FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
COMMON ROAD, WHAPLODE DROVE

FINAL REPORT

ECL0825/STATUS DESIGN

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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 Status Design in respect of a development that consists of a residential dwelling at Common Road, Whaplode Drove.

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

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located on land adjacent to Conway, Common Road, Whaplode Drove, Spalding, PE12 0UF. The National Grid Reference of the site is 53142/31190.

The location of the site is shown in Figure 1.

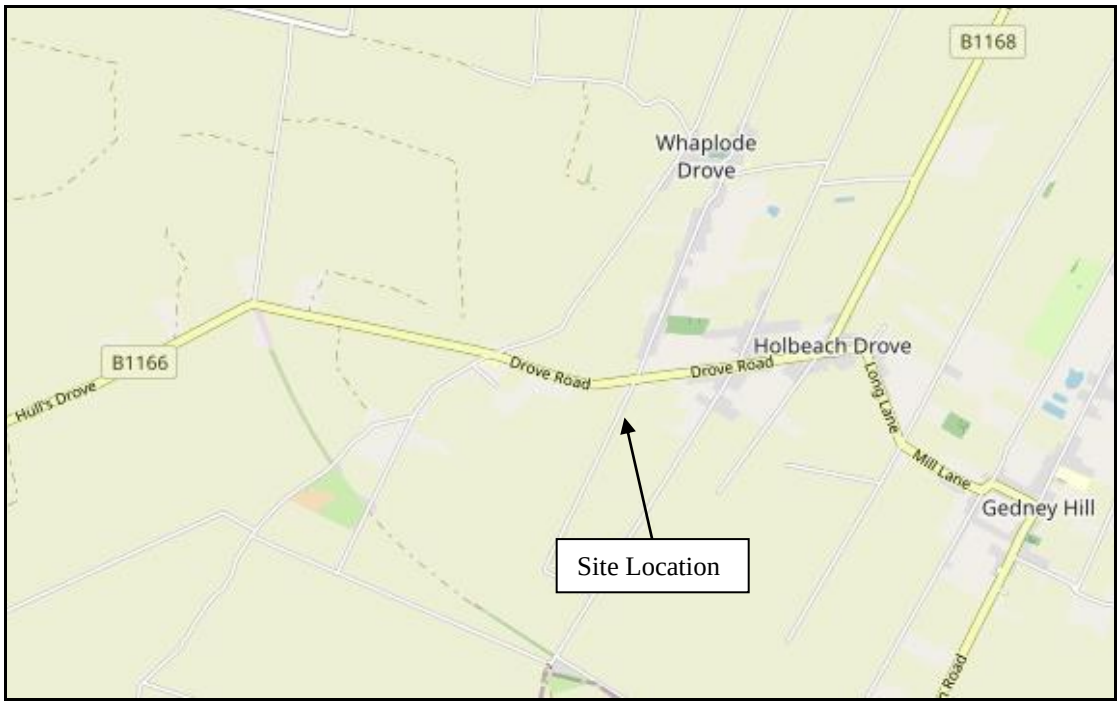


Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is on the eastern side of Common Road. The site is part of the garden of Conway, a residential dwelling. There is agricultural land to the east and south of the site and Conway is to the north. The area of development is 0.12 hectares.

Environment Agency LiDAR Data shows that ground levels within the site are between +1.3m OD and +1.6m OD. Common Drove adjacent to the site is at +2.2m OD. The surrounding agricultural land is typically between +1.0m OD and +1.5m OD.

The site is in the South Holland Internal Drainage Board (IDB) District. Surface water at the site would naturally drain through soakaway and hence to the IDB drainage system. There is a riparian drain to the south of the site on the eastern side of Common Road and on the northern boundary of Conway. There is an IDB Ordinary Watercourse 200m east of the site.

The online British Geological Survey maps indicate that the site is likely to be underlain by Oxford 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 residential dwelling. The dwelling will be single storey. A Site Plan of the proposed development is 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 3, an area with a high probability of flooding.

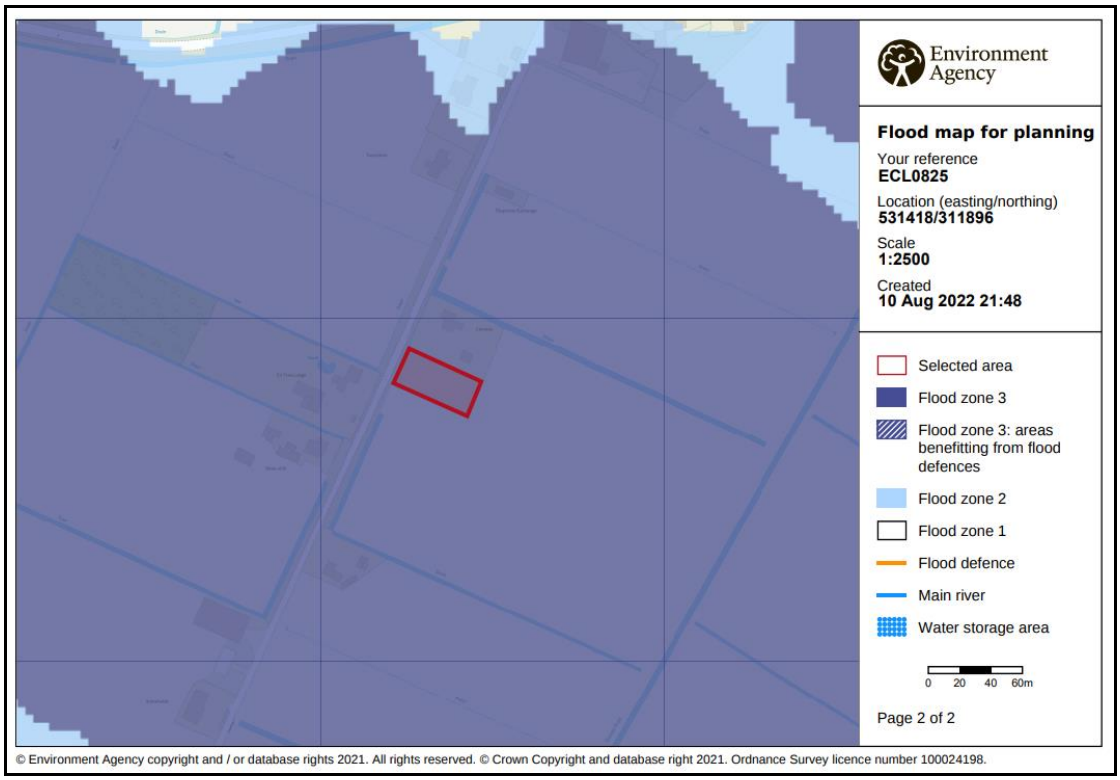


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site has a medium risk of flooding from rivers or the sea (annual probability between 1% and 3.3%);
- 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 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 within Flood Zone 3 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 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.

Large parts of the South Holland district between the River Welland and River Nene lie within Flood Zone 3. As such, the opportunities to undertake the development at an alternative site with a lower flood risk are limited. The River Nene and River Welland have defences that provide protection during the 0.5% annual probability (1 in 200 chance each year) event.

The SFRA states that 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 that the site is not at risk during the 1% annual probability event in 2115 with breaches. Based upon the SFRA and the standard of protection provided by the Environment Agency defences the site is considered to pass the Sequential Test.

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 Local Plan has a target of a net increase of at least 11,681 dwellings in South Holland over the 25-year local plan period. The Plan considers this new housing is required to ensure the sustainability of the Local Plan area. The proposed development will contribute to this target.

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 12km north west of the River Nene. The site is protected by the River Nene defences between Dog in a Doublet and Guyhirn.

The site is 6.6km east of the River Welland. Crowland Washes provides floodplain storage for the River Welland. The land to the east of the River Welland is protected from the River Welland and Crowland Washes by the Corporation Bank.

The River Nene and River Welland are 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 South Holland IDB. There is an IDB Ordinary Watercourse 1200m east of the site. The site and the surrounding land are within the Fleet Fen catchment and drain to Fleet Fen Pumping Station which discharges to the South Holland Main Drain. The South Holland Main Drain discharges to the tidal River Nene at Sutton Bridge Tidal Sluice.

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

The potential sources of flooding that have been identified during this assessment are:

- local blockages to the South Holland IDB drainage system;
- an event in the local drainage network greater that exceeds the standard of protection;
- failure of Fleet Fen Pumping Station; and
- overtopping and/or breaching of the River Welland or River Nene.

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 benefits from defences on the River Nene and River Welland 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 and River Welland 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 South Holland IBD area should a breach of the tidal defences occur. The South East Lincolnshire SFRA includes maps demonstrating the residual peak depth in 2116. 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 200 chance each year) tidal event the site is not at risk during a breach.

The proposed development is for a single storey dwelling and therefore the finished floor level within the dwelling needs to consider the 0.1% annual probability (1 in 1000 chance each year) event in 2115. The South East Lincolnshire SFRA includes 0.1% annual probability (1 in 1000 chance each year) maps for specific locations, but these do not cover the site. Through a comparison of the flood depths in the areas covered by the maps during the 0.5% and 0.1% annual probability events for 2115 it can be estimated that flood depths are 0.1m higher for the more extreme event. Based upon the elevation of the site the development is not at risk during the more extreme 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 Fleet Fen 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 2115. 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. Based upon the information available during the preparation of this flood risk assessment, to mitigate against the remote risk of flooding, it is recommended that the floor level of the dwelling is 0.3m above surrounding ground level. Furthermore, there should be 0.3m of flood resilient construction above finished floor 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 dwellings should register to receive flood warnings.

Should there be a failure of Fleet Fen 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 using 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 single storey dwelling on Common Road, Whaplode Drove, Spalding.

- 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 River Nene and River Welland 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.

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

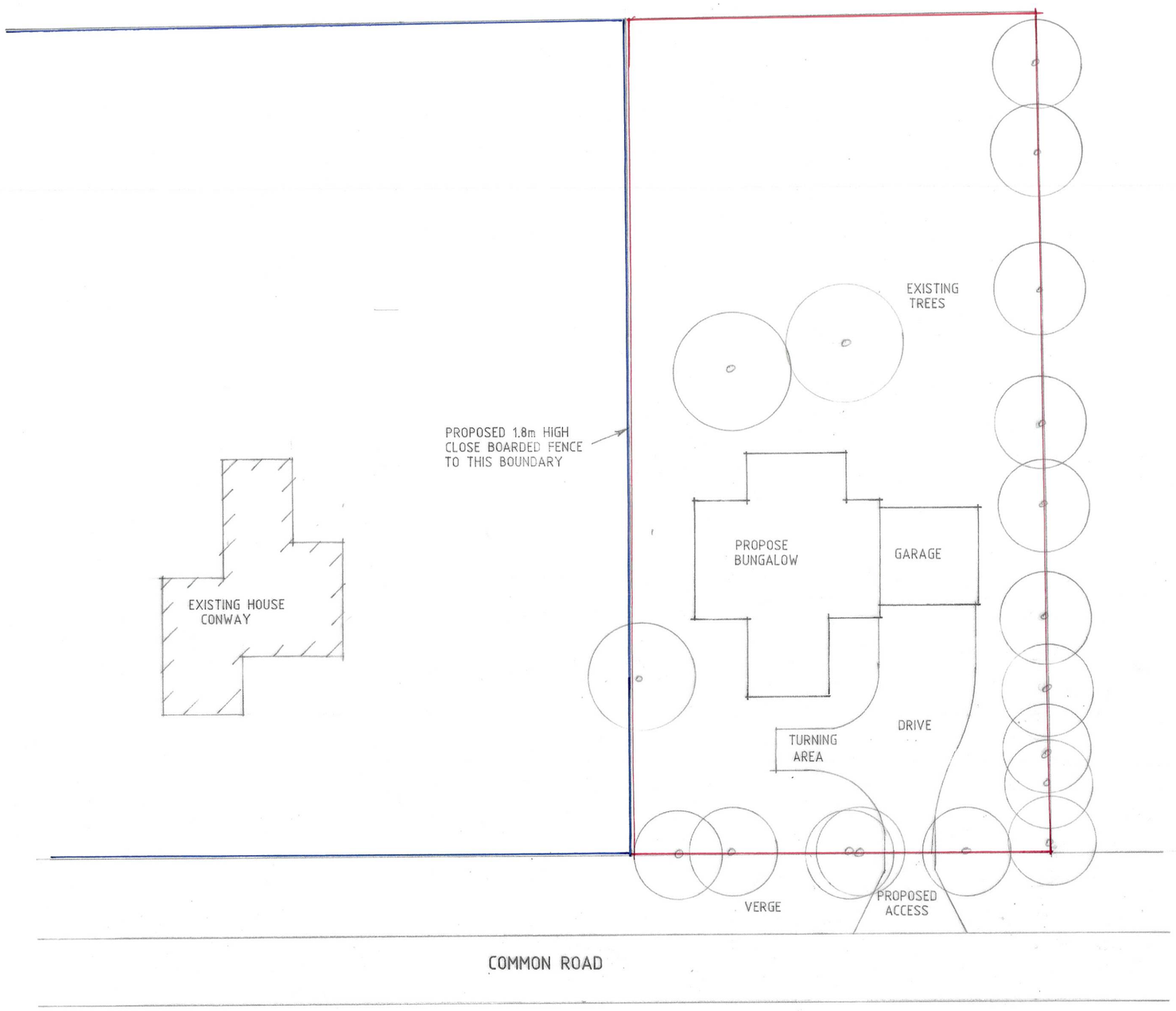
- The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

ATTACHMENT 1

SITE PLAN
(DWG SD22-025/1)

NOTE

THIS IS AN INDICATIVE LAYOUT ONLY



SITE PLAN

General Notes.

Do not scale from this drawing

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The General Contractor is to check all dimensions on site and report discrepancies to the Architect.

All details shown on this drawing are based upon typical site conditions related to the area. No responsibility can be accepted for abnormal conditions unless reported to the Architects so that design amendments may be considered. Site soil surveys are recommended in respect of foundations to establish specific site conditions before foundation work is undertaken.

Please note this drawing is not a conveyance drawing.

Proposed on-site soakaways to be maintained by the owner for the life duration of the property.

This drawing is limited in the amount of information contained and does not purport to contain a full specification of the works. It is solely for the purpose of obtaining Planning and Building Regulations approvals. This drawing must not be used in a contract document alone. The works will not be supervised or inspected by Status Design unless specifically contracted to do so. It is the client or their agent's responsibility to control workmanship, substitution of materials, adherence to specification, variations to contract, etc.

All materials to be new unless stated otherwise and all components and materials, etc. to be used, fitted and installed, etc. in strict accordance with manufacturers' instructions and relevant Code of Practice. Materials should conform to appropriate British Standard specifications or BBA Certificate or European Code equivalent.

The Employer/Client shall ensure that the selected contractor is competent to and adopts all measures necessary to achieve compliance with Health and Safety Legislation for Building Sites and Work Places. The Employer/Client is advised that should the works need to comply with the Construction Design and Management Regulations 2015 (CDM) and Health and Safety at Work etc., Act 1974 (HSW Act) an independent Planning Supervisor will be required, whom should be supplied with a set of all relevant drawings, etc.

The works shall comprise of all that shown on the drawings and information, etc. Works that may not specifically be shown but may be reasonably inferred as necessary to carry on the works shall be deemed to be included.

These notes relate to this drawing and all associated drawings.

It is the property/landowner's responsibility to be aware of the Party Wall, etc. Act 1996 when building or carrying out alterations in close proximity to adjoining neighbour's boundaries.

Status DESIGN
CONSULTANTS IN ARCHITECTURE & PLANNING

PROPOSED BUNGALOW ADJ.. CONWAY, COMMON ROAD, WHAPLODE DROVE FOR

MR. R. McNAB.

SITE PLAN

1:200	SD22-025/1
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