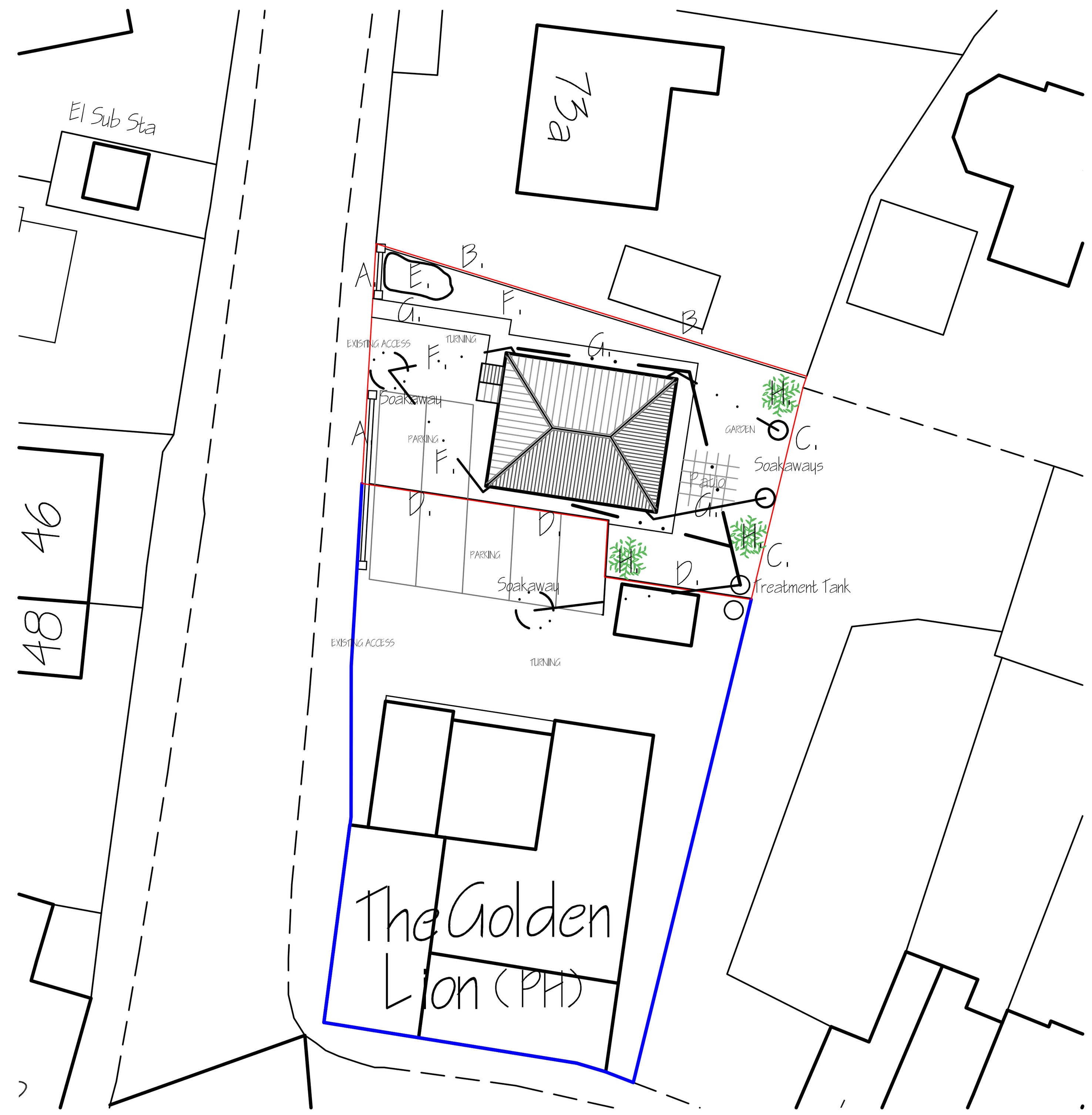
1/3 to ½ bag of peat free tree and shrub planting compost to be incorporated into backfill for each tree hole.

Domestic Ventilation Design Assessment for compliance with requirement F1 (1) of the Building Regulations 2010: -

Ref	Opening Description	Room Description	Minimum Ventilator Required	Ventilator Positions	Ventilators Per Position	Background Ventilation (mm2)	Total Required Ventilation (mm2)
2	Window	Kitchen	5000	1	3	5000	15000
3	Bi-Fold Doors	Dining Area	5000	1	3	5000	15000
5	Window	Lounge	5000	1	3	5000	15000
6	Window	Bathroom	2500	1	2	5000	10000
7	Window	Bedroom 3	5000	1	3	5000	15000
8	Window	Bedroom 2.	5000	1	3	5000	15000
9	Window	Master Bedroom	5000	1	3	5000	15000
						Total Ventilator EA provided to meet whole house dwelling background Ventilation Compliance	100,000

New Opening schedule: -

Ref	Opening Description	Opening Size	Lintel Type	Lintel Length	Secure Door & Window
1	Entrance Door	1022.5w x 2100h	Keystone HD / K-90	1350mm	Yes
2	UPVC Window	1810w x 1050h	Keystone HD / K-90	2250mm	Yes
3	Bi-Fold Doors	2935w x 2100h	Keystone HD / K-90	3250mm	Yes
4	UPVC Window	685w x 2100h	Keystone S / K-90	1050mm	Yes
5	UPVC Window	1810w x 1350h	Keystone HD / K-90	2250mm	Yes
6	UPVC Window	910w x 1050h	Keystone S / K-90	1350mm	Yes
7	UPVC Window	1810w x 1200h	Keystone HD / K-90	2250mm	
8	UPVC Window	1810w x 1200h	Keystone HD / K-90	2250mm	
9	UPVC Window	1810w x 1200h	Keystone HD / K-90	2250mm	
10	Internal Door Opening	910w x 1950h	Keystone HD / BOX 100	1350mm	
11	Internal Beam Support	2100w x 2600h	127 X 76 X 13 UB	2300mm	



SITE PLAN 1:250

ref:	revision	date
C	BUILDING REGULATIONS AMENDMENTS	DEC '2021.
B	BUILDING REGULATIONS APPLICATION	DEC '2021.
A	PLANNING DETAILS ADDED	MAY 2021.

G. R. MERCHANT LTD.
I.ENG AMICE FIWO

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Project
RESIDENTIAL DEVELOPMENT
ADJ: THE GOLDEN LION PUBLIC HOUSE
SEAS END ROAD, MOULTON SEAS END
SPALDING, LINCS PE12 6LD

Client
R MURREY & P SUMMERFIELD

Drawing
FLOOR PLANS & ELEVATIONS
SITE & LOCATION PLAN

Job Ref. 3840-21.
Drawing No. 01C.
Date MAY 2021.
Drawn SLD.
Scales 1/50 1/100 (otherwise stated).

DO NOT SCALE FROM THIS DRAWING