Flood Risk Assessment

Address: Martin Farm, South Drove, Martin, Lincolnshire, LN4 3RF.

Grid Reference: TF 15190 60650

Created by: Stuart Green at above address, Tel. No. 07971316176
With references from Environmental Agency, Lincolnshire.

Information obtained: Jan 2022

Introduction

This flood risk assessment is in accordance to planning Application at Martin Farm for a Horse Exercise Area/Arena, size 40m x 20m. This development will be raised above ground level by approx. 200mm, the surface will be porous and will have drainage incorporated in the design by French Drains in to existing drainage ditches, maintained by ourselves.

1. Flood Map

The attached map includes the current Flood Map for this area. The Flood Map indicates the area at risk of flooding, assuming no flood defences exist, for a flood with a 0.5% chance of occurring in any year for flooding from the sea, or a 1% chance of occurring for fluvial (river) flooding. It also shows the extent of the Extreme Flood Outline which represents the extent of a flood with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater.

In some locations, such as around the fens and the large coastal floodplains, showing the area at risk of flooding assuming no defences may give a slightly misleading picture in that if there were no flood defences, water would spread out across these large floodplains. This flooding could cover large areas of land but to relatively shallow depths and could leave pockets of locally slightly higher land as isolated dry islands. It is important to understand the actual risk of the flooding to these dry islands, particularly in the event of defence failure.

The Flood Map also shows the location of formal raised flood defences and flood storage reservoirs. It represents areas at risk of flooding for present day only and does not take account of climate change.

The Flood Map only indicates the extent and likelihood of flooding from rivers or the sea. It should also be remembered flooding may occur from other sources such as surface water
sewers, road drainage, etc.

2. Historic Flood Event Outlines

A copy of the Historic Flood Event Outlines Map showing the extent of previous recorded flooding in your area is attached. This only covers information that is held with Environmental Agency.

3. Schemes in the area
There are no ongoing capital projects to reduce or sustain the current flood risk to this site.

4. Fluvial Flood Risk Information
4.1 Fluvial Defence Information

The existing fluvial defences reducing the risk of flooding to this site consist of earth embankments and upstream flood storage reservoirs. They are in fair condition and reduce the risk of flooding (at the defence) to a 10% (1 in 10) chance of occurring in any year. The fluvial defences are inspected routinely to ensure potential defects are identified by the Environmental Agency.

4.2 Fluvial Modelled Levels and Flows
Available modelled fluvial flood levels and flows for the model nodes shown on the attached map are set out in the data table attached. This data is taken from the model named on the data table, which is the most up-to-date model currently available.
Please note these levels are “in-channel” levels and therefore may not represent the flood level on the floodplain, particularly where the channel is embanked or has raised defences.

4.3 Fluvial Modelled Flood Extents

Please find attached a map showing available modelled flood extents, taking into account flood defences, for Martin farm location. This data is taken from the model named on the map, which is the most up-to-date model currently available.

4.4 Fluvial Hazard Mapping

For certain locations, EA have carried out modelling to map the maximum values of flood depth, velocity and hazard rating (danger to people) resulting from overtopping and / or breaching of defences at specific locations for a number of scenarios.
At present this site is not covered by any fluvial hazard mapping.

Climate change will increase flood risk due to overtopping of defences. Please note, unless specified otherwise, the climate change data included has an allowance for 20% increase in flow.

Summary

By looking at these facts for the location of Martin Farm, the risk of flooding via the Sea is less than 0.5% and from the river is less than 1% with-out Flood defences, but with the risk of flooding via river is from the Timberland Delph with has defences (embankments) and is inspected regularly by the Environmental Agency, this risk would be lower.

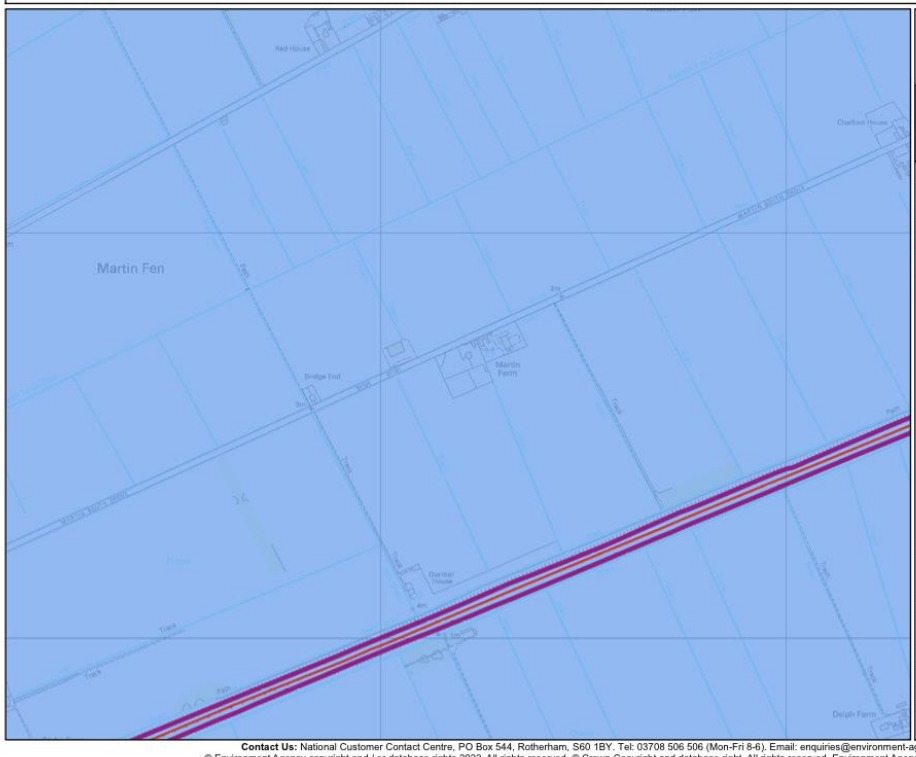
In the event of the are flooding, as said earlier in the report, the depth of the flood would be minimum as it would be spread across the flat flood plain.

The development is raised by approx. 200mm and will have drainage into existing drainage ditches and the surface is porous, this will not affect the rain surface run off and this land is currently well drained.

Looking at the history of floods in the area, the only reported flood was due to the Timberland Delph breaching, which is the only time in the Delph's 200-year history. The flood water did not come anywhere near Martin Farm and was then directed away from the area through the drainage system.

The development of the Horse exercise area/arena is not a dwelling, it is just drained Surface, of an area of 40m x 20m with a perimeter fence around it, so in the low risk of it flooding it will be no risk to live.

Flood Map centred on TF15190 60650 - created Jan 2022 [Ref: CCN-2021-245447]



Environment Agency

Scale 1:10,000

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Legend

- Main River
- Raised Defences
- Flood Storage Area
- Areas at Risk of Flooding from Rivers or the Sea
- Extreme Flood Outline

Dark blue shows the area that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded:

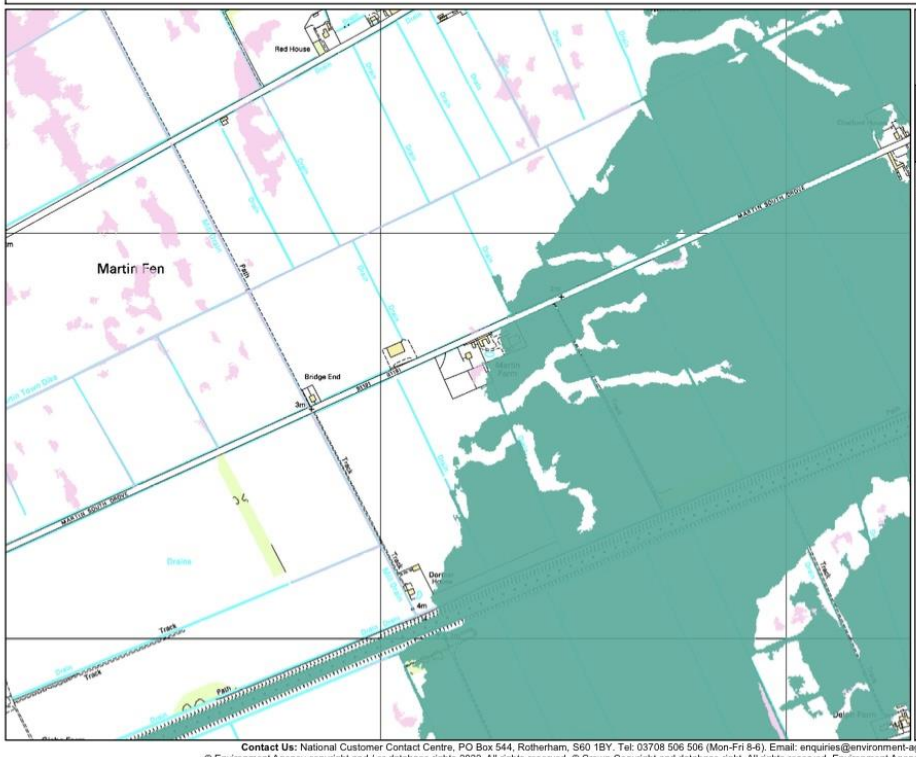
- from the sea by a flood that has a 0.5% (1 in 200) or greater chance of happening each year.

- or from a river by a flood that has a 1% (1 in 100) or greater chance of happening each year.

Light blue shows the extent of the Extreme Flood Outline, which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater.

These two colours show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements. Sites outside the two extents, but behind raised defences, may be affected by flooding if the defences are overtopped or fail.

Modelled Flood Extents - Climate Change (with defences) Model: Lower Witham 2009 [CCN-2021-245447]



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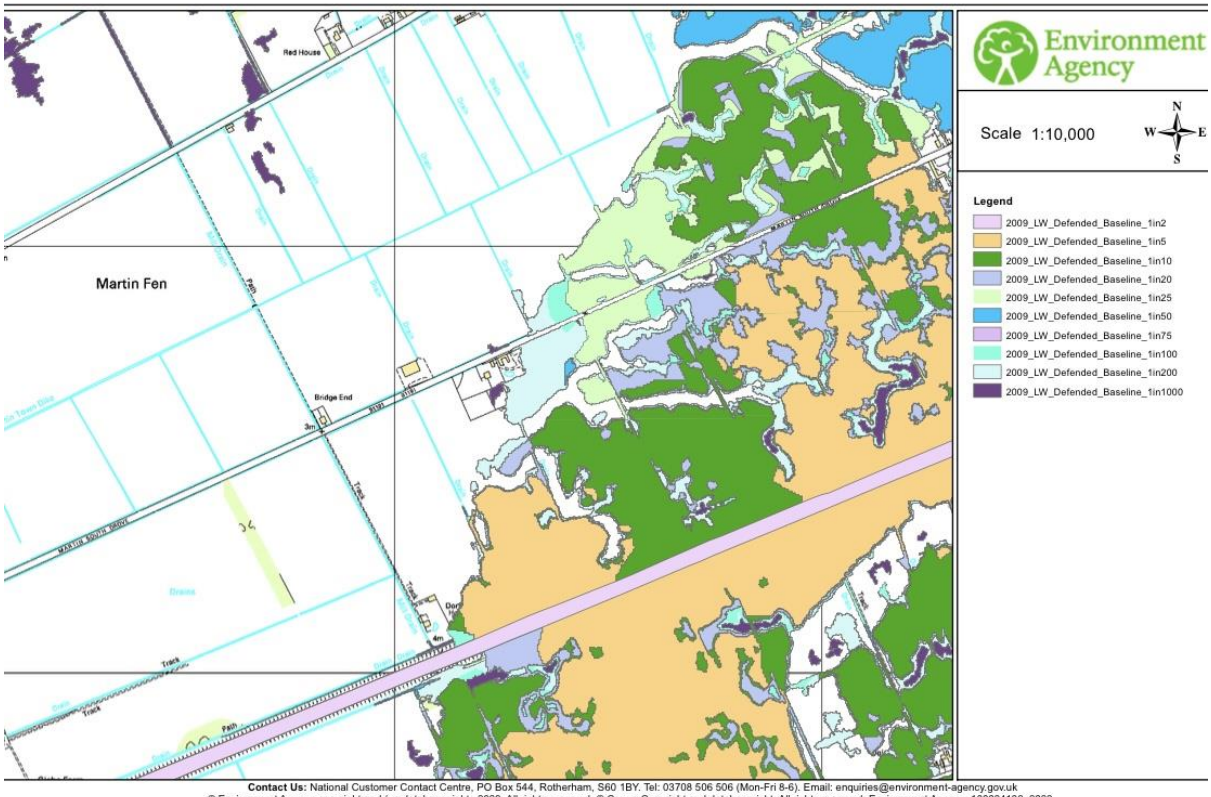
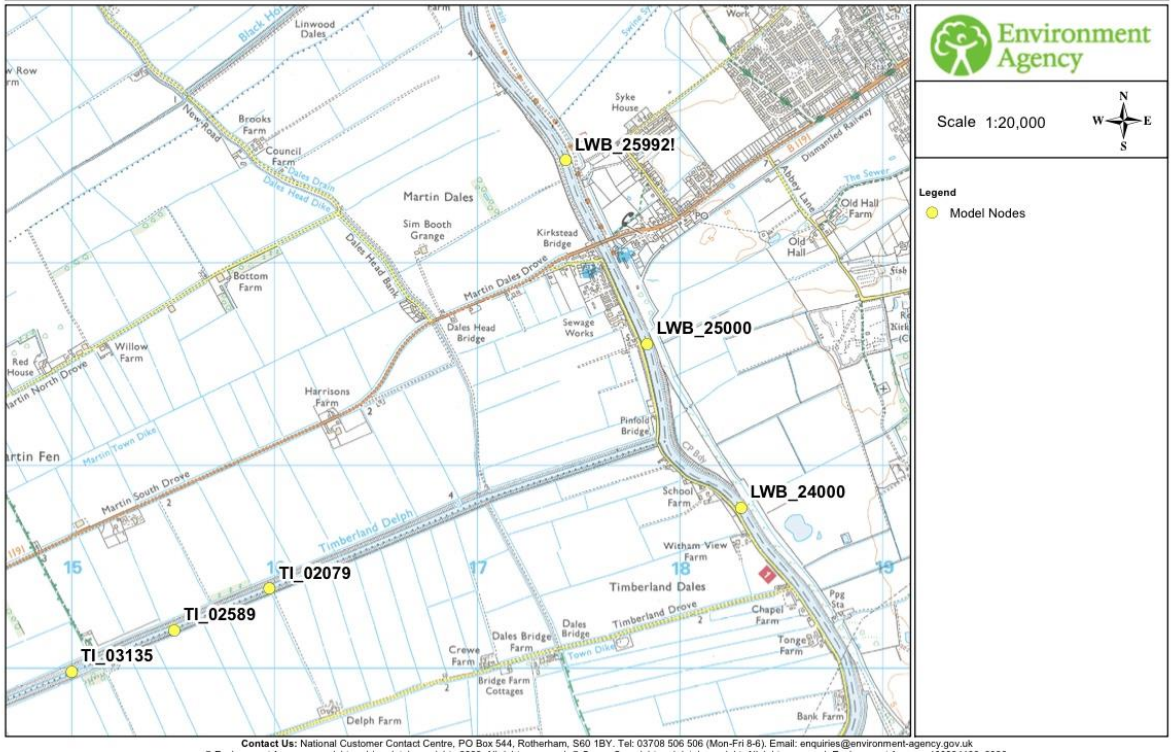
- 2009_LW_Defended_Baseline_1in100_CC20pc
- 2009_LW_Defended_Baseline_1in1000_CC20pc

Modelled Flood Extents (with defences) Model: Lower Witham 2009 [CCN-2021-245447]



Modelled Nodes Model: Lower Witham 2009 [CCN-2021-245447]



Fluvial Flood Levels (mODN) (Timberland Delph)

The fluvial flood levels for the model nodes shown on the attached map are set out in the table below. They are measured in metres above Ordnance Datum Newlyn (mODN).

			Annual Exceedance Probability - Maximum Water Levels (mODN)											
Node Label	Easting	Northing	50% (1 in 2)	20% (1 in 5)	10% (1 in 10)	5% (1 in 20)	4% (1 in 25)	2% (1 in 50)	1.33% (1 in 75)	1% (1 in 100)	1% (1 in 100) inc 20% Climate Change	0.5% (1 in 200)	0.1% (1 in 1000)	0.1% (1 in 1000) inc 20% Climate Change
TI_02079	515979	360395	3.68	3.78	3.79	3.80	3.80	3.80	3.80	3.80	3.81	3.81	3.81	3.81
TI_02589	515510	360190	3.67	3.76	3.77	3.77	3.78	3.78	3.78	3.79	3.79	3.80	3.78	3.78
TI_03135	515004	359985	3.68	3.77	3.78	3.78	3.78	3.79	3.79	3.79	3.79	3.79	3.80	3.80

Fluvial Flood Flows (m³/s) (Timberland Delph)

The fluvial flood flows for the model nodes shown on the attached map are set out in the table below. They are measured in metres cubed per second (m³/s).

			Annual Exceedance Probability - Maximum Flows (m³/s)											
Node Label	Easting	Northing	50% (1 in 2)	20% (1 in 5)	10% (1 in 10)	5% (1 in 20)	4% (1 in 25)	2% (1 in 50)	1.33% (1 in 75)	1% (1 in 100)	1% (1 in 100) inc 20% Climate Change	0.5% (1 in 200)	0.1% (1 in 1000)	0.1% (1 in 1000) inc 20% Climate Change
TI_02079	515979	360395	3.82	4.71	5.31	5.14	4.70	5.13	5.28	5.56	6.65	5.68	5.58	5.06
TI_02589	515510	360190	3.55	4.44	5.01	4.41	4.85	4.64	4.99	5.28	6.27	5.79	5.33	4.73
TI_03135	515004	359985	3.31	4.18	4.69	4.42	4.65	4.49	5.25	4.97	6.65	5.06	6.10	6.18

Fluvial Flood Levels (mODN) (Witham)

The fluvial flood levels for the model nodes shown on the attached map are set out in the table below. They are measured in metres above Ordnance Datum Newlyn (mODN).

			Annual Exceedance Probability - Maximum Water Levels (mODN)											
Node Label	Easting	Northing	50% (1 in 2)	20% (1 in 5)	10% (1 in 10)	5% (1 in 20)	4% (1 in 25)	2% (1 in 50)	1.33% (1 in 75)	1% (1 in 100)	1% (1 in 100) inc 20% Climate Change	0.5% (1 in 200)	0.1% (1 in 1000)	0.1% (1 in 1000) inc 20% Climate Change
LWB_24000	518304	360793	3.75	4.04	4.22	4.26	4.28	4.31	4.33	4.33	4.41	4.35	4.38	4.44
LWB_25000	517841	361601	3.76	4.06	4.23	4.27	4.30	4.33	4.34	4.35	4.42	4.37	4.40	4.46
LWB_25992!	517439	362505	3.77	4.07	4.26	4.31	4.32	4.35	4.35	4.36	4.43	4.38	4.43	4.48

Fluvial Flood Flows (m³/s) (Witham)

The fluvial flood flows for the model nodes shown on the attached map are set out in the table below. They are measured in metres cubed per second (m³/s).

			Annual Exceedance Probability - Maximum Flows (m³/s)											
Node Label	Easting	Northing	50% (1 in 2)	20% (1 in 5)	10% (1 in 10)	5% (1 in 20)	4% (1 in 25)	2% (1 in 50)	1.33% (1 in 75)	1% (1 in 100)	1% (1 in 100) inc 20% Climate Change	0.5% (1 in 200)	0.1% (1 in 1000)	0.1% (1 in 1000) inc 20% Climate Change
LWB_24000	518304	360793	84.97	91.27	97.28	99.56	100.00	101.44	101.09	101.33	104.74	101.52	111.19	131.92
LWB_25000	517841	361601	87.86	94.43	99.23	103.34	105.27	107.24	105.65	106.82	108.90	108.36	116.31	137.80
LWB_25992!	517439	362505	87.99	93.76	98.84	102.68	103.05	105.90	105.51	106.05	108.86	106.97	115.95	134.99

Flood Map centred on TF15190 60650 - created Jan 2022 [Ref: CCN-2021-245447]

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Scale 1:10,000

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Legend

2019-November_Timberland Delph

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk