FLOOD FISK ASSESSMENT



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PROPOSED HELIPAD AT BLEU RAY FARM, MILL GATE, WHAPLODE PE12 6RY

CLIENT ; VMM PROPERTIES LIMITED

DATE ; JULY 2025

PROJECT REF ; JDA/2022/885

This Flood Risk Assessment is part and parcel of a Full Planning Application submitted to South Holland District Council for A Helipad at Bleu Ray Farm, Mill Gate, Whaplode PE12 6RR

This flood risk assessment has been prepared solely to support the planning application for the proposed development at Bleu Ray Farm. The author has made every effort to provide an accurate assessment of the flood risk but accepts no liability should the information be found to be incorrect or incomplete, or if it is used for any other purposes other than for which it was originally commissioned.

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RISK – Very Low to Low

The Site is located in Flood Zone1 and 2, this equates to a High risk of flooding from rivers and the sea. Analysis of the EA's model data indicates there is a Very Low to Low fluvial and tidal flood risk. Surface water (pluvial) flood risks are Very Low to Low. Groundwater flood risks are Negligible and flooding risks from artificial sources (i.e. canals, reservoirs and sewers) are Low. Mitigation measures are recommended in this report to reduce the risks to an acceptable level over the lifetime of the development.
In their Product data for site at Bleu Ray Farm (NGR: TF3241820989). CCN/ 2023/ 308215, the Environment Agency state that have no historical records of flooding in the area of the site.

The Environment Agency data also state that the site is not considered to be at risk of flooding from main rivers or tidal events
The site benefits from the presence of both river and tidal flood defences.
The application site area is defined on the submitted OS based Location Plan. The site area is 22,780 sq m – 5.63 acres.

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1. INTRODUCTION

1.1 A Full planning application is to be submitted by John Dickie Associates on behalf of VMM Properties to seek permission to develop a Helipad at Bleu Ray Farm, Mill Gate, Whaplode PE12 6RR

1.2 Planning approval requires a Flood Risk Assessment to be submitted to the LPA as the site, is shown as situated in Flood Zones 1 and 2 of the Agency's Flood Zone Maps. The Assessment is to be prepared to meet the requirements and general principles contained in Paragraph 9 of the Technical Guidance to the National Planning Policy Framework (NPPF).

The latest Agency Maps have been created as a tool to raise awareness of flood risk with the public and partner organisations such as Local Authorities, Emergency Services and Drainage Authorities. The Maps do not take into account any flood defences.

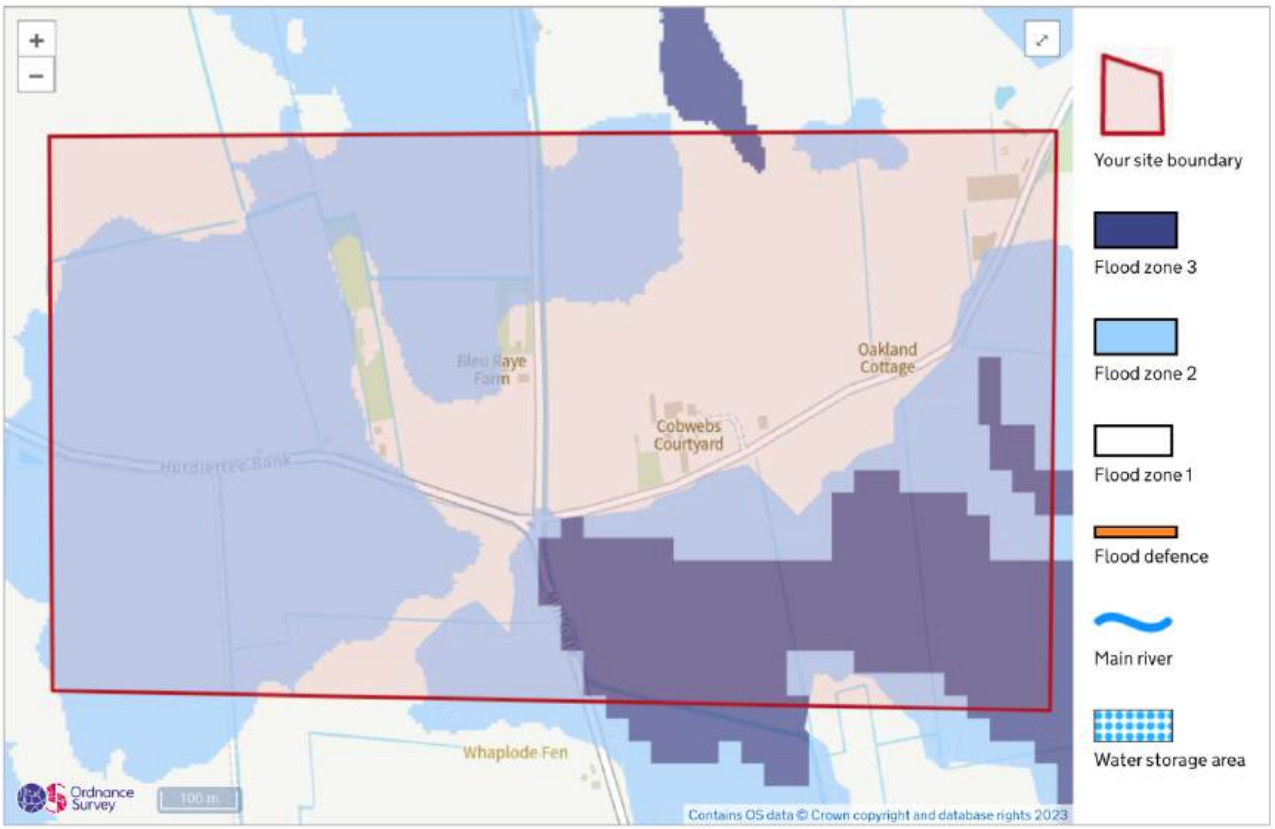
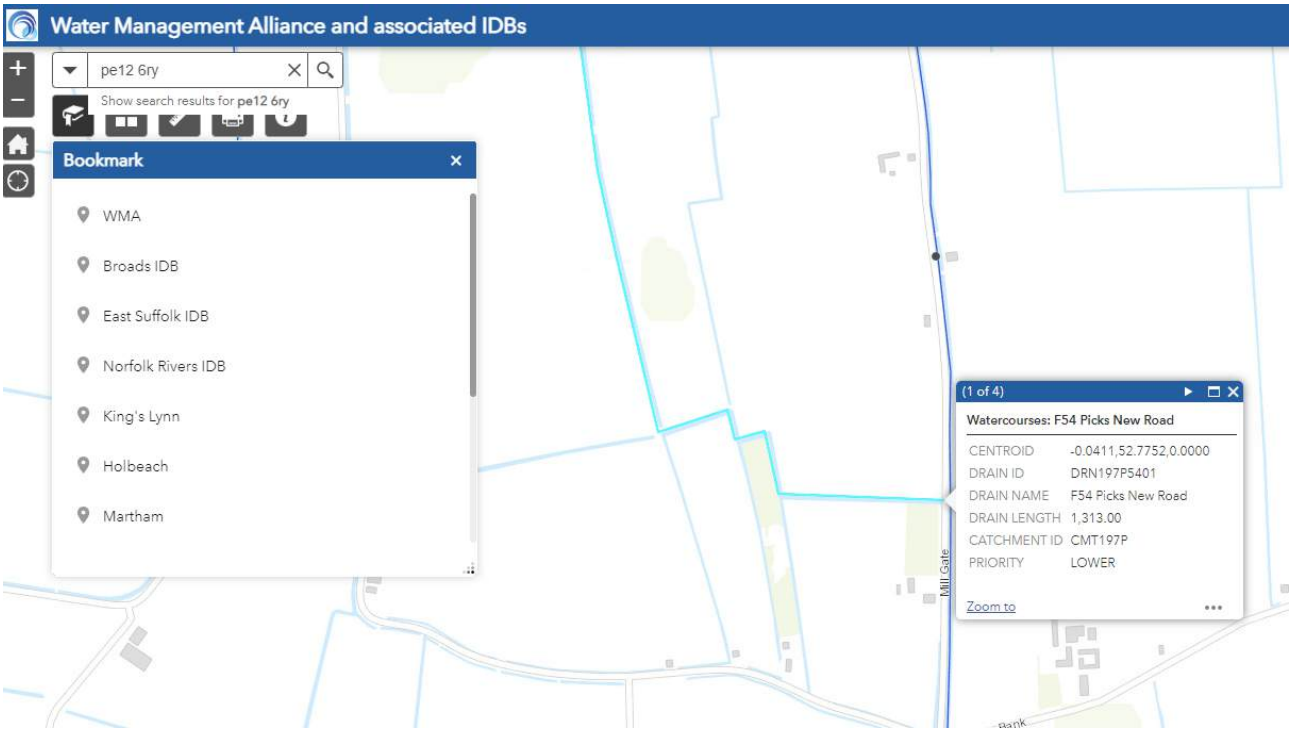


Fig 1. Extract from Environment Agency Mapping

It can be seen from the above EA Flood Mapping that this area is in defended Flood Zone 2. Whilst the Zone 2 designation suggests a probability of flooding, the area benefits from flood defences.

The site is in the South Holland Internal Drainage Board (IDB) area. As can be seen from the extract below from the WLMA IDB mapping resource, none of the Board's assets are affected by the development.



The British Geological Survey maps indicate the following :

Tidal flat deposits, including mud flat and sand flat deposits, form extensive nearly horizontal marshy land in the intertidal zone that is alternately covered and uncovered by the rise and fall of the tide. They consist of unconsolidated sediment, mainly mud and/or sand. They may form the top surface of a deltaic deposit.

Calcareous mudstone, silty mudstone and siltstone, with subordinate fine-grained sandstones and argillaceous limestone (cementstone) or siltstone nodules; typically rhythmic alternations of dark grey, silty mudstone (rich in fine-grained shell and plant material) with pale grey mudstone; ooidal, and in some cases coralline marls and limestones developed locally (including Elsworth Rock Member; Upware Limestone Member), (Gallois and Cox, 1977; Cox and Gallois, 1979).

Nearest Borehole Record shown below ;

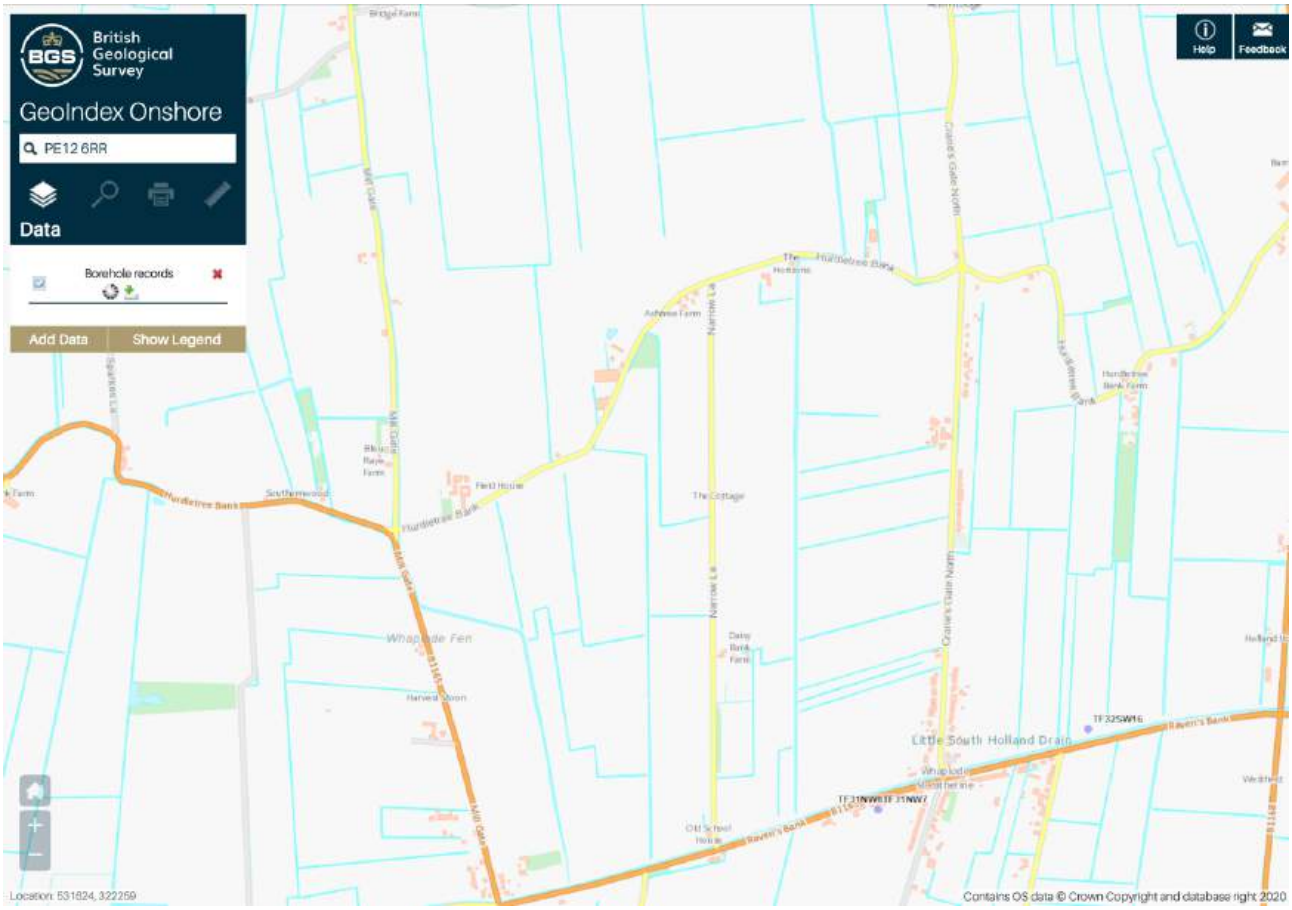
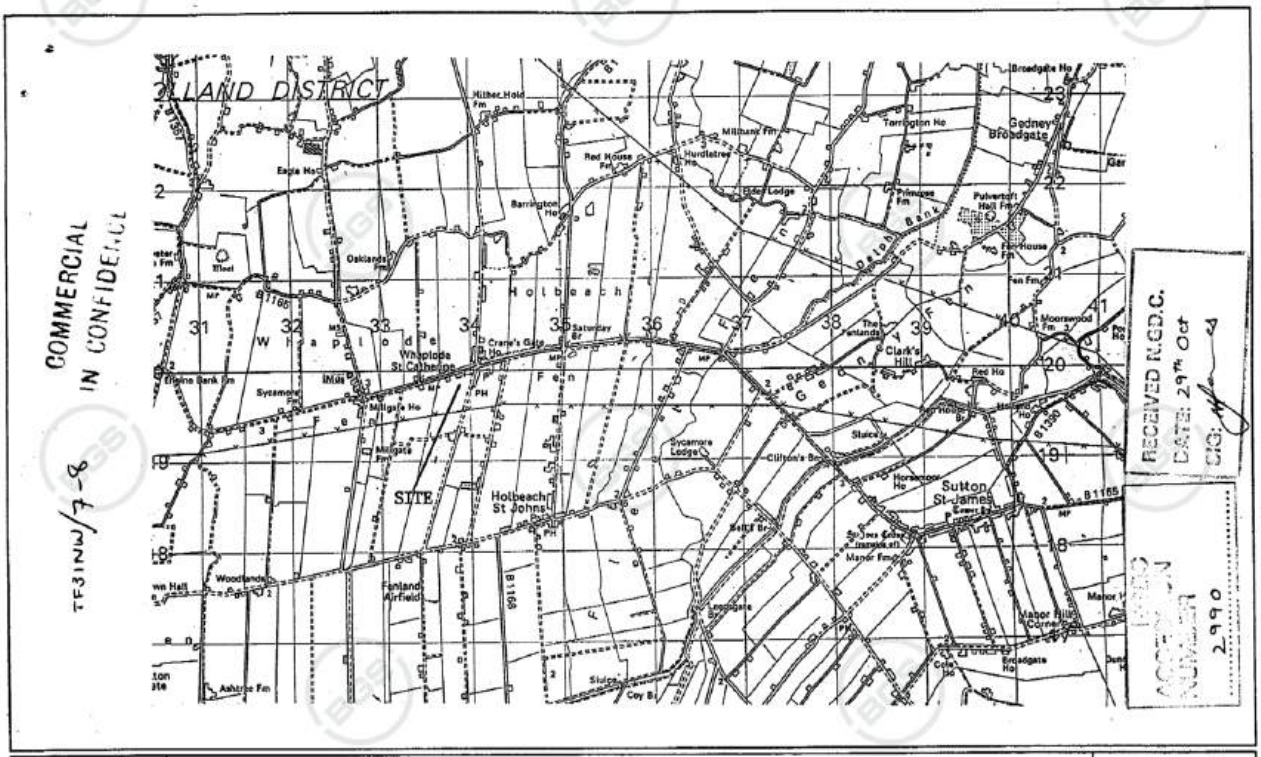


Fig 2. BGS Mapping

Borehole Reference: TF31NW8
Name: CRANESGATE ROAD TP 2
Water Well Reference: N/A
Precision: ± 10 METRES
Length (m): 2
Date: 1991
Easting: 533900
Northing: 319970
Scan Quality: not Entered
Record: Scan



Aug 1991 Scale 1:50,000 Dwg No 1	Site Location Plan Cranesgate Road, Whaplode St Catherines	LINCS LAB Telephone (0522) 530355

TF3INW 8 3390 - 1997

Job Number: 1464	**Site:** Cranesgate Road, Whaplode St Catherines.	**Trial Pit No.:** 2	**Sheet 1 of 1**
Remarks: No ground water encountered. COMMERCIAL IN CONFIDENCE	**Location:** See plan	**Orientation:** NNE - SSW	**Dimensions:** Length: 2.00m. Width: 0.80m. Depth: 2.00m.
	Client: Ashwood Homes.	**Face Logged:** ESE	
	Excavation Method: JCB	**Logged by:** INH	**Log Scale:** 2.5 m/page **Ground Level** m AOD

Date 1991	Depth of Casing (m)	Depth of Water (m)	Sample/Test No.	Sample/Test Type	Sample/Test Depth (m)	Change of Strata Legend	Depth below GL (m)	Re-duced Level OD (m)	Thick-ness of Stratum (m)	Description of Strata	P.T. Pene't mm	P.T. N	NMC %	Atterberg Limits LL %	Atterberg Limits PL %	Atterberg Limits PI %	Density Bulk kg/m³	Density Dry kg/m³	Shear Strength Cu kN/m²	Shear Strength ϕ_u °	Shear Strength Type of Shear Test	Chemical SO_3 Class	Chemical pH	Other Tests
31/07									0.30	Brown silty,sandy TOPSOIL.														
							0.30		1.70	Medium dense,light brown to dark brown,slightly clayey,silty fine SAND with traces of red orange staining.(Al)														
			1	B	0.50-2.00																			G
										Land drain at 0.90m.														
31/07							2.00			END OF TRIALPIT.														

Scale As Shown	**Disturbed Samples** W Water Sample D Small Bag B Large Bag T Tin J Jar	**Undisturbed Samples** U100 100mm diameter U38 38mm diameter	**Symbols** PT Penetration Tests M Mackintosh Probe Count N Blow Count P Probe CBR	**Type of Shear Test** V Shear vane Cu Undrained Cohesive Strength SB Shear Box ϕ_u Internal Friction Angle TX Triaxial (undrained)	**Notes** Geology: (Al):Alluvium G:Grading	LINCS LAB Tel: (0522) 530355

2.0 Location

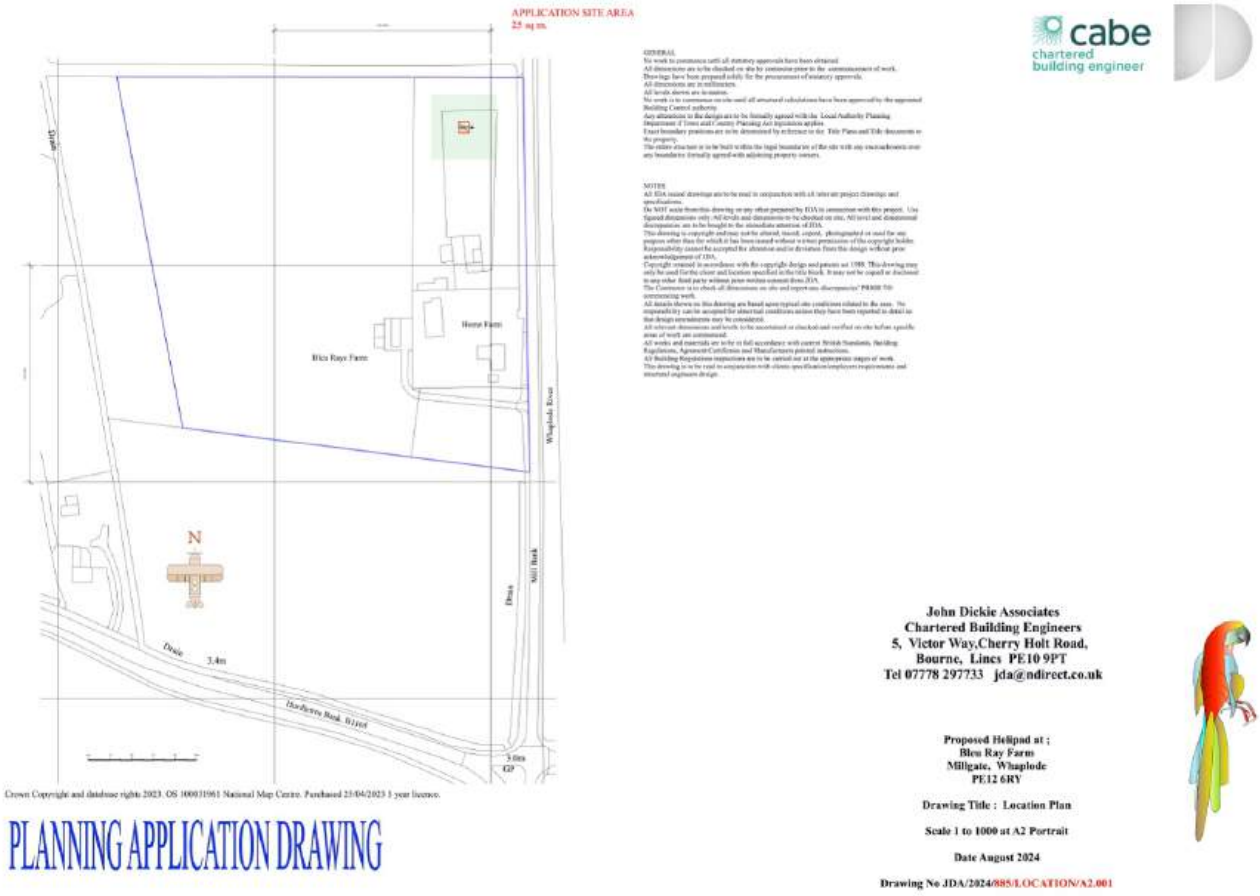
2.1 The 25sq m site sits to the North of Home Farm – a domestic residence off Mill Gate. It is bounded to the North by an IBD controlled watercourse that discharges under the adopted Highway into the Whaplode River – flat arable fields sit to the North of the watercourse.

The site is located some 2km from Whaplode St Catherines and 3km from the village of Whaplode. The market Town of Spalding is located some 6km to the North West of the site with Holbeach a similar distance to the North East.

Its position means that it will not be subject to rapid inundation from higher land and is not subject to flood flows from elsewhere.

2.2 The position and extent of the site are shown on Fig 1 – Site Location and Site Layout Plans at the end of the document.

2.3 The site is shown within Flood Zones 1 and 2 as detailed on the Environment Agency Flood Zone Map.



3.00. The site and sequential/exception tests

Not applicable.

Exception Test

Not applicable.

4.00 Flood History

From available information there does not appear to be any record of flooding to this site in recent years. The storm events in 2007 had no significant effect.

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5.0 Assessment of the Risk

Applying the flood risk vulnerability classification in Table 2 of the Guidance, a residential development is classified as “more vulnerable”.

Table 3 of the Environment Agency’s Technical Guidance is set out below ;

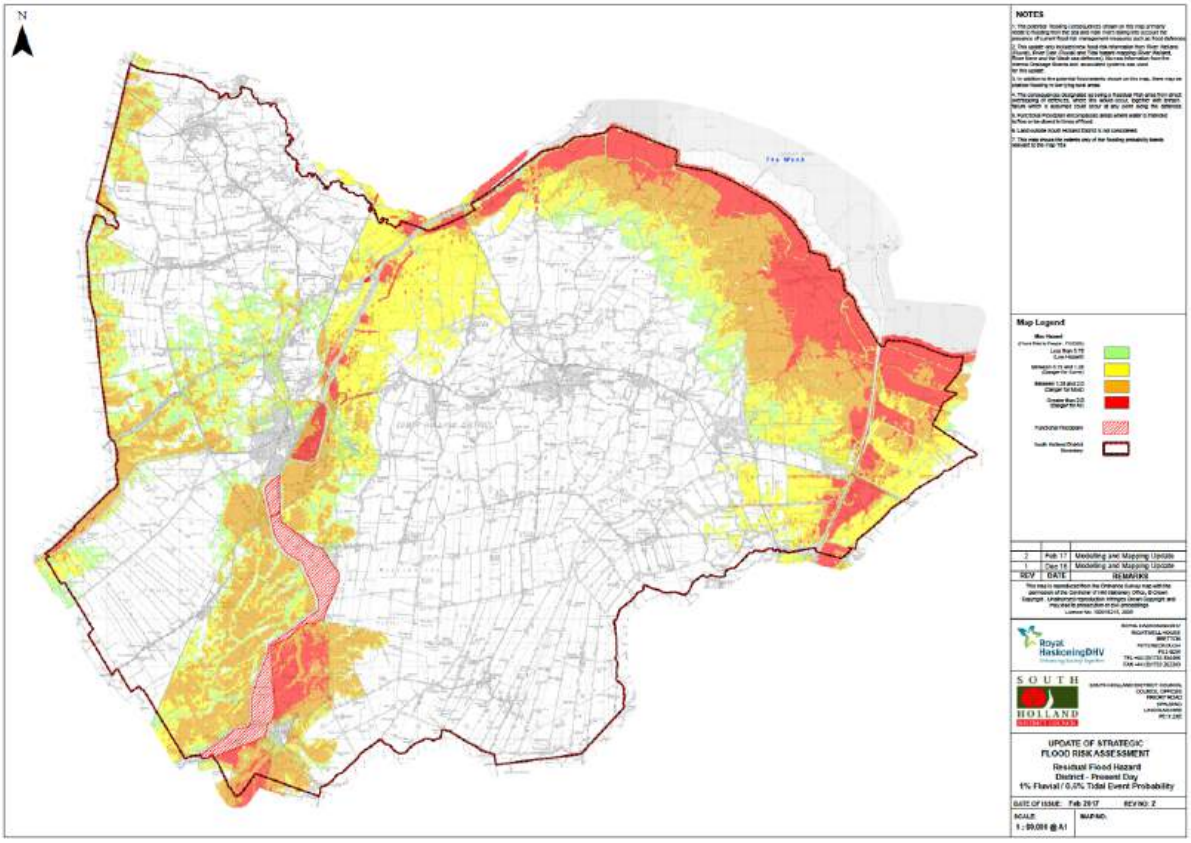
Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

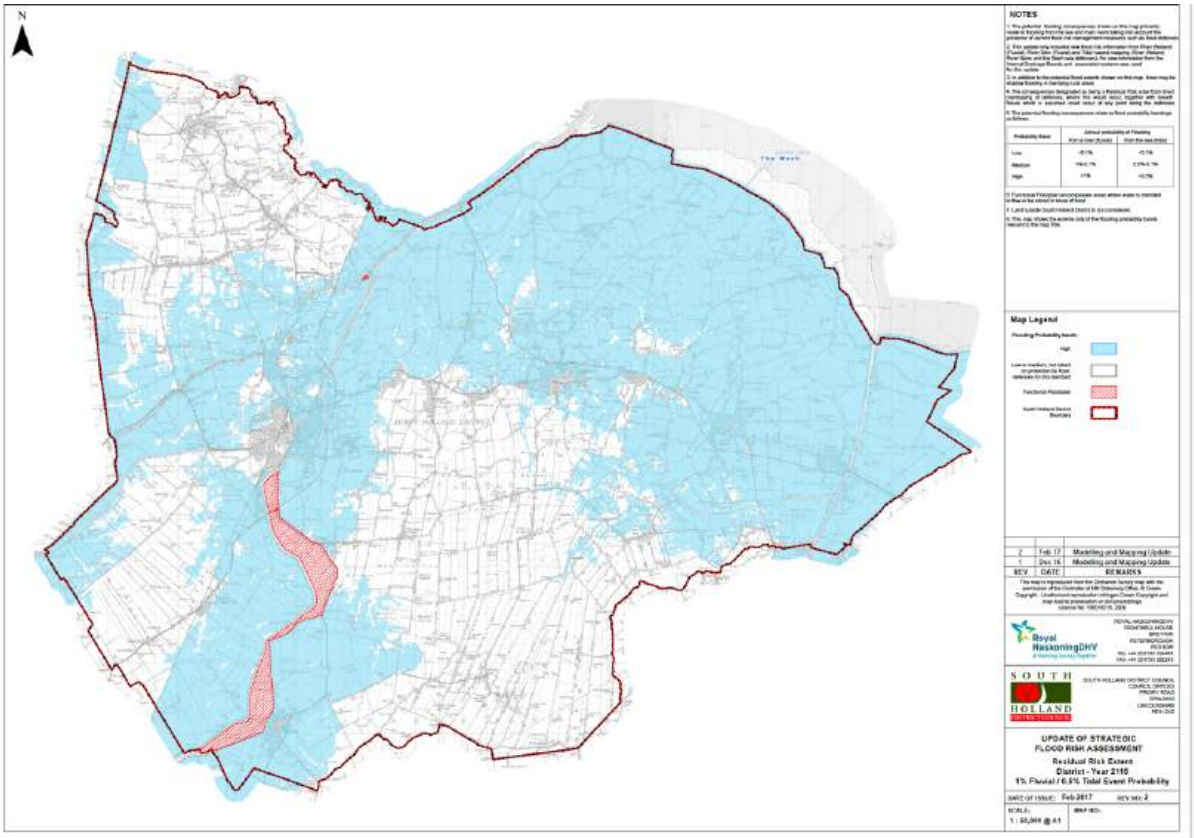
SuDS features are proposed to manage the surface water runoff generated by the development in a sustainable way. This will ensure the development does not increase surface water flood risk off-site.

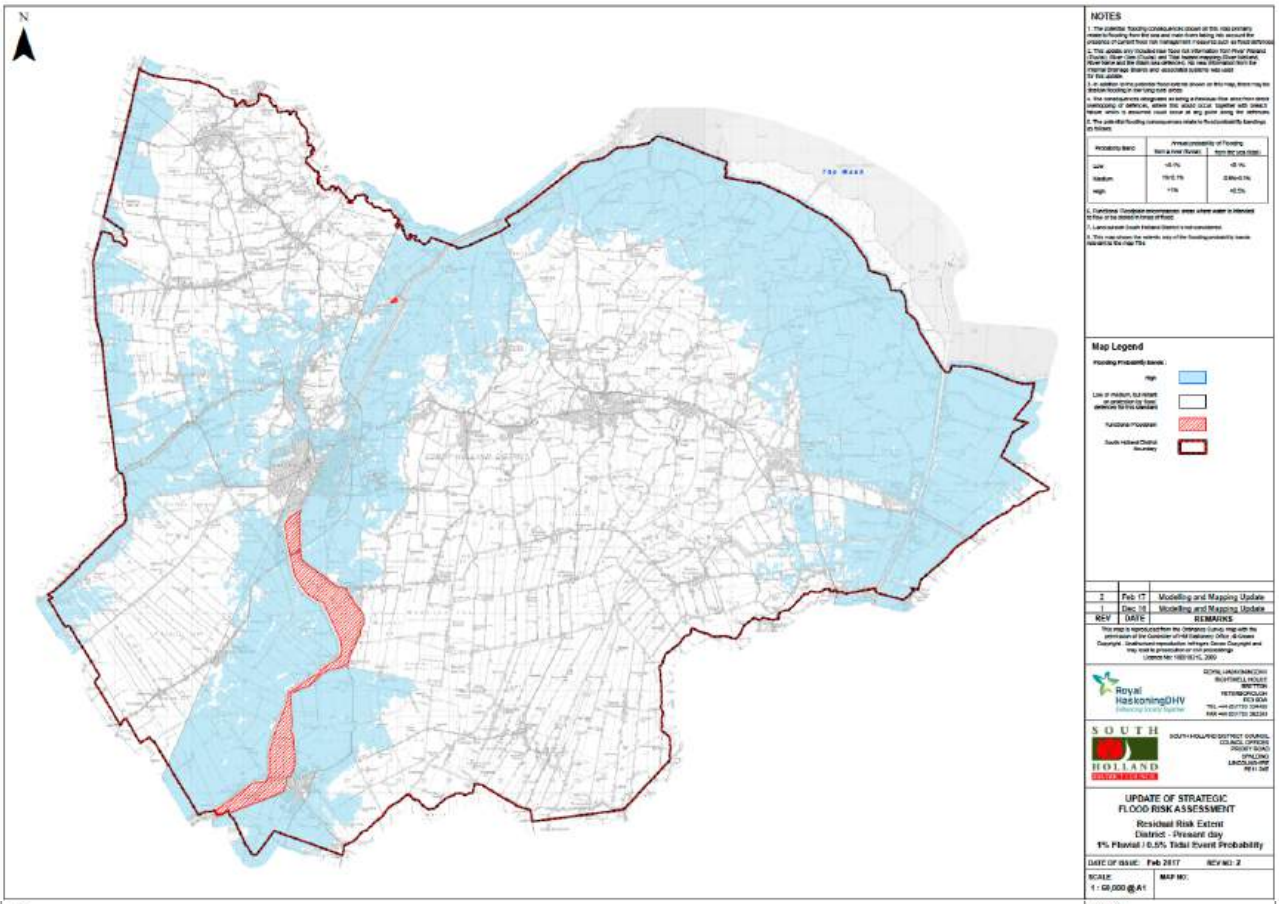
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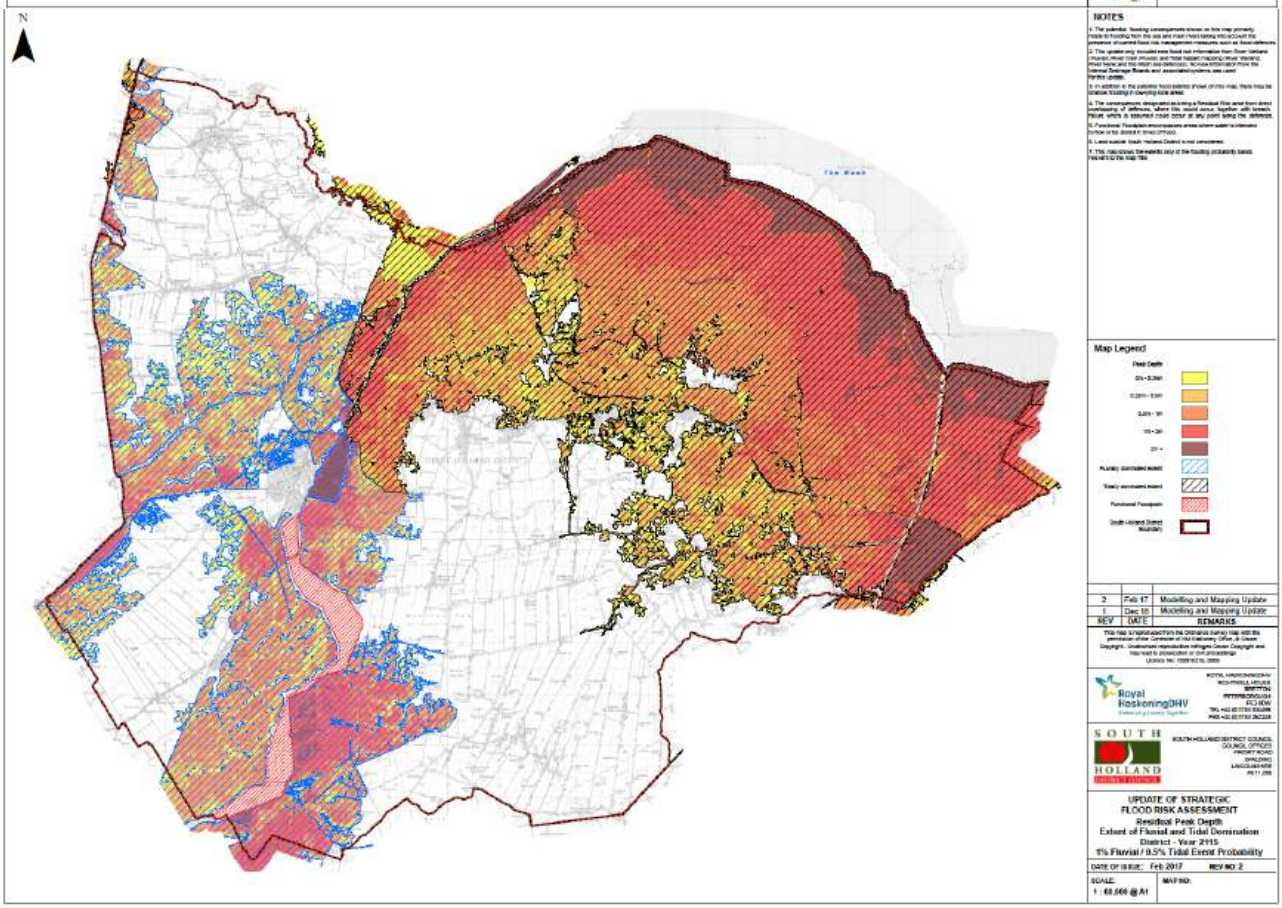
6.00. Strategic Flood Risk Assessment

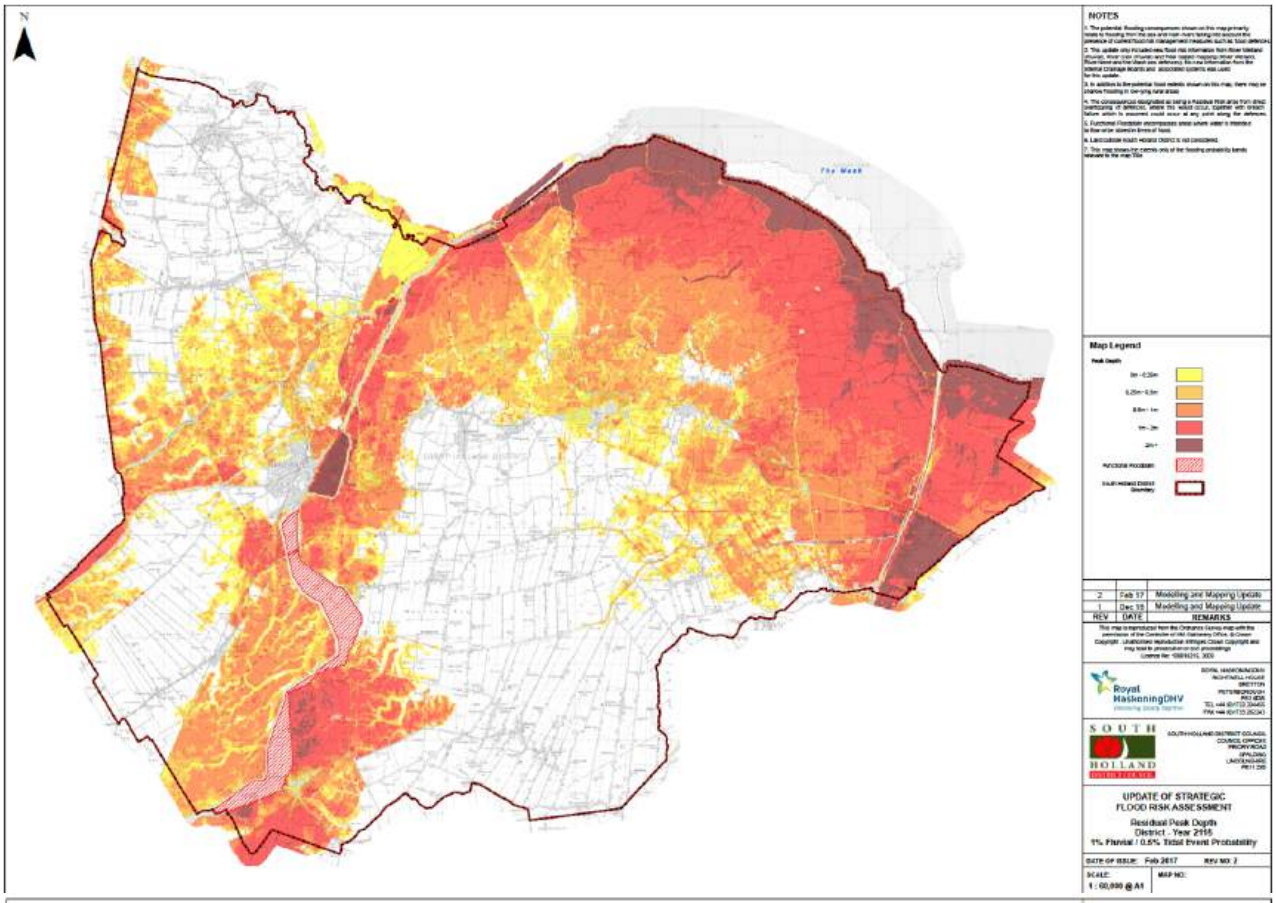
See below:

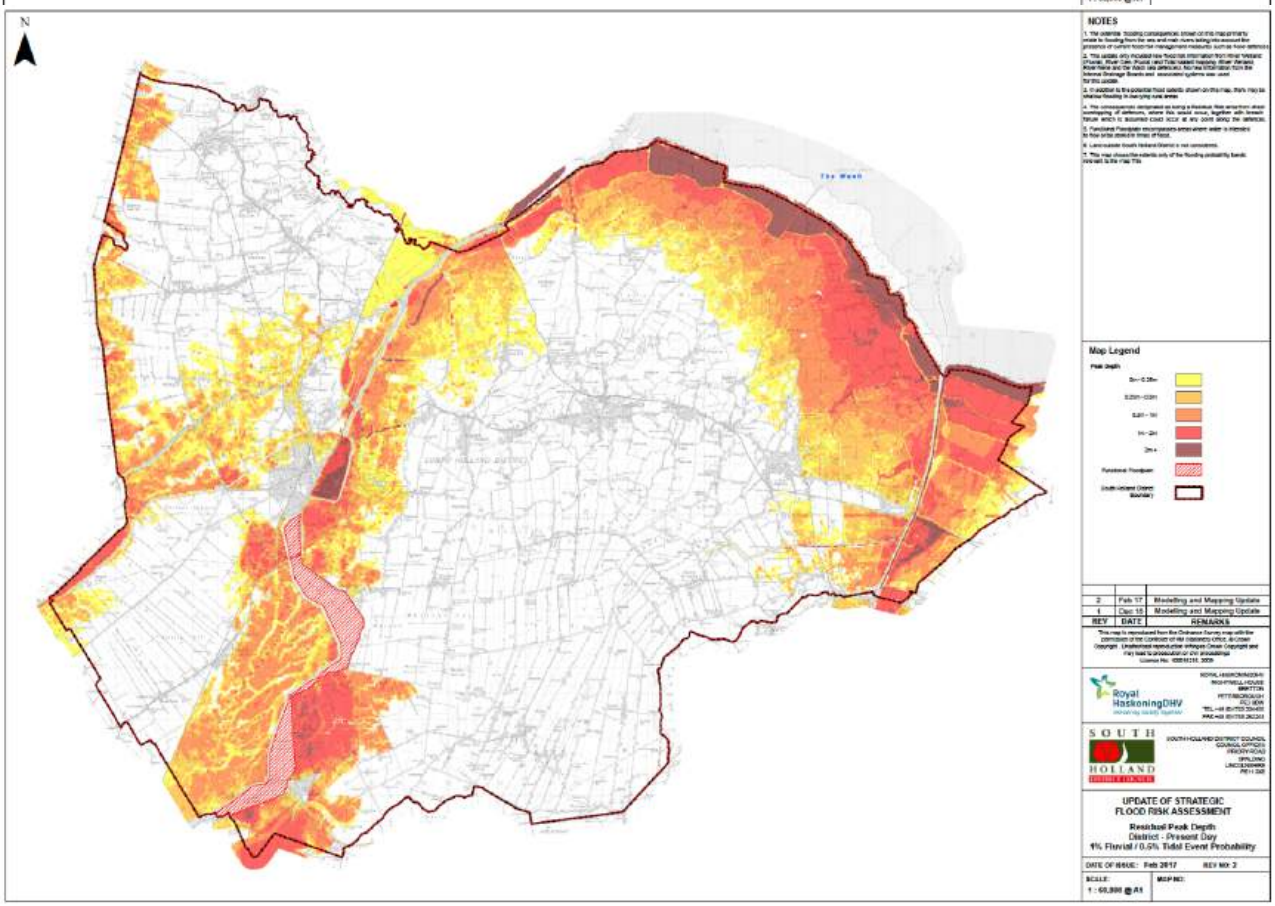

N
NOTES
Map Legend
UPDATE OF STRATEGIC
FLOOD RISK ASSESSMENT
Residual Flood Hazard
District - Present Day
1% Fluvial / 0.5% Tidal Event Probability

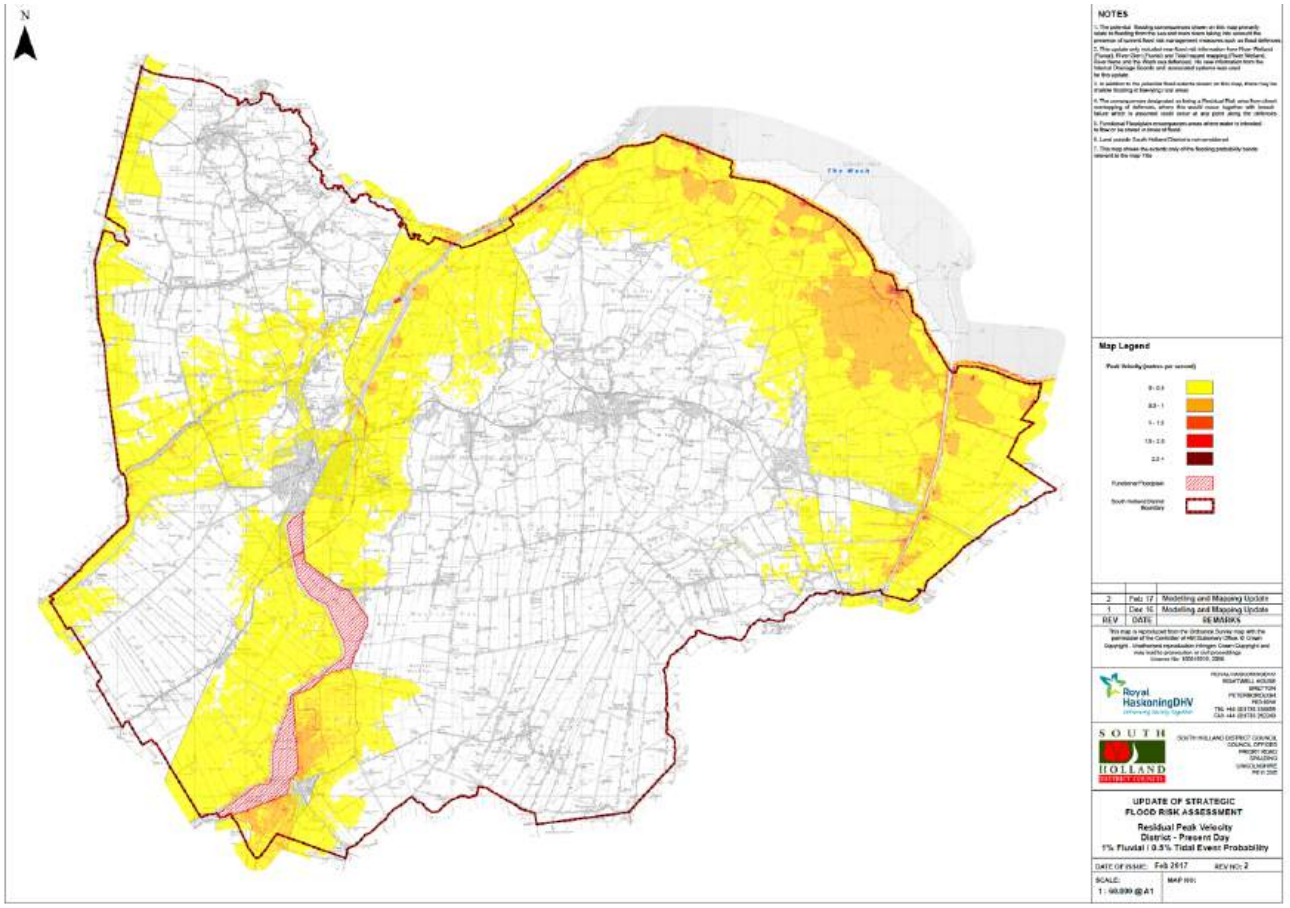

N
NOTES
Map Legend
UPDATE OF STRATEGIC
FLOOD RISK ASSESSMENT
Residual Risk Extent
District - Year 2115
1% Fluvial / 0.5% Tidal Event Probability

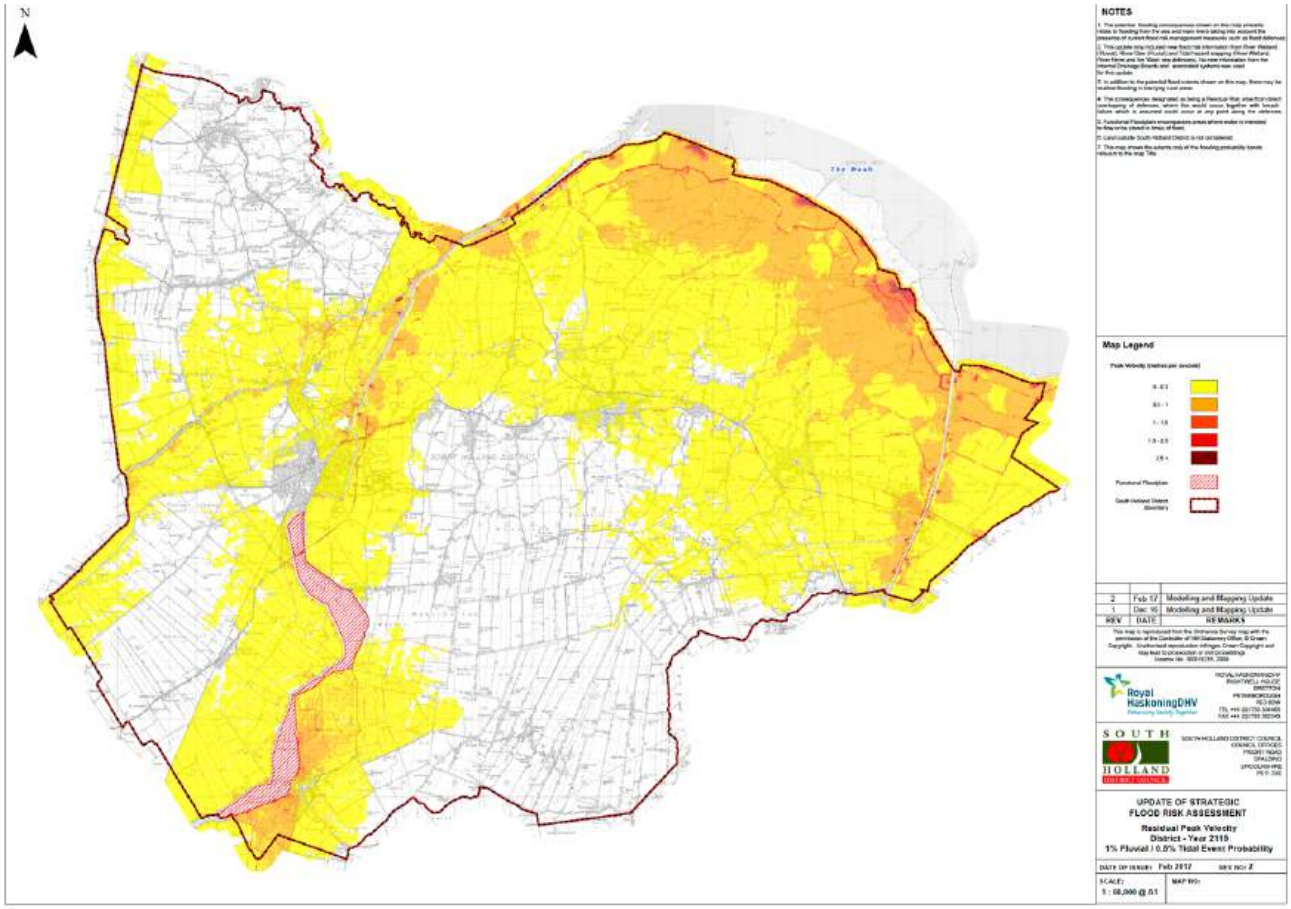

N
NOTES
Map Legend
Flooding Probability Bands :
High
Low or medium, but benefit or protection by flood defences to this standard
Functional Floodplain
South Holland District Boundary
2 Feb 17 Modelling and Mapping Update
1 Dec 16 Modelling and Mapping Update
REV DATE REMARKS
Royal HaskoningDHV
SOUTH HOLLAND
UPDATE OF STRATEGIC FLOOD RISK ASSESSMENT
Residual Risk Extent
District - Present day
1% Fluvial / 0.5% Tidal Event Probability
DATE OF ISSUE: Feb 2017 REV NO: 2
SCALE: 1 : 60,000 @ A1
MAP NO:

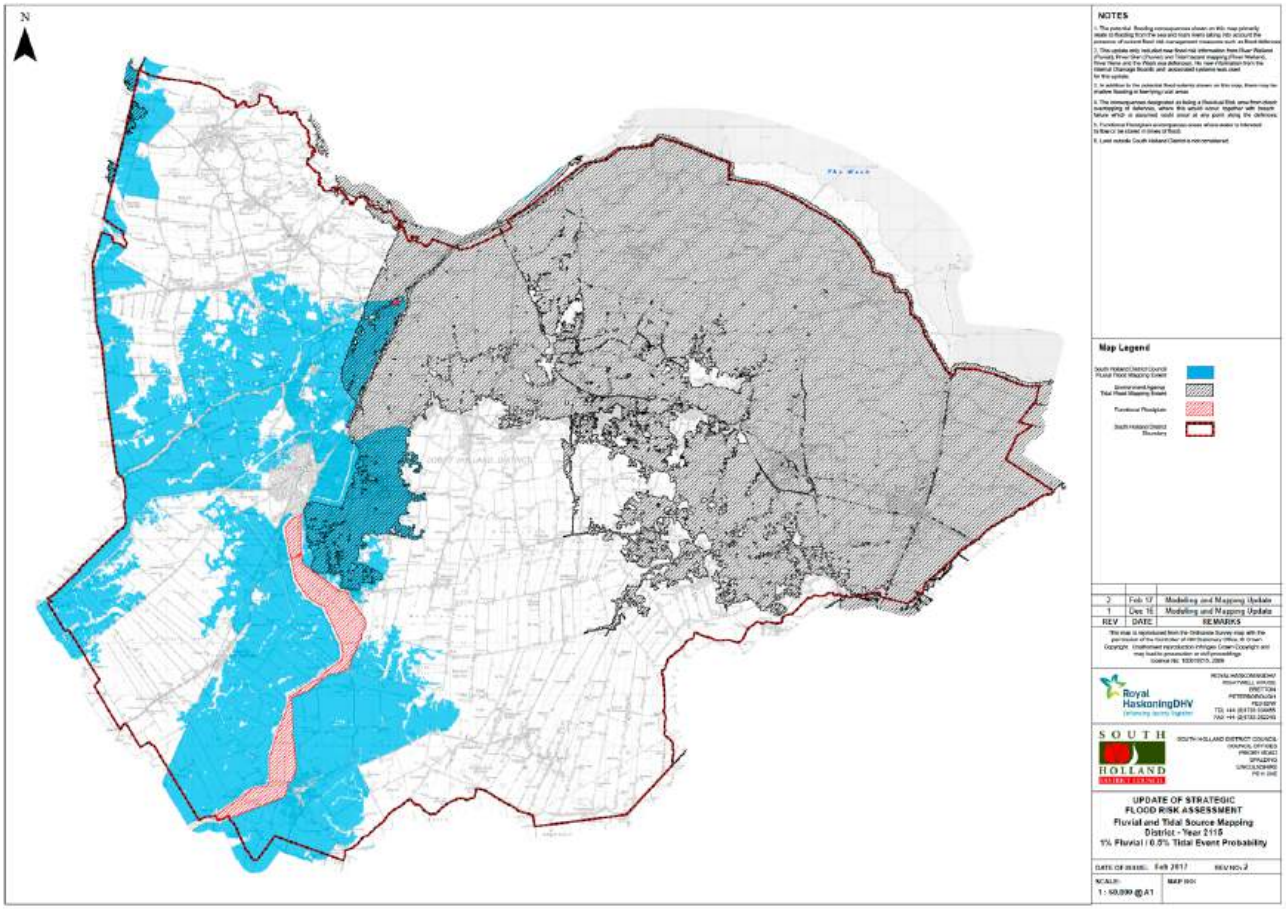

N
NOTES
Map Legend
Peak Depth
0m - 0.3m
0.301m - 0.6m
0.601m - 1m
1m - 2m
2m +
Fluvially dominated extent
Tidally dominated extent
Functional Floodplain
South Holland District Boundary
2 Feb 17 Modelling and Mapping Update
1 Dec 16 Modelling and Mapping Update
REV DATE REMARKS
Royal HaskoningDHV
SOUTH HOLLAND
UPDATE OF STRATEGIC FLOOD RISK ASSESSMENT
Residual Peak Depth
Extent of Fluvial and Tidal Domination
District - Year 2115
1% Fluvial / 0.5% Tidal Event Probability
DATE OF ISSUE: Feb 2017 REV NO: 2
SCALE: 1 : 60,000 @ A1
MAP NO:

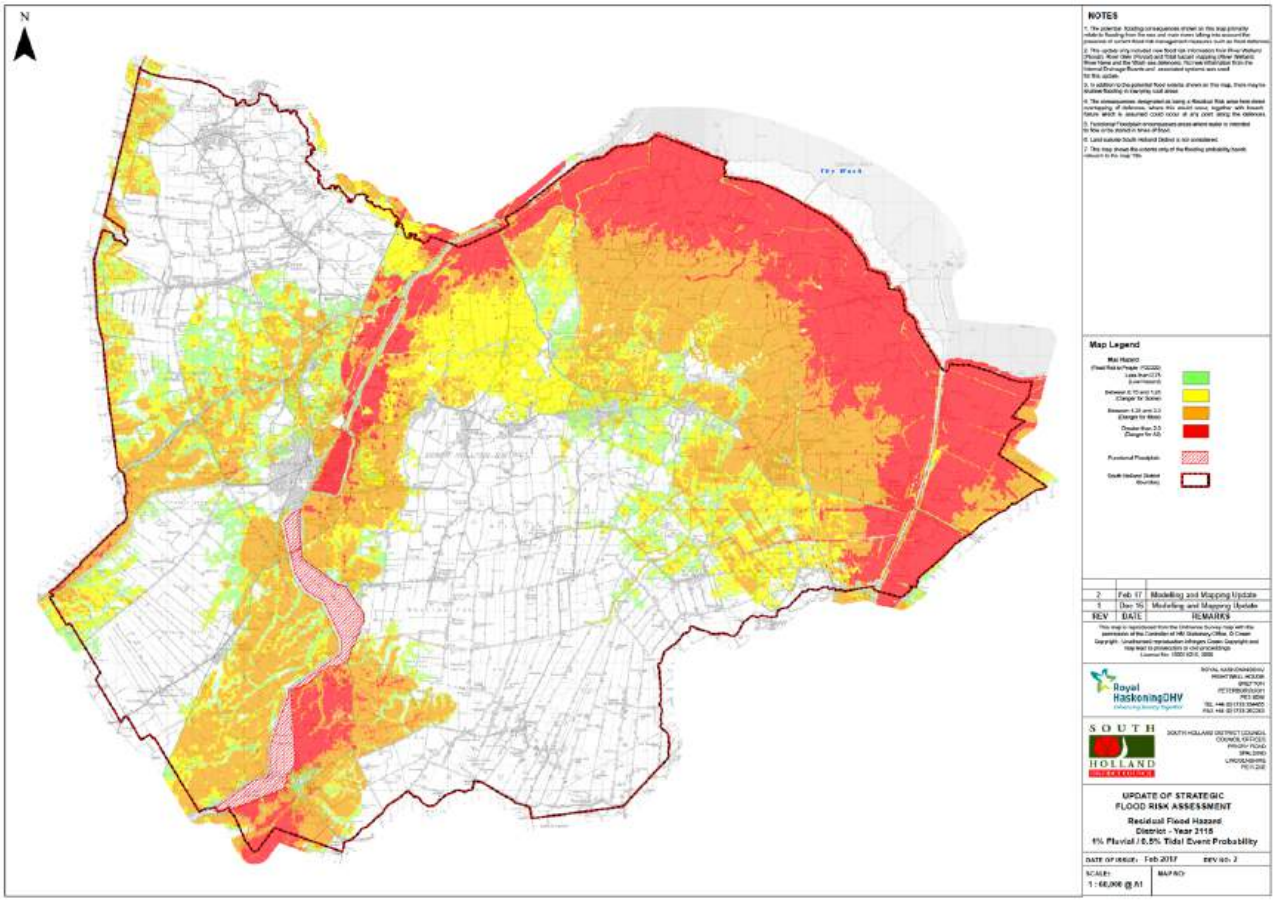

N
NOTES
Map Legend
UPDATE OF STRATEGIC
FLOOD RISK ASSESSMENT
Residual Peak Depth
District - Year 2115
1% Fluvial / 0.5% Tidal Event Probability
SOUTH HOLLAND


N
NOTES
Map Legend
UPDATE OF STRATEGIC
FLOOD RISK ASSESSMENT
Residual Peak Depth
District - Present Day
1% Fluvial / 0.5% Tidal Event Probability
SOUTH HOLLAND


N
NOTES
Map Legend
Peak Velocity (metres per second)
0 - 0.5
0.5 - 1
1 - 1.5
1.5 - 2.5
2.5 +
Functional Floodplain
South Holland District Boundary
2 Feb 17 Modelling and Mapping Update
1 Dec 16 Modelling and Mapping Update
REV DATE REMARKS
Royal HaskoningDHV
SOUTH HOLLAND
UPDATE OF STRATEGIC FLOOD RISK ASSESSMENT
Residual Peak Velocity
District - Present Day
1% Fluvial / 0.5% Tidal Event Probability
DATE OF ISSUE: Feb 2017 REV NO: 2
SCALE: 1 : 60,000 @ A1
MAP NO:


N
NOTES
Map Legend
Peak Velocity (metres per second)
0 - 0.5
0.5 - 1
1 - 1.5
1.5 - 2.5
2.5 +
Functional Floodplain
South Holland District Boundary
2 Feb 17 Modelling and Mapping Update
1 Dec 16 Modelling and Mapping Update
REV DATE REMARKS
Royal HaskoningDHV
SOUTH HOLLAND
UPDATE OF STRATEGIC FLOOD RISK ASSESSMENT
Residual Peak Velocity
District - Year 2115
1% Fluvial / 0.5% Tidal Event Probability
DATE OF ISSUE: Feb 2017 REV NO: 2
SCALE: 1 : 60,000 @ A1
MAP NO:


N
NOTES
Map Legend
UPDATE OF STRATEGIC
FLOOD RISK ASSESSMENT
Fluvial and Tidal Source Mapping
District - Year 2115
1% Fluvial / 0.5% Tidal Event Probability
SCALE:
1 : 50,000 @A1


N
NOTES
Map Legend
UPDATE OF STRATEGIC
FLOOD RISK ASSESSMENT
Residual Flood Hazard
District - Year 2115
1% Fluvial / 0.5% Tidal Event Probability
SCALE:
1 : 50,000 @A1

Notes on Flood Zone mapping in the SFRA:

The Flood Zones, whilst generally accurate on a large scale, are not provided for land where the catchment of the watercourse falls below 3km2. There are a number of small watercourse and field drains which may pose a risk to development (e.g. some ordinary watercourses and / or drains managed by Internal Drainage Boards). Therefore, whilst these smaller watercourses may not be shown as having flood risk on the flood risk mapping, it does not necessarily mean that there is no flood risk. As part of a site-specific FRA the potential flood risk and extent of flood zones should be determined for these smaller watercourses.

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7.00. Site Levels

A plan showing all these levels is shown on the accompanying topographic Survey.



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8.00. Existing Flood Alleviation Measures

The site is protected by tidal defences on both the River Nene and the River Great Ouse. Said 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 every 5 years. The main element of the strategy is a programme for protecting the riverbanks from natural erosion.

The extensive local drainage network is managed by the South Holland IDB. There are no IDB assets adversely affected by the proposed development – the 9m access strip alongside the

Board's asset (alongside the Northern boundary of the site) is clear of any form of development of landscaping. Surface water from the existing buildings and hard-standings drains naturally via infiltration leading eventually to the IDB drain system.

During the operation and maintenance of its pumping stations and other owned/maintained assets, the IDB seeks to maintain a standard capable of providing flood protection to its District. Routine maintenance programmes ensure that the appropriate levels of protection are maintained.

Current maintenance standards of the South Holland IDB and the Environment Agency's defences are considered good.

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9.0. Potential Sources of Flooding
Probability of Flooding
The probability of flooding associated with blockages in the South Holland IDB drainage system is very low due to the aforementioned maintenance standards.

This site is not affected by breaching or overtopping for the present day (2006) scenarios for either the 1 in 200 (0.5% AEP) or 1 in 1000 (0.1% AEP) year event which means the present day flood risk to the site from this source is LOW.

The latest Environment Agency information online shows the extent of flooding from rivers and the sea encompassing the site but confirms a very low risk. Very low risk means that each year this area has a chance of flooding of less than 0.1%. This takes due account of the effect of any flood defences in this area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail. However, the expected rise in sea levels due to climate change over the lifetime of the development does present a residual risk to the development site.

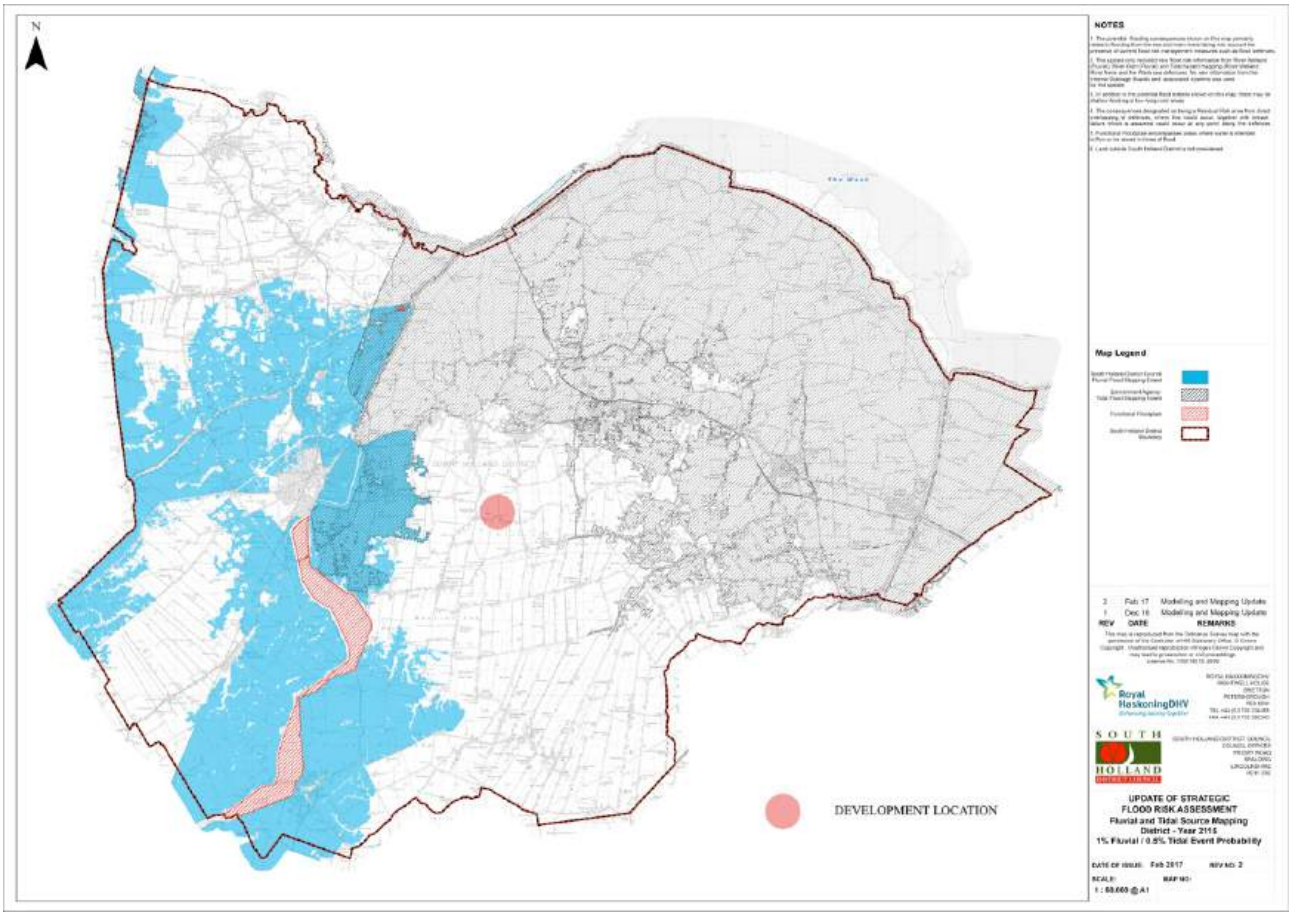
The Environment Agency have provided the year 2115 scenario which does affect the site which is assuming the development would still be in use in 100 years' time although this is unlikely, it has been taken into account as a precautionary measure.

Sources of Flooding
<u>Flooding from Adjacent Land / Development</u>
The main risk of flooding to the site from this source is from the IDB watercourse and/or the Whaplode River to the East of the site.

Due to the flat topography of the site and surrounding area, any overland flow from adjacent land site is likely to be shallow. There is also an extensive network of land drainage ditches which, by design, intercept overland flows.

The Helipad will not be positioned in any depressions or low points within the site.
Overall, the risk of flooding from this source is considered to be LOW.

Based upon the SFRA mapping and the Environment Agency data, the site is geographically located on the periphery of the anticipated breach extents – see SFRA Mapping below with the application site identified :



Flooding from artificial sources

Artificial sources of flood risk include waterbodies or watercourses that have been amended by means of human intervention rather than natural processes. Examples include reservoirs (and associated water supply infrastructure), docks, sewers and canals. The flooding mechanism associated with flood risk from artificial sources is primarily related to breach or failure of structures (reservoir, lake, sewer, canal, flood storage areas, etc.).

There are several ditches in the vicinity of the site which convey field and highway runoff around the perimeter of the site and beyond. If these ditches were to overflow due to either blockage or exceedance of capacity, the flood water would be shallow due to the flat topography of the land in this area. These ditches are monitored and maintained by the IDB with regular clearance and unblocking whenever necessary.

Flood water from this source is unlikely to pose a significant risk to the development and the risk of flooding from this source is considered to be LOW.

Sewer flooding

The SFRA does not include any information regarding flooding events from sewers (SE Lincolnshire, 2017) of the Site.

Canal failure

According to Ordnance Survey (OS) mapping, there are no canals within 500 m of the Site.

Water supply infrastructure

Water supply infrastructure is comprised of a piped network to distribute water to private houses or industrial, commercial or institution establishments and other usage points. In urban areas, this represents a particular risk of flooding due to the large amount of water

supply infrastructure, its condition and the density of buildings. The risks of flooding to properties from burst water mains cannot be readily assessed.
If more information regarding the condition and history of the water supply infrastructure within the vicinity of the Site is required, then it is advisable to contact the local water supplier (Anglian Water).

Culverts and bridges

The blockage of watercourses or structures by debris (that is, any material moved by a flowing stream including vegetation, sediment and man-made materials or refuse) reduces flow capacity and raises water levels, potentially increasing the risk of flooding. High water levels can cause saturation, seepage and percolation leading to failure of earth embankments or other structures. Debris accumulations can change flow patterns, leading to scour, sedimentation or structural failure.
Culverts and bridges have not been identified within 50 m of the Site.

Floodplain storage

Where flood storage from any source of flooding is to be lost as a result of development, onsite level-for-level compensatory storage, accounting for the predicted impacts of climate change over the lifetime of the development, should be provided. Where it is not possible to provide compensatory storage on site, it may be acceptable to provide it off-site if it is hydraulically and hydrologically linked.
The loss of floodplain storage is less likely to be a concern in areas benefitting from appropriate flood risk management infrastructure or where the source of flood risk is solely tidal.
The development is located within fluvial and tidal Flood Zone 3 and involves an increase in the proposed building footprint. However, the development is only affected by flooding in the case of a breach or overtopping of defences and benefits from the presence of formal fluvial and tidal flood defences, therefore compensatory storage is not considered to be necessary (CIRIA C624 (2004)).

Drainage and run-off

Based on the topography and low surface water flood risk in the vicinity, interference or interaction with overland flow paths and inflows from off-Site is considered unlikely.

The potential surface water run-off generated from the Site during a 1 in 100 year return period should be calculated, using FEH 2013 rainfall data from the online Flood Estimation Handbook (FEH), developed by NERC (2009) and CEH (2016).

The NPPF (2021) recommends the effects of climate change are incorporated into FRA's. As per the most recent update to the NPPG (May 2022) the applicable climate change factor for the 1 in 30 (≥ 3.3% AEP) and 1 in 100 (< 3.3 to 1% AEP) year event to apply to surface water flooding is dependent upon the management catchment.

The breach models show anticipated flood risk to the site at year 2115 which is 100 years in the future. The lifetime of this development is highly likely to be less than this, somewhere between 20 and 50 years as a maximum. Therefore, the breach scenarios at 2115 which have been used ensure a robust assessment of the residual flood risk from this source. The year 2115, 1 in 200 year breach scenario is more than sufficient
to assess the risk to the site based on the anticipated lifetime of the development.

Overall the risk of flooding from this source is considered to be LOW and there are mitigation measures proposed to deal with this residual risk such as raising land in the location of the Helipad to raise the FFLs out above any anticipated flood depths.

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13.00 Mitigation Measures
The assessment of flood risk in this assessment confirms a LOW risk of flooding from all sources of flooding. No mitigation is required for the Helipad.

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14.00 Conclusions
The following conclusions can be made:
The proposed development is not in a functional flood plain as defined by PPS25.
As a result of this assessment, the following conclusions have been reached.
The proposed development is in a defended floodplain.
The risk of the site flooding from any Environment Agency watercourse is very low. The risk of flooding is further lowered due to the Internal Drainage Board drains incorporating a significant freeboard.
The risk of flooding from IDB watercourses is also extremely low.
Velocities, and therefore the hazard of any flood water in the area would be low.
The site is located within an IDB catchment with a minimum standard of drainage of 1% annual probability (1 in 100 chance each year) which exceed with DEFRA guidelines for rural development.
The actual risk is identified as low and its implication for the site should not prevent a planning application being approved.

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15.00. Recommendations
The helipad area should be constructed with permeable materials.
The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

The essential and recommended mitigation measure will provide further protection to the development and reduce any residual risk as far as reasonably practicable. It is recommended that compliance with the recommendations of this FRA are conditioned as part of any planning permission.

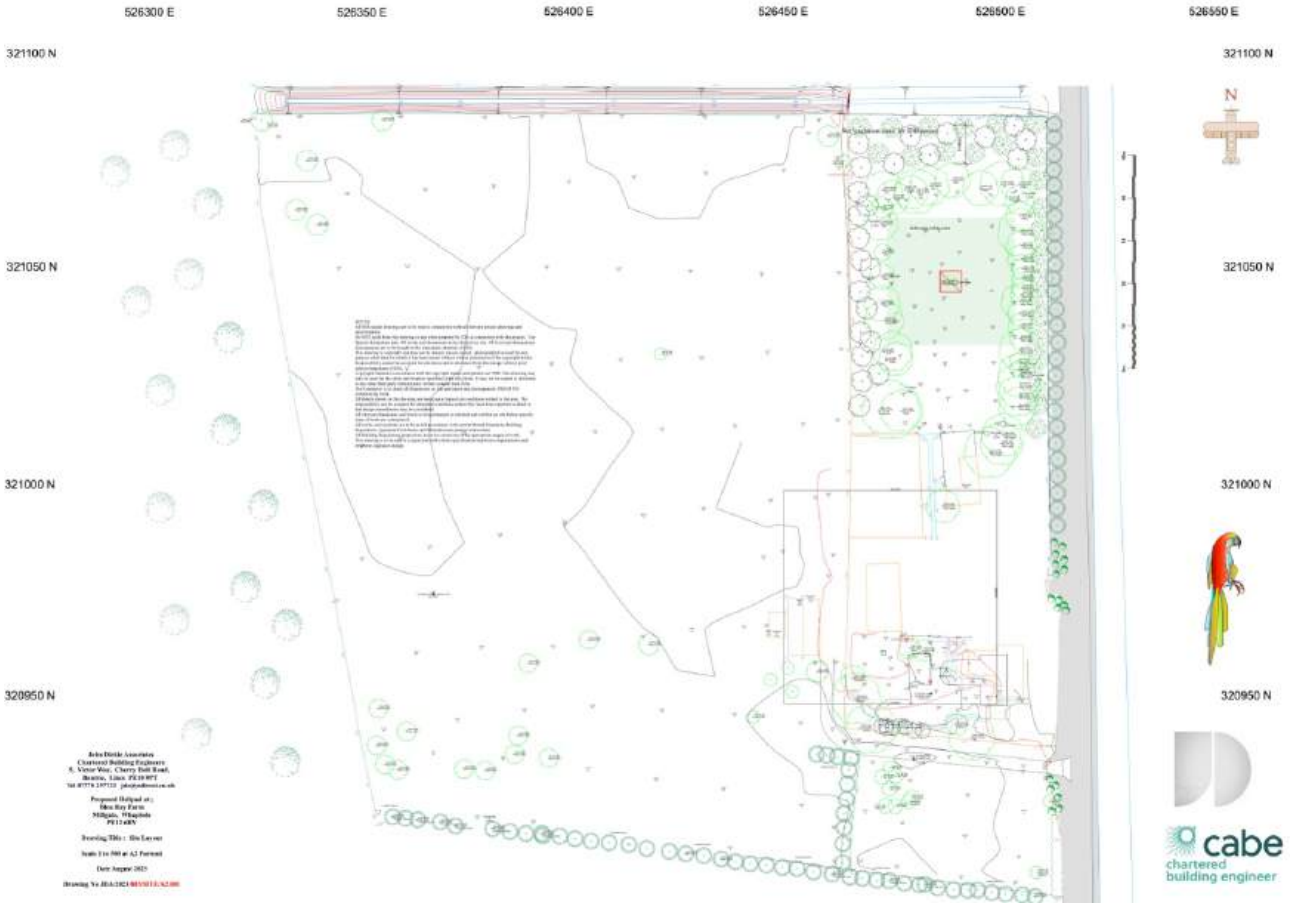
This assessment concludes that the site is suitable for development for the intended use without unacceptable risk of flooding from all sources to the site itself and elsewhere as long as the essential mitigation measures are applied to this development.

It is our conclusion that the development complies with NPPF and passes, or is not required to pass, the sequential and exemption tests and should therefore be permitted with appropriate Conditions.



John Dickie C. Build E MCABE
Chartered Building Engineer

Appendix D. Scheme Drawings




526300 E
526350 E
526400 E
526450 E
526500 E
526550 E
1100 N
1050 N
000 N
950 N
321100 N
321050 N
321000 N
320950 N
N
cabe
chartered
building engineer



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PLANNING APPLICATION DRAWING

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Tel 07778 297733 jda@ndirect.co.uk



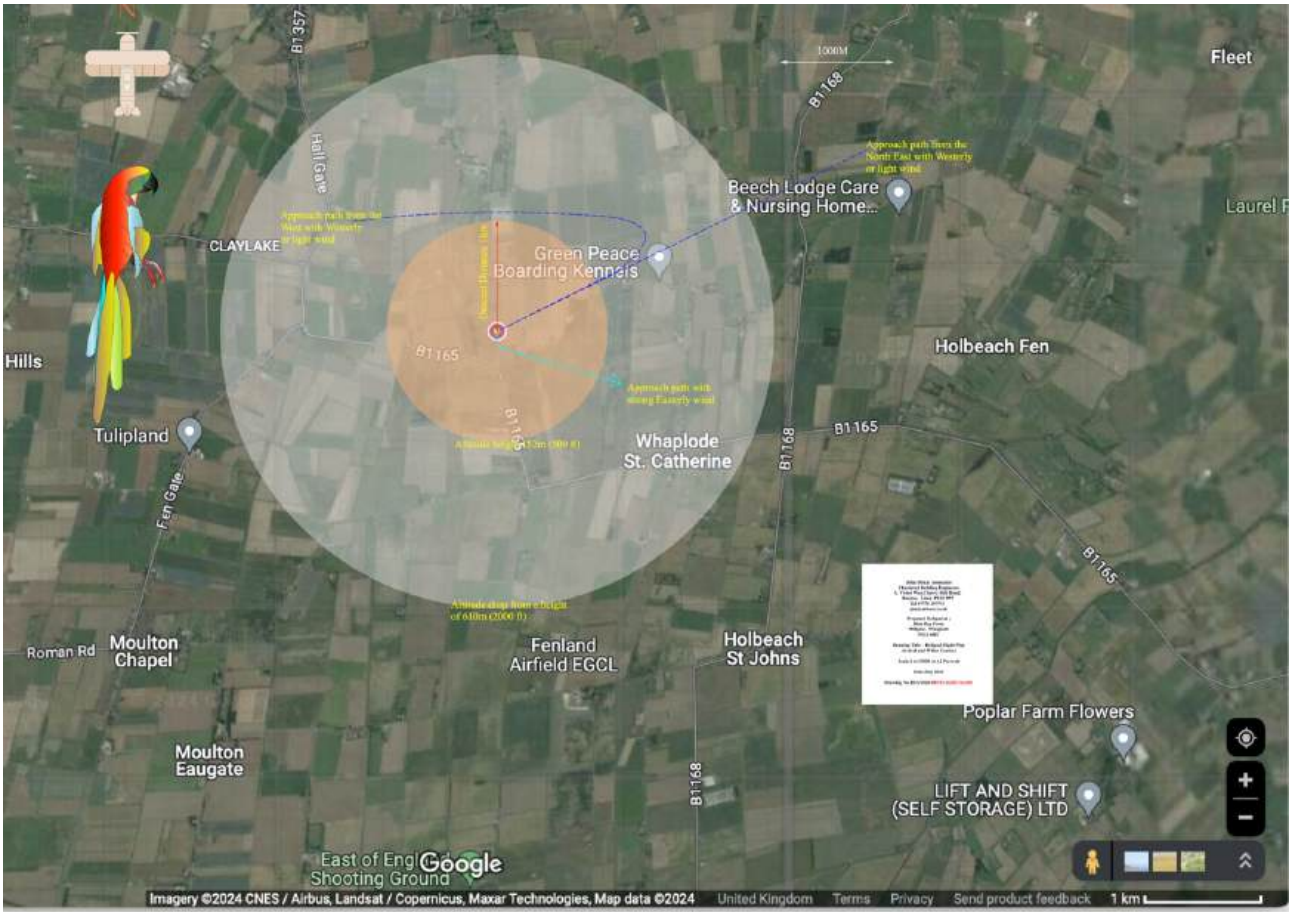
Proposed Helipad at ;
Bleu Ray Farm
Milligate, Whaplode
PE12 6RY

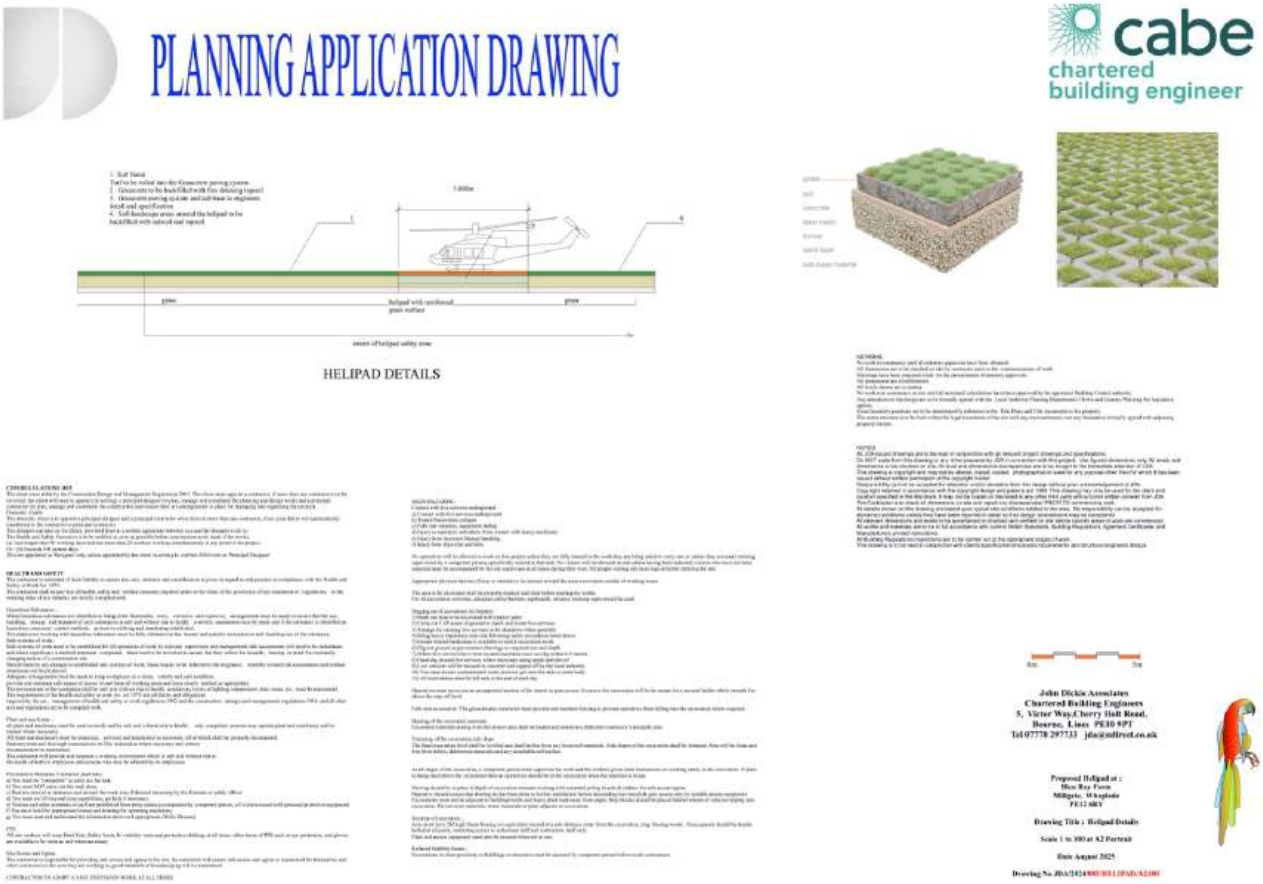
Drawing Title : Location Plan

Scale 1 to 1000 at A2 Portrait

Date August 2024

Drawing No JDA/2024/885/LOCATION/A2.001





DISCLAIMER

This document has been prepared solely as a Flood Risk Assessment in support of a Full planning application for a Helipad at Bleu Ray Farm, Mill Gate, Whaplode PE12 6RR

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