

**FLOOD RISK ASSESSMENT
FOR A CHANGE OF USE AT
DOZEN'S BANK, WEST PINCHBECK, SPALDING**

FINAL REPORT

ECL0644b/G R MERCHANT LTD

DATE SEPTEMBER 2022

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CONTENTS

1.0 INTRODUCTION

2.0 SITE LOCATION AND DESCRIPTION

- 2.1 Site Location
- 2.2 Existing Site
- 2.3 Proposed Development
- 2.4 Local Development Documents
- 2.5 Available Flood Risk Information

3.0 FLOOD RISK VULNERABILITY

- 3.1 The Sequential and Exception Test
- 3.2 Vulnerability Classification
- 3.3 Application of the Sequential Test

4.0 SITE SPECIFIC FLOOD RISK

- 4.1 Local Flood Assets
- 4.2 Sources of Flooding
- 4.3 Probability of Flooding
- 4.4 Historic Flooding
- 4.5 Climate Change
- 4.6 Residual Risk

5.0 FLOOD RISK MITIGATION

- 5.1 Summary of Risks
- 5.2 Mitigation Measures

6.0 CONCLUSIONS

ATTACHMENT 1 – Topographical Survey (Dwg 8801-1)

ATTACHMENT 2 – Location & Site Plan (Dwg 3910-21-01D)

ATTACHMENT 3 – Evacuation Plan

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This document has been prepared solely as a Flood Risk Assessment in support of a planning application for a proposed change of use at Dozen's Bank, West Pinchbeck, Spalding. "Ellingham Consulting Ltd" accepts no responsibility or liability whatsoever for any use made of this document other than by the client "Mr T Breaker" for the purposes it was originally commissioned and prepared. All comments and opinions made are based upon information available to "Ellingham Consulting Ltd" during the necessary investigative process, and the conclusions and recommendations, could therefore, differ in the event of material subsequently being found erroneous, incomplete, or misleading. "Ellingham Consulting Ltd" therefore, accepts no liability should this prove to be the case.

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 T Breaker in respect of a development that consists of a change of use of agricultural land to form an extension to a caravan park at Dozen's Bank, West Pinchbeck, Spalding.

A planning application for the proposed development has been submitted by G R Merchant Ltd.

This Flood Risk Assessment:

- addresses the comments received from South Holland District Council on 16 March 2022;
- includes a topographic survey so that the flood depths can be estimated
- includes a comparison of reasonably available sites to satisfy the Sequential Test; and
- reflects an updated site boundary.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located at Lake Ross, Dozen's Bank, West Pinchbeck, Spalding, Lincolnshire, PE11 3NA. The National Grid Reference of the site is 52116/32221.

The location of the site is shown in Figure 1.

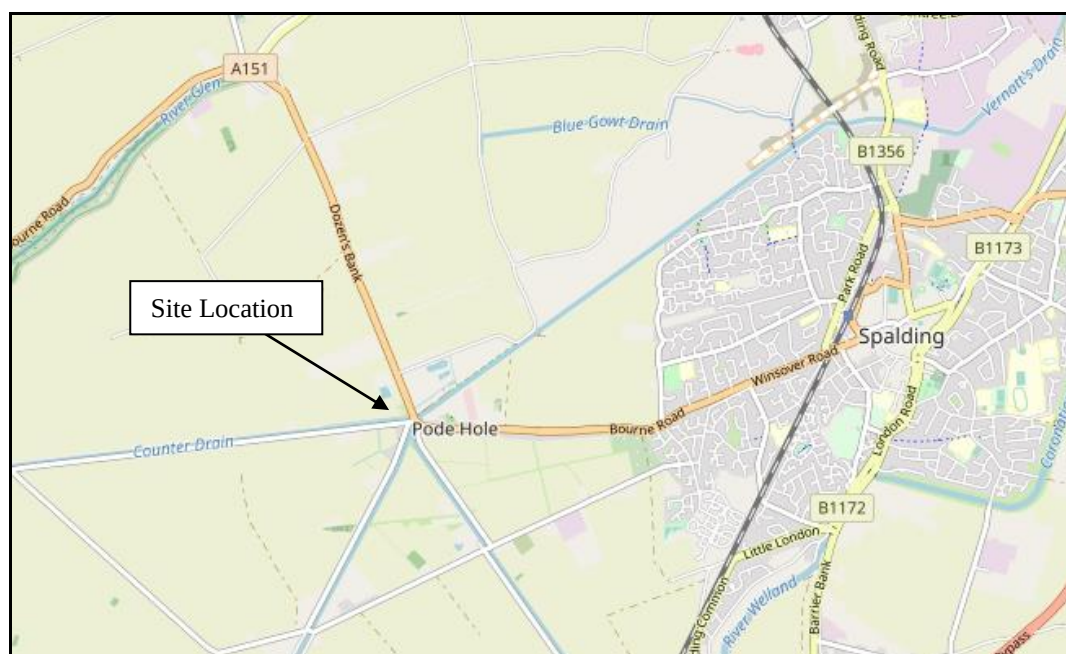


Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is on the western side of Dozen's Bank to the north of Pote Hall. The site consists of a residential dwelling, a caravan park including club house and amenities block, and agricultural land. The area of development is approximately 0.97 hectares.

A topographic survey has been undertaken and spot levels are shown in Attachment 1. The survey shows that the typical ground level within the area of the proposed caravans is typically +1.8m OD.

The site is in the Welland and Deepings Internal Drainage Board (IDB) District. Surface water at the site would naturally drain through soakaway and hence to the riparian drainage network and then to the Board's main drain system. There is a riparian drain on the western side of Dozen's Bank. The nearest Board Drain, the Fourth District Main Drain, is 200m south 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 change of use of agricultural land to form and extension to a caravan park. The development consists of static homes, touring caravan pitches, a toilet and amenity block and a new access. Details of the proposed development are provided in Attachment 2.

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 Available Flood Risk Information

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.

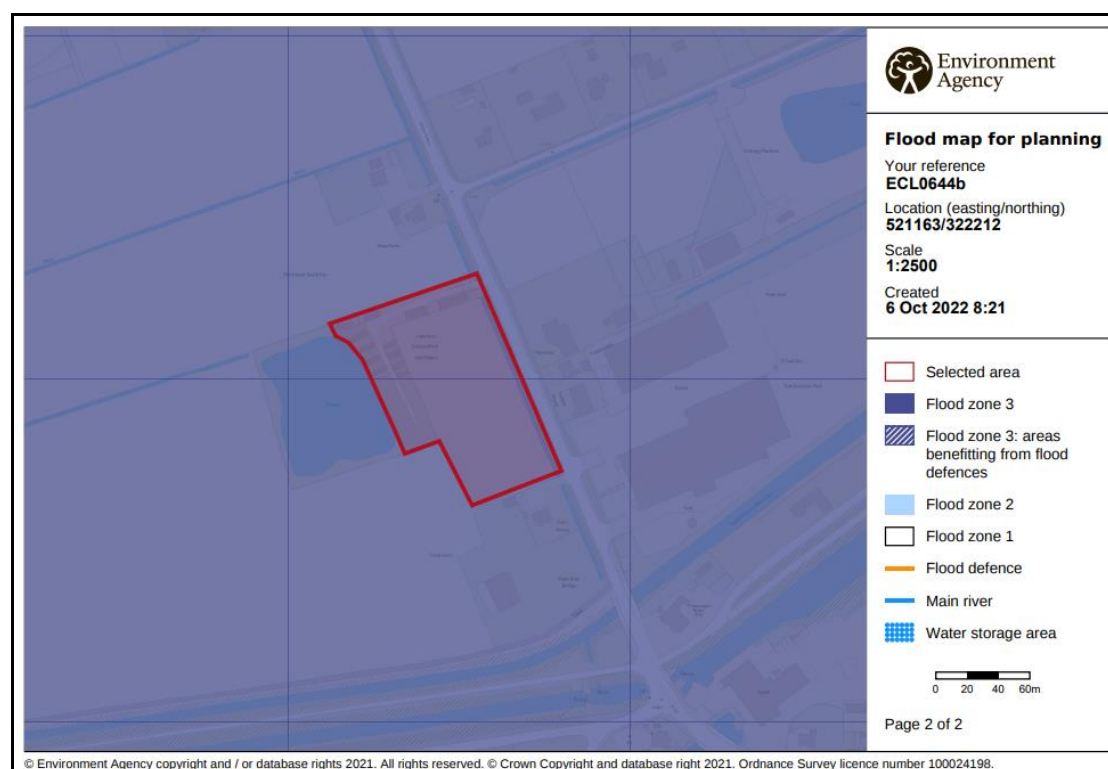


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site has a medium risk of flooding (annual probability between 1% and 3.3%);
- the site has a very low risk of surface water flooding (annual probability 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% event	The site is in the 'Low Hazard' area	The site is in the 'Danger to Some' area
Residual Peak Depth Map for the 1% fluvial and 0.5% event	The peak flood depth at the site is between 0.00m and 0.25m	The peak flood depth at the site is between 0.25m and 0.5m

Table 1 – Flood Risk within SFRA Maps

When the site boundary is compared to the Residual Flood Hazard Map for 2116 it shows that the site is entirely within the 'Danger for Some' area.

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 sites used for holiday or short-let caravans and camping 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 defended Flood Zone 3 and the development is 'More Vulnerable' therefore it is 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, 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 close to the River Welland lies within Flood Zone 2 or Flood Zone 3. The River Welland has defences that provide protection during the 1% annual probability (1 in 100 chance each year) fluvial event including climate change and the 0.5% annual probability (1 in 200 chance each year) tidal event including climate change. The 'actual risk' of flooding at the site has a low probability.

The application of the Sequential Test follows a series of stages. The first stage requires agreement of the geographic area over which the test is to be applied. Based upon the letter from South Holland District Council the Sequential Test area considered is the district.

The second stage requires the reasonably available sites to be listed. The sites with planning permission granted in the last 4 years for the same or similar development are listed in Table 1. Whilst it is acknowledged that there are sites within the district

that have a lesser flood risk if they have not been the subject of a planning application they are not considered to be reasonably available.

Site	Planning Reference	Development	Availability
Heron Cottage Caravan and Caravanning	H05-0694-21	Extension To Existing Caravan Site	Caravans were on site during summer of 2022.
The Lawns & Lakes Camping and Caravanning	H05-0036-22	Extension To Existing Caravan Site	The application was part retrospective and all caravans are on site.

Table 1 – Similar Sites with Planning Permission

The comments in Table 1 regarding the availability of the site are based upon discussion with the owner of the site or the agent who undertook the application. Based upon Table 1 there are no reasonably available sites.

The final stages of the Sequential Test require obtaining and comparing flood risk data for the reasonably available sites. As there are no reasonably available sites this has not been undertaken.

Based upon the assessment above 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 South East Lincolnshire Local Plan recognises that tourism plays a significant role in the local economy. Tourist facilities can offer benefits to local communities directly through employment, and indirectly, such as by supporting local food producers, local shops, pubs, and restaurants. The proposed change of use will therefore provide a wider sustainability benefit.

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 2.9m north west of the River Welland and the Cowbit Wash. Cowbit Wash is the floodplain to the River Welland and the site is protected from the River Welland by the Welland Bank.

The site is due west of the inlet to the Coronation Channel, a bypass channel of the River Welland. The embankments of the Coronation Channel were constructed in the 1950's to convey river flows around Spalding. The Coronation Channel together with the Crowland and Cowbit Washes offer flood reduction to Spalding and the surrounding district.

The Cowbit Wash, the Coronation Channel, and River Welland defences 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 Welland and Deepings IDB. There is an IDB maintained watercourse, the Fourth District Main Drain, 200m south of the site. The site and the surrounding land are within the Fourth District catchment and drain in an easterly direction to Fourth District Pumping Station. Fourth District Pumping Station discharges to Vernatts Drain which flows into the River Welland at Surfleet.

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 Welland and Deepings 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 Welland and Deepings IDB main drain system;
- an event in the local drainage network that exceeds the standard of protection;
- failure of Fourth District Pumping Station; and
- overtopping and / or breaching of the River Welland defences.

4.3 Probability of Flooding

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

The standard of drainage provided by Welland and Deepings IDB is assessed at 2% annual probability (1 in 50 chance each year), compatible with the Department of the Environment, Food and Rural Affairs (DEFRA) target level of service for rural drainage and flood defence works. The risk associated with flooding due to events greater than 2% annual probability (1 in 50 chance each year) is lowered due to the Welland and Deepings IDB high priority watercourses incorporating a freeboard. This provides storage during events greater than 2% annual probability (1 in 50 chance each year).

The Coronation Channel and the Cowbit Wash protect the site from the River Welland. These flood relief measures provide protection during the 1% annual probability (1 in 100 chance each year) fluvial flood.

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 Welland.

The 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 at the site should a breach occur. The South East Lincolnshire SFRA includes maps demonstrating the impact of a breach in 2115. 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 200 chance each year) event the peak depth at the site is between 0.25m and 0.5m.

An extract from the SFRA map is shown in Figure 3 below.

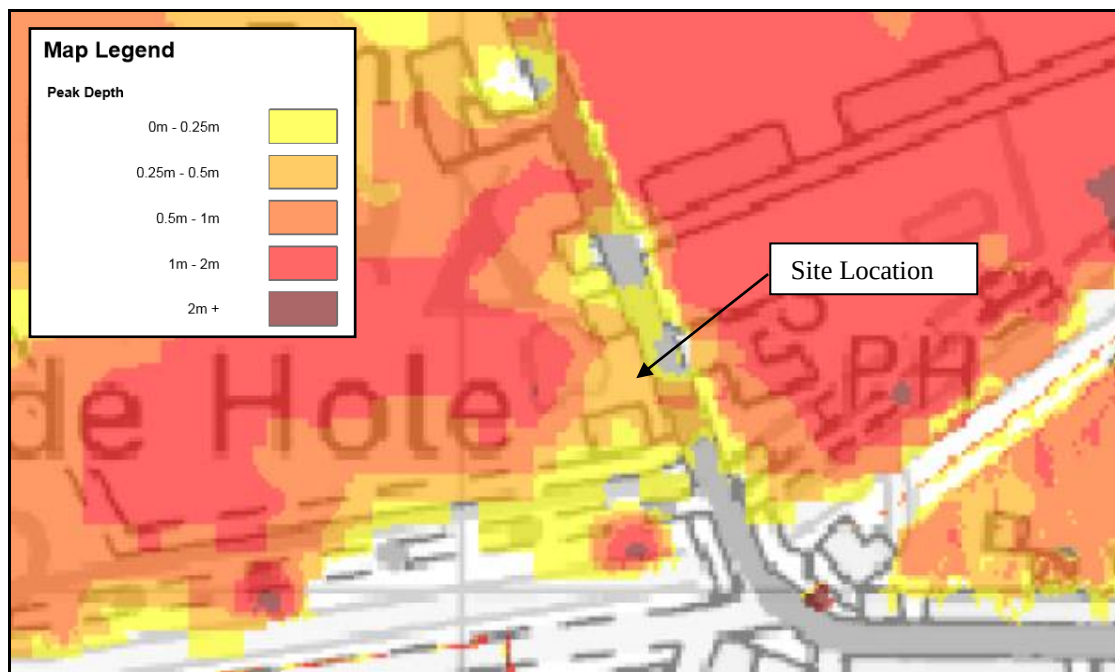


Figure 3 – SFRA 2115 Residual Peak Depth Map during the 1% fluvial and 0.5% tidal Annual Probability Event

Due to the nature of the development, it is necessary 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. However, these maps cover the area around West Pinchbeck and through comparison of the flood depths in this area during the 1% and 0.1% annual probability events for 2115 it can be estimated that flood depths are 0.1m higher for the more extreme event.

A peak flood depth of 0.6m can therefore be estimated in the area of the proposed caravans during the 0.1% annual probability (1 in 1000 chance each year) event in 2115.

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low. Failure of Fourth District 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 in a 'Danger to Some' area and at risk of flooding up to a depth of 0.5m during the 0.5% annual probability (1 in 200 chance each year) tidal event or the 1% annual probability (1 in 100 chance event) fluvial event. A peak flood depth of 0.6m has been estimated during the 0.1% annual probability (1 in 1000 chance each year) event.

The proposed development increases the impermeable area and therefore there is an increased volume of surface water that has the potential to increase flood risk.

These risks will be addressed through the mitigation measures set out below.

5.2 Mitigation Measures

The mitigation measures proposed have been determined in accordance with the SFRA (Appendix C) Standing Advice Matrix. The site is within an area with a hazard rating of 'Danger to Some' and based upon cell E6 it is recommended that:

- the floor level of the caravans should be a minimum of 0.6m above general ground level;
- the caravans are secured using ground anchors; and
- the risks are mitigated by the use of flood warning and a Flood Warning and Evacuation Plan.

A Flood Warning and Evacuation Plan is provided in Attachment 3. It should be noted that the proposed caravans have a floor level approximately 0.6m above ground level.

The developer should ensure that the operator of the site is sufficiently aware of the risk of flooding, and the standard of the existing defences. The Environment Agency provides a Flood Warning Service which includes Flood Warning Codes and uses direct warning methods where the risks and impacts of flooding are high.

In addition to direct and indirect flood warnings, the Environment Agency operates a 24 hour a day Floodline Service providing advice and information on flooding. The operator of the site should register with the Floodline Direct Warnings Service to receive any future flood warnings.

Should there be a failure of Fourth District 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.

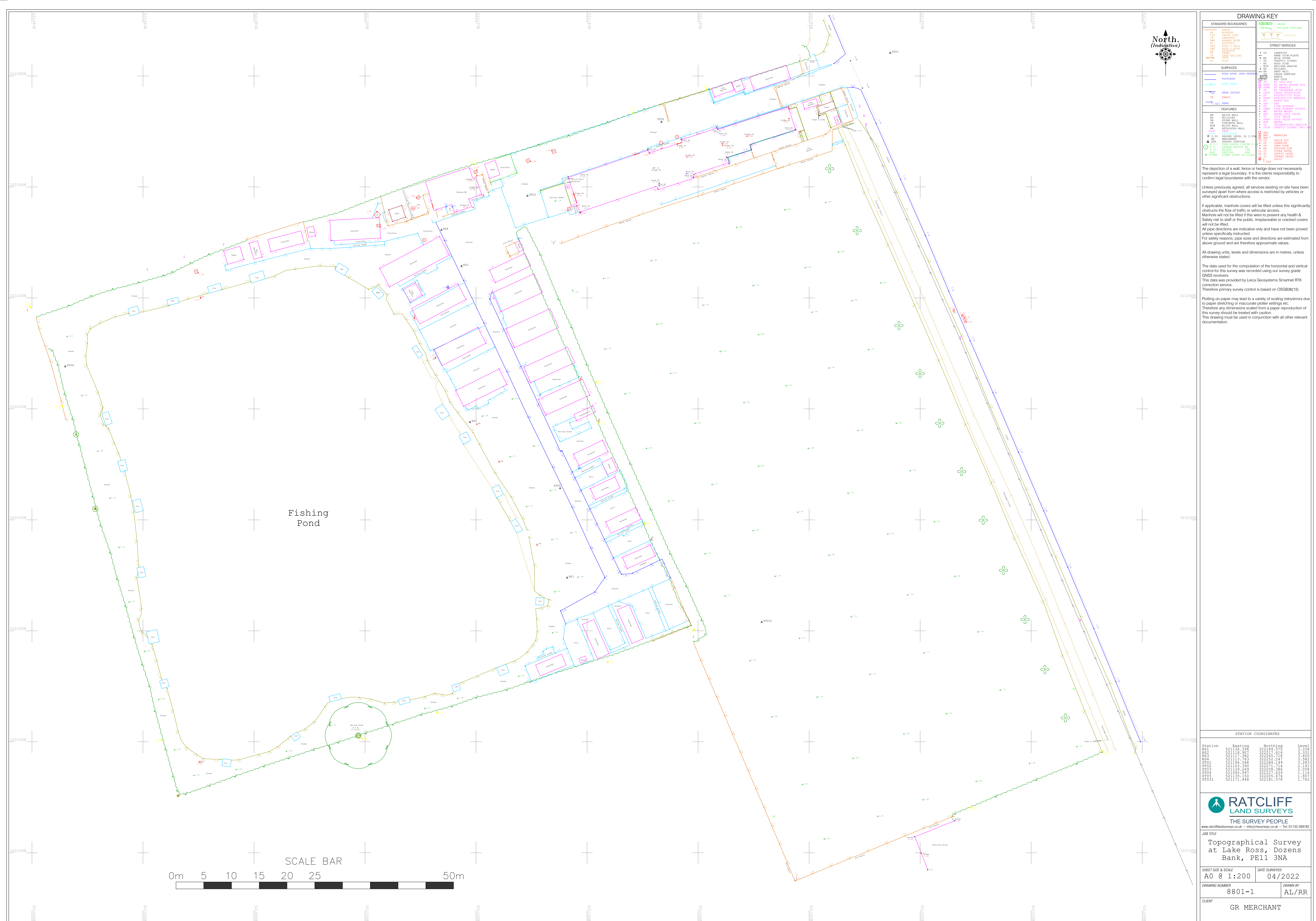
6.0 CONCLUSIONS

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

- The proposed development consists of the change of use of agricultural land to form an extension to a caravan park at Lake Ross, Dozen's Bank, West Pinchbeck, Spalding.
- The proposed development is in Flood Zone 3. The site benefits from defences on the tidal River Welland that provide protection during the 1% annual probability (1 in 100 chance each year) fluvial event and the 0.5% annual probability (1 in 200 chance each year) tidal event including an allowance for climate change.
- The site is located within an Internal Drainage Board catchment with a minimum standard of drainage of 2% annual probability (1 in 50 chance each year) which accords with DEFRA guidelines for rural development. The risk of flooding is lowered further due to the Welland and Deepings IDB high priority watercourses incorporating a significant freeboard. This provides storage during events greater than 2% annual probability (1 in 50 chance each year).
- The site is in an area with a 'Danger to Some' hazard rating and the peak flood depth in the area of the proposed caravans during a breach of the defences is estimated to be 0.6m.
- It is recommended that the caravans have a floor level 0.6m above general ground levels, the caravans are secured by anchors, and the Flood Warning and Evacuation Plan is followed.
- The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

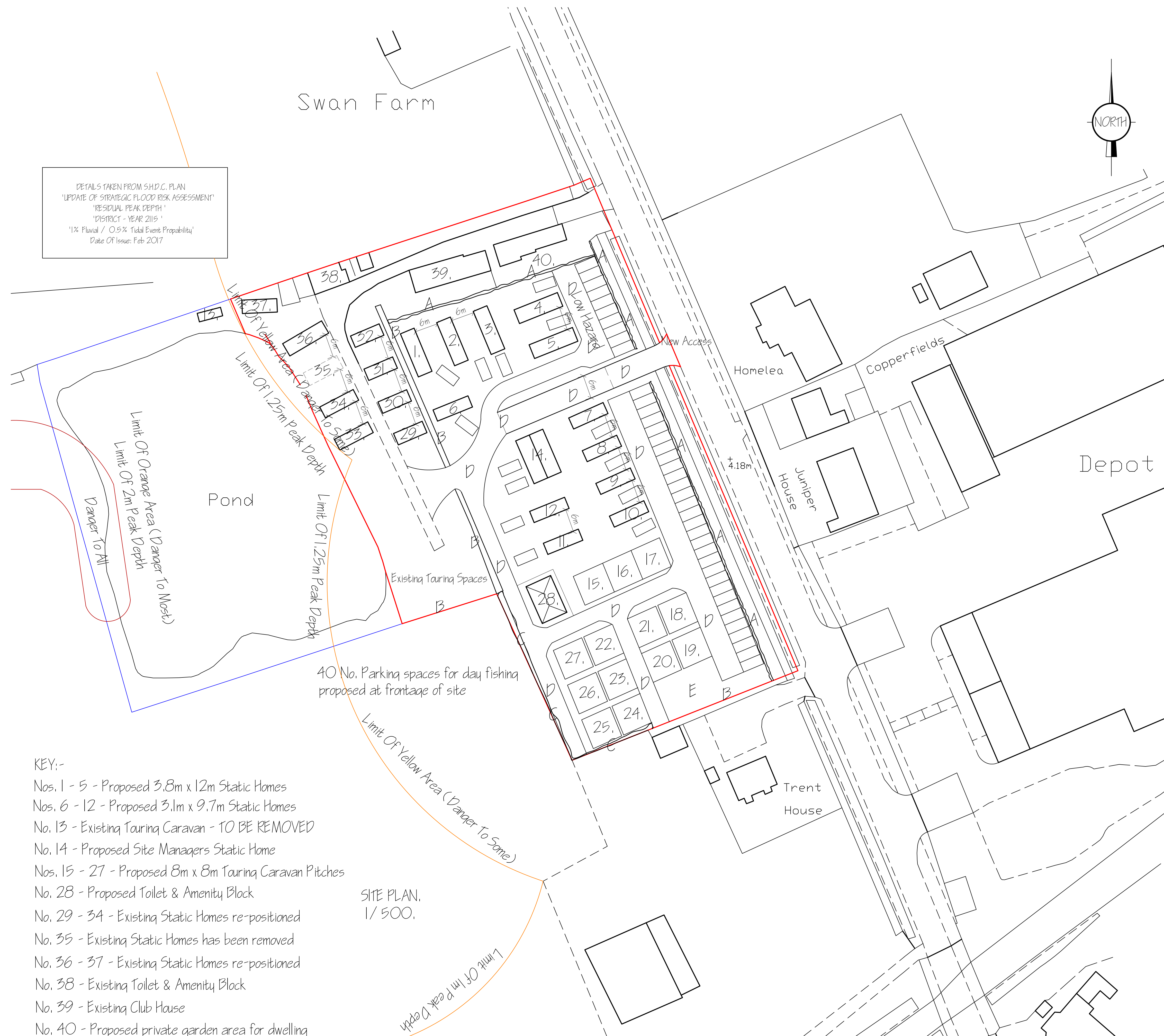
ATTACHMENT 1

TOPOGRAPHICAL SURVEY (Dwg 8801-1)

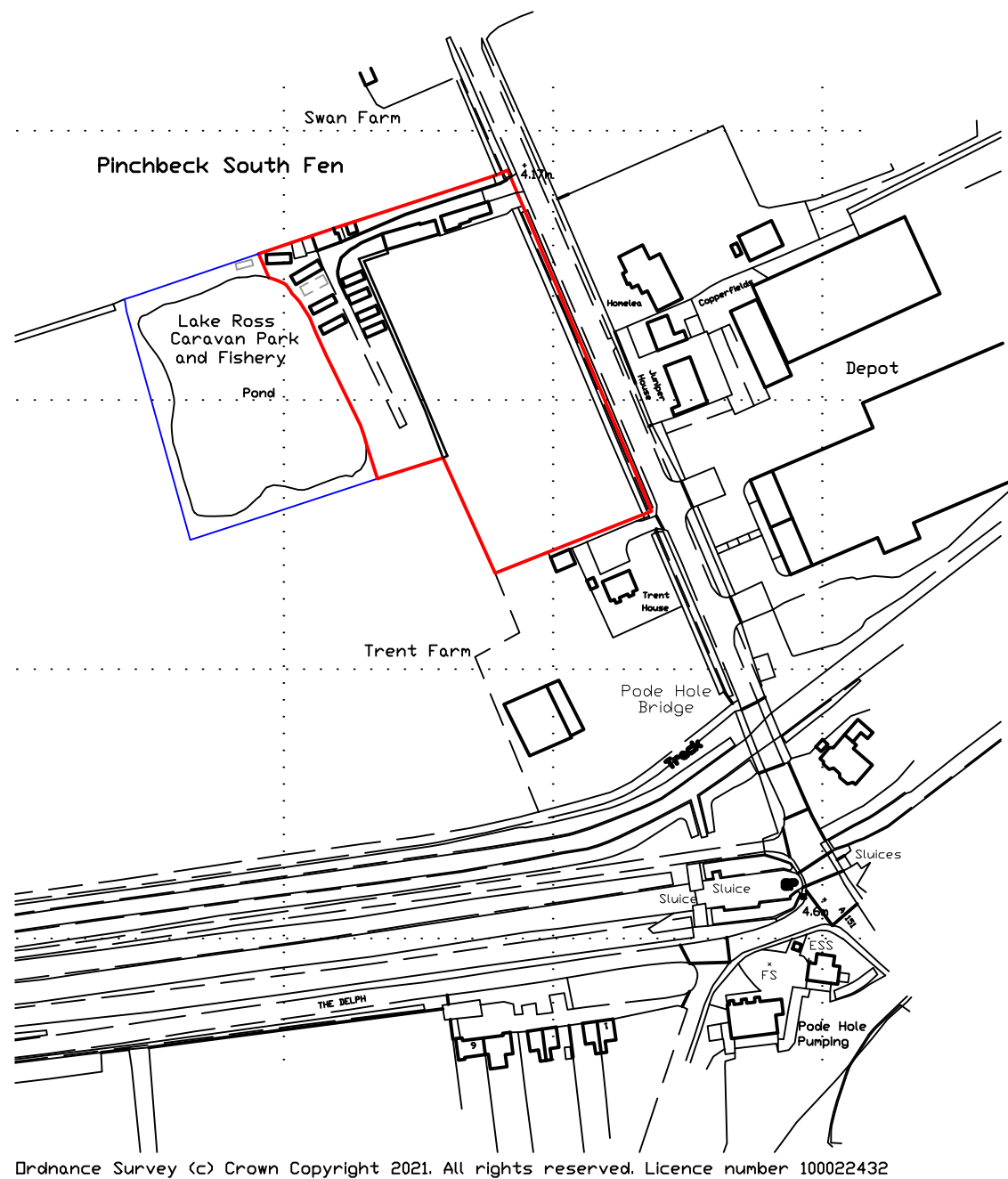


ATTACHMENT 2

LOCATION & SITE PLAN (Dwg 3910-21-01D)



DETAILS TAKEN FROM S.H.D.C. PLAN
'UPDATE OF STRATEGIC FLOOD RISK ASSESSMENT'
'RESIDUAL PEAK DEPTH'
'DISTRICT - YEAR 2115'
'1% Fluvial / 0.5% Tidal Event Probability'
Date Of Issue: Feb 2017



LOCATION PLAN,
1/ 2500.

NOTE :-
NEW ACCESS AND DYKE CROSSING TO
BE TO LCC HIGHWAYS SPECIFICATION
AND REQUIREMENTS.

NOTE :-
EXISTING ACCESS TO REMAIN FOR
EMERGENCY PURPOSES - BUT NOT
USED FOR ACCESS INTO THE LAKES

- LANDSCAPING, TREE PLANTING & FENCING SCHEME.
- A - PROPOSED 2.0m LAUREL HEDGE.
 - B - EXISTING 3.5m HEDGE TO REMAIN
 - C - PROPOSED 2.5m CONIFER HEDGE AND FENCE
 - D - TARMAC ROADWAY
 - E - WILD FLOWER MEADOW

- KEY:-
- Nos. 1 - 5 - Proposed 3.8m x 12m Static Homes
 - Nos. 6 - 12 - Proposed 3.1m x 9.7m Static Homes
 - No. 13 - Existing Touring Caravan - TO BE REMOVED
 - No. 14 - Proposed Site Managers Static Home
 - Nos. 15 - 27 - Proposed 8m x 8m Touring Caravan Pitches
 - No. 28 - Proposed Toilet & Amenity Block
 - No. 29 - 34 - Existing Static Homes re-positioned
 - No. 35 - Existing Static Homes has been removed
 - No. 36 - 37 - Existing Static Homes re-positioned
 - No. 38 - Existing Toilet & Amenity Block
 - No. 39 - Existing Club House
 - No. 40 - Proposed private garden area for dwelling

SITE PLAN,
1/ 500.

D	FLOODING DANGER AREAS ADDED	SEP 2022
C	PLANNING APPLICATION	JUNE 2022
B	RESIDUAL PEAK DEPTH ADDED	JUN 2022
A	CLIENTS AMENDMENTS	NOV 2021
ref	revision	date
G. R. MERCHANT LTD.		
I.ENG AMICE FIWO		
ARCHITECTURAL, STRUCTURAL AND LAND DRAINAGE CONSULTANTS		
4 Wrights Mews 12A Park Road, Holbeach, Spalding, Lincs. PE12 7EE Tel: 01406 490800 Fax: 01406 425744 E-Mail: gr.merchant@btconnect.com		
Project CHANGING OF USE TO CARAVAN SITE LAKE ROSS, DOZENS BANK WEST PINCHBECK, SPALDING, Lincs, PE11 3NA.		
Client MR. T. BREAKER		
Drawing LOCATION & SITE PLAN		
Job Ref.	Drawing No.	
3910-21.	010	
Date	Drawn	
OCTOBER 2021.	S.D	
Scales (As Stated)		
DO NOT SCALE FROM THIS DRAWING		
This drawing is copyright and may not be altered, traced, photographed or used for any other purpose other than that for which it is issued. The General Contractor is to check all dimensions on site and report any discrepancies to the Architect. All details shown on this drawing including foundations are based upon typical site conditions related to the area. No responsibility can be accepted for abnormal conditions which may be discovered during construction unless reported to the Architect so that design arrangements may be considered. Site and surveys are recommended in respect of foundations to establish specific site conditions before foundation work is undertaken. This drawing is limited in the amount of information contained and does not purport to be a full specification of the works. It is the sole responsibility for the purpose of obtaining Planning / Building Regulation approval. This drawing must not be used as a contract document after the date of issue to the client or any other person. The client or any representative thereof, it is the client or their appointed agents responsibility to ensure that the drawing is used in accordance with the manufacturer's instructions and relevant code of practice. Materials shall conform to appropriate British standard specification or BSIA certificate or European code equivalent. The Employer / Client shall ensure that the selected contractor is competent with 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 an independent Planning Supervisor will be required. The works shall comprise of all that is shown on the drawing and details. Work that may not specifically be shown but may be reasonably inferred as necessary to carry out the works shall be deemed to be included. It is the joint / joint owners responsibility to be aware of the Party Wall etc. Act 1996 when building in close proximity to adjoining neighbors boundaries.		

ATTACHMENT 3

FLOOD WARNING AND EVACUATION PLAN

Flood Warning and Evacuation Plan for:

Lake Ross, Dozens Bank, West Pinchbeck, Spalding, Lincolnshire, PE11 3NA. The National Grid Reference of the site is 52113/32221.

Flood Risk and Flood Warning Area

The site is in Flood Zone 3 of the Environment Agency Flood Map for Planning and in the “Danger for Some” hazard area of the South East Lincolnshire Strategic Flood Risk Assessment. The site is protected by flood defences however is at risk if the existing defences were breached.

You should be signed up to receive free notifications from the Environment Agency’s flood warning service Floodline

This flood warning area is called:

“Far extent of Tidal Flooding from the Wash and Tidal Estuaries”

To sign up or get latest flood information call **0345 988 1188** or online www.gov.uk/flood

Categories of Flood Warning

There are three categories of flood warning.

Flood Alert

Flooding is possible. Be prepared.

Flood Warning

Flooding is expected. Immediate action required.

Sever Flood Warning

Severe flooding. Danger to life.

If a flood warning is received take the following action:

- Listen to local radio for latest information – Radio Lincolnshire 94.9
- Charge mobile phones in case you need to evacuate.
- Know how to turn off your gas, electricity and water.
- Pack a “flood kit” in case you need to leave. Include phone numbers, insurance documents, bankcards and personal items.
- Listen to the emergency services – if you are asked to evacuate or a severe flood warning is issued, evacuate without delay.

If evacuation is required, then take the following actions:

Relocate to higher ground taking a safe route to avoid any flooding. Evacuation from the development should be in a northerly and then westerly direction along the A141 (Bourne Road) to Bourne which is in Flood Zone 1.

- Before evacuating make premises secure and take valuables with you
- Tell friends and family where you are going
- Avoid contact with flood water and wash your hands regularly
- Do not return until the emergency services say it is safe to do so

Useful contacts:

Floodline – for latest flood information call **0345 988 1188** or www.gov.uk/flood

Lincolnshire Prepared – for information on how floods are responded to in Lincolnshire and how to prepare for evacuation www.lincolnshire.gov.uk/lincolnshire-prepared