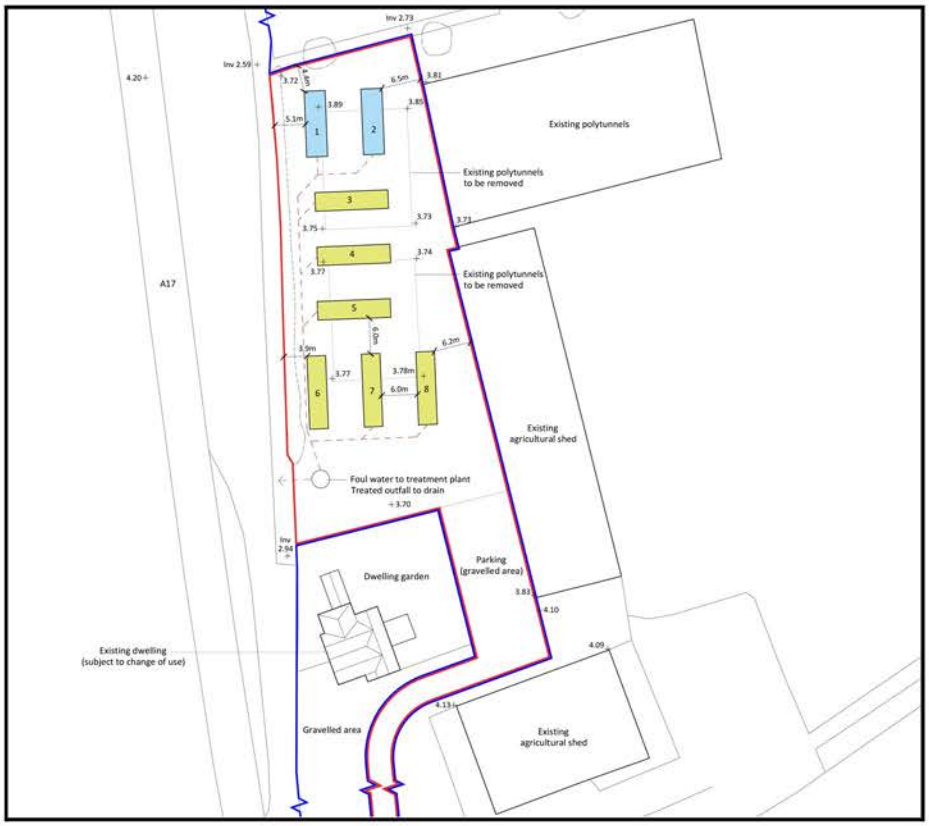
FLOOD RISK ASSESSMENT

Agricultural Workers' Accommodation
Vickers Park
Washway Road
Moulton Marsh
Spalding
PE12 6LP



RM ASSOCIATES

10 Main Street
Thorpe on the Hill
Lincoln
LN6 9BG
Tel 01522 681728
Mobile 07967 304737
Email: ray.rmassociates@gmail.com

September 2019 Version 1

RMA

FLOOD RISK ASSESSMENT FOR AGRICULTURAL WORKERS' ACCOMMODATION VICKERS PARK, WASHWAY ROAD, MOULTON MARSH, SPALDING. PE12 6LP

INTRODUCTION

The Government has placed increasing priority on the need to take full account of the risk associated with flooding at all stages of the planning and development process. This seeks to reduce the future damage to property and the risk to life from incidents of flooding. Their expectations relating to flooding are contained in the National Planning Policy Framework Feb 2019, (NPPF), which identifies how the issue of flooding is dealt with in the drafting of planning policy and the consideration of planning applications by avoiding inappropriate development in areas at risk from flooding and to direct development away from areas at highest risk.

The NPPF provides that development in areas at risk of flooding should be avoided and seeks to direct development away from areas at highest risk. There is a sequential, risk-based approach to the location of development avoiding where possible, flood risk to people and property, managing any residual risk and taking account of the impacts of climate change.

This document has been prepared solely as a flood risk assessment and drainage statement on behalf of the client, Naylor Flowers Ltd. RM Associates accepts no responsibility or liability for any use of this document other than by the client, for the purposes for which it was originally commissioned and prepared. If any unauthorised Third Party comes into possession of this report; they rely on it at their own risk and RM Associates owe them no duty of care or skill. All comments contained in this report, including any conclusions are based upon information available at the time of writing the report. RM Associates accepts no liability if additional information exists or becomes available after the time of writing this report. This document is the copyright of RM Associates. The reproduction or transmission of all or part of this document, whether by photocopying or storing in any medium by electronic means or otherwise, without the prior written consent of RM Associates is prohibited.

This report contains public sector information licensed under the Open Government Licence v3.0.

APPLICATION SITE

The site is located at Vickers Park, Washway Road, Moulton Marsh, Spalding. PE12 6LP within the administrative area of South Holland District Council. The National Grid Reference is TF33007 29763. **Plan 1**

This flood risk assessment has been prepared for a Full Planning Application is for the change of use of land, for the siting of 6 mobile homes and 2 log cabins for occupation by agricultural workers, in connection with the applicant's current horticultural and agricultural business. **Plans 2, 3 & 4**

The growing of cut flowers is seasonal and the application proposes that with the drop-off in the need for workers in the winter months, the caravans and lodges will only be in use for 9 months in the year (the HMOs will be used for the remaining time). Accordingly, the use is temporary: the accommodation is of temporary construction and will

not be occupied year-round. However, and somewhat obviously, the need for the workers and, therefore, the accommodation remains each year. Those workers needed outside of this period will be housed in the existing dwellings. The site will therefore not be used for permanent occupation. There is also a pair of semi-detached three-bedroom dwellings on site also owned by the applicant that will be used to house workers and which will be occupied as 'small homes in multiple occupation'.

The Site would be classed as Non-Major Development applying the National Planning Policy Guidance (NPPG) as the site is to be developed for less than 10 dwellings.

The National Planning Policy Guidance (NPPG) defines three levels of flood risk depending upon the annual probability of fluvial flooding occurring.

Zone 1 – Low Probability (<0.1%)

Zone 2 – Medium Probability (0.1 – 1.0%

Zone 3 – High Probability (>1.0%)

The site is shown to be within Flood Zone 3 'High Probability' as detailed on the Environment Agency's Flood Zone Maps without defences, and as defined in Table 1 of NPPG. **Map 1**

Table 1: Flood Zones Definition

Flood Zone 3- High Probability
Definition Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year. The water-compatible and less vulnerable uses of land are appropriate in this zone. The highly vulnerable uses should not be permitted in this zone. The more vulnerable and essential infrastructure uses should only be permitted in this zone if the Exception Test is passed. Essential Infrastructure permitted in this zone should be designed and constructed to remain operational and safe for uses in times of flood **Flood Risk Assessments requirements** All proposals in this zone should be accompanied by a Flood Risk Assessment. **Policy aims** Developers and local authorities should seek opportunities to: • reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques; • relocate existing development to land with a lower probability of flooding; • create space for flooding to occur by allocating and safeguarding open space for flood storage.

Applying the Flood Risk Vulnerability Classification in Table 2 of NPPG, it is contended, that with the site use for the seasonal workers, not occupying the site from the 1st November to 31st January in the following year, the proposed residential use should be classified as "More Vulnerable", with Table 1 of NPPF stating that such uses are appropriate in this zone. The residential units do not provide, or are intended to provide, permanent residential accommodation, as defined in the "Highly Vulnerable" classification but are more in line with short lets as defined in the "More Vulnerable" classification. A Flood Warning and Evacuation Plan will be prepared. Any seasonal workers required on site in the closed period will be housed in the adjacent two storey properties.

This seasonal variation in labour demand will mean that the accommodation units will not be required during the

time of year when a flooding incident is most likely. Accordingly, the requirement by the Environment Agency for this type of accommodation to be vacant during winter months can be complied with.

Table 2: Flood Risk Vulnerability Classification

More Vulnerable
• Hospitals • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels • Non-residential uses for health services, nurseries and educational establishments • Landfill and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravan and camping, subject to a specific warning and Evacuation Plan.

The site is generally flat land levels taken from the topographical survey average 3.75mODN, Washdyke Road at the site entrance being at a level of 3.84mODN. Plan **2**

DRAINAGE AUTHORITIES

Environment Agency

The Environment Agency has permissive powers for reducing the risk of flooding from designated main rivers and from the sea.

The following potential sources of flooding affecting the development site have been identified as:

- The River Welland and The Wash

The Flood Zone Maps identify river catchments over 3 sq. km. These maps are a theoretical estimate of areas that could be inundated should no defence exist. In practice, current standards of protection would result in flood envelopes substantially less than shown by these maps. The maps make no allowance for local, site specific features.

The flood zone maps show that the site of the proposed development is considered at risk from tidal flooding. These maps indicate that the area would be flooded without flood defences, which are in place along the coastal edge (with an annual probability of more than 0.5% i.e. return frequency of less than 1 in 200 years for tidal flooding or more than 1.33% return frequency of less than 1 in 100 years for fluvial flooding). **Map 1**

The Environment Agency Risk of flooding from Rivers and Sea map shows that the site is at Low Risk of flooding. **Low risk** means that each year this area has a chance of flooding of between 0.1% and 1%. This takes into account the effect of any flood defences that may be in this area. Flood defences reduce, but do not completely stop the chance of flooding as they can be overtopped or fail. **Map 2**

The Wash

The Wash lies some 9.0km to the north-east of the site. The Wash embankments constitute the first line of defence

against any tidal flooding. These consist of earth embankments. These earth embankment crest level is circa 7.00mODN with a predicted 1 in 200-year peak tide of 5.95mODN at Lawyers Sluice.

River Welland

The River Welland lies some 2.7Km to the north of the site and is tidal down stream of Marsh Lane Sluice, the present day 1 in 200-year tide flood level is 5.99mODN at Fosdyke Bridge. The tidal flood defences of the tidal River Welland consist of earth embankments which are in good condition and the crest heights are circa 7.00mODN.

From Lincolnshire & Northamptonshire Area, Tidal Modal Analysis (June 2006) **Map 3**

Peak tide levels Present Day (2006) at Fosdyke Bridge (Tidal River) 0.5% (1 in 200) = 5.99mODN

Peak tide levels (2116) at Fosdyke Bridge (Tidal River) 0.5% (1 in 200) = 5.99mODN plus climate change allowances from Table 3 of 1.21mm = 7.11mODN

Taking the precautionary approach, the Hazard Rating following a breach which in Flood Risk Assessment (FD 2320) Guidance for New Development Phase 2 R& D Technical Report these are classified as low <0.75, moderate 0.75-1.25, significant 1.25-2.50 and extreme >2.50 based upon an empirical measure of velocity and depth.

Flood Hazard			**Description**
	<0.75	Low	**Caution –** Flood Zone with shallow flowing water or deep standing water.
	0.75 – 1.25	Moderate	**Danger for Some -** (i.e. children) Danger Flood Zone with deep or fast flowing water.
	1.25 – 2.0	Significant	**Danger for Most –** Danger Flood Zone with deep fast flowing water.
	>2.0	Extreme	**Danger for All** – Extreme Danger Flood Zone with deep fast flowing water.

HR = d x (v + 0.5) +DF

Where V = Flood flow velocity (m/sec) D

= Flood depth (m)

DF = A debris factor included to represent the greater damage, or risk of injury to people, that can occur if debris is swept along with the water. = 0.5 for depths <0.25 or 1.0 for depths.

For the degree of Flood Hazard to be classified as low HR must be <0.75

The Environment Agency has recently carried out a Tidal Hazard Mapping for the Wash/Welland following a breach to the defences. The Tidal Hazard Maps (2009) for Scenario year 2006 for the 1 in 1000-year event show that the site is not within a Hazard Rating area. With climate change up to year 2115 the maps show that the site is within a Hazard Rating area of between 0.75 – 1.25 (Danger for Some), with a depth between 0 - 0.25m and velocity 0 - 0.3m/sec., therefore the site is subject to tidal flooding following a breach to the defences.

Map 4 shows the Hazard rating for the present day and **Map 5;** show the results for The Wash/Welland 2115 taken from the Environment Agency Tidal Hazard Mapping.

The Environment Agency has also produced maps based on computer modelling of simulated overtopping of defences along the coastline for specific tidal scenarios. The maps only consider the consequences of overtopping of defences and do not show the possible consequences of breaches of the tidal defences. For future climate change scenarios, it is assumed that the defences remain at 2006 heights. These maps for the simulated overtopping relate only to the main coastal defences and does not currently include any overtopping from the Haven defences.

The Maps for Scenario year 2006 for the 1 in 1000-year event show that the site is not within a Hazard Rating area. With climate change up to year 2115 the maps show that the site is within a Hazard Rating area of between 0.75 – 1.25 (Danger for Some), with a depth between 0.25 - 0.50m and velocity 0 - 0.3m/sec., therefore the site is subject to tidal flooding following overtopping of the defences.

The minimum mitigation measures required for developments that do have ground floor sleeping shall be determined by the flood depths arising from the 2115 0.1% breach scenario. The finished floor Level FFL of any new dwellings shall be informed by the flood depths. For flood depths between 0 - 0.25m deep the FFL shall be set at a minimum of 300mm above the ground level.

It is proposed that the lowest ground floor level for the proposed units be set 600mm above the existing average ground level at 4.35mODN.

The greatest risk of flooding of the site would therefore be from a breach to the tide earth embankments for the River Welland/Wash and the 2115 breach hazard maps have been assessed for this report. There are no main rivers close by which could affect the site.

The Environment Agency's position for the previous withdrawn application Ref no H13-0404-17 **Use of land for the stationing of agricultural workers' accommodation Land at Vickers Park Washway Road** was as follows:

> *The proposed development will only meet the requirements of the National Planning Policy Framework (NPPF) if the following measures as detailed in the Flood Risk Assessment submitted with this application are implemented and secured by way of a planning condition on any planning permission.*
>
> *Condition*
>
> *The development permitted by this planning permission shall be carried out in accordance with the approved Flood Risk Assessment (FRA) prepared by R.M Associates, dated April 2017, Version 1 and the following mitigation measures detailed within the FRA:*
>
> - *The finished floor levels of the caravans and log cabins should be set a minimum of 600mm above the existing ground levels.*
> - *The caravans and log cabins not to be occupied from 01 November to 31 January each year.*
>
> *The mitigation measures shall be fully implemented prior to occupation and subsequently in accordance with the timing / phasing arrangements embodied within the scheme, or within any other period as may subsequently be agreed, in writing, by the local planning authority.*

South Holland District Council

In order to inform the process of risk assessment and site selection the District Council commissioned Consultant

Engineers to prepare a Strategic Flood Risk Assessment, which was updated for the South East Lincolnshire Local Plan.

Fluvial & Tidal Hazard Mapping for hazard rating, depth and velocity maps are included in the updated SFRA but as the 1 in 1000year scenario was not produced for the District, the maps produced by the EA have been used.

SURFACE WATER FLOODING

The site is shown on the Surface Water flood maps not to be affected by surface water flooding. Very low risk means that each year this area has a chance of flooding of less than 1 in 1000 (0.1%). Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. **Map 6**

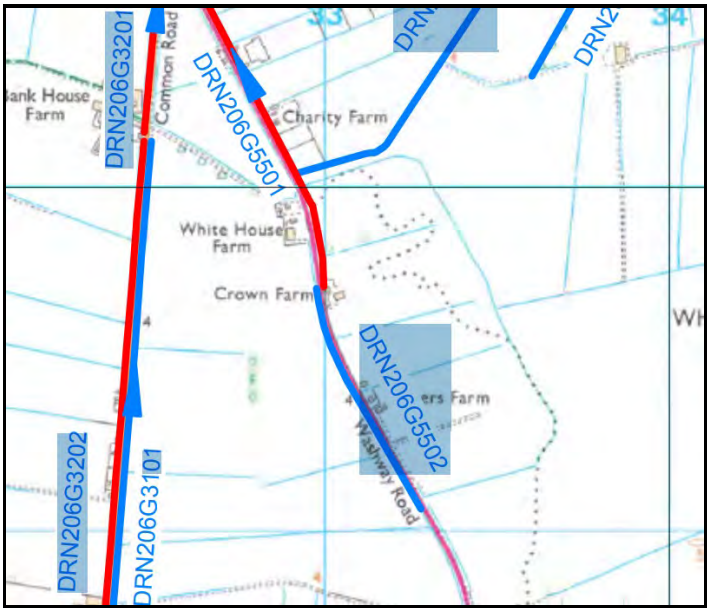
Unlike the fluvial mapping, which is based on a detailed hydraulic model, this mapping is based purely on applying rainfall to a digital terrain model.

SOUTH HOLLAND INTERNAL DRAINAGE BOARD

The proposed development site is located within the catchment area Holbeach River (N) of the South Holland Internal Drainage Board.

The Board is therefore responsible to operate and maintain the arterial fluvial system. The whole of the area has a network of drains/ dykes which connect into the Drainage Board's drainage system.

The Board's drains around the site play a significant part in the local drainage. The nearest Board's drain is on the west side of the development site which is drain No DRN206G5502, P55 Washway Road A17 This outfalls into the River Welland at Holbeach River Sluice.



South Holland IDB Drainage Map

FLOODING FROM OTHER SOURCES

Flooding is a natural process and can happen at any time from sources other than watercourses and the sea.

The site is not shown on the Environment Agency Surface Water Flood map to be affected by surface water flooding

- Flooding from land can occur from intense rainfall, often over a short duration of time that it is unable to soak into the ground or enter the drainage system. However, with there being no high ground around the site and the ground floor of the units being set 600mm the above existing ground level this will not cause any rapid inundation of the site.

- The area is not known to suffer from any groundwater problems

- Flooding from sewers can occur from over loading from heavy rainfall caused by blockages or having inadequate capacity. There are no public sewers in the vicinity of the development.

- Non-natural or artificial sources of flooding such as reservoirs, lakes or canals where water is stored above natural ground level could cause flooding if the structure fails or is over topped. There are no other known facilities close by which would affect the site.

CLIMATE CHANGE

It is now recognised that Global warming is likely to affect the frequency and severity of extreme events as both tidal and fluvial flooding. The Climate change allowances in the NPPF Guidance were updated on the 19th February 2016.

The site is located within the Anglian River Basin, for sites within Flood Zone 3a and for "More Vulnerable" land uses the Higher Central and Upper End river flow allowances figures in Table 1 should be used.

Table 1 Peak river flow allowances by river basin district (1961 to 1990 baseline)

River basin District	Allowance category	Total potential change anticipated for '2020s' (2015 to2039)	Total potential change anticipated for '2050s' (2040 to2069)	Total potential change anticipated for '2080s' (2070 to2115)
Anglian	Upper End	25%	35%	65%
	Higher central	15%	20%	35%
	Central	10%	15%	25%

The effect of global warming on peak rainfall allowances is given in Table 2.

Table 2 Peak rainfall intensity allowance in small and urban catchments (1961 to1990 baseline)

Applies across all of England	Total potential change anticipated for 2010 to 2039	Total potential change anticipated for 2040 to 2059	Total potential change anticipated for 2060 to 2115
Upper End	10%	20%	40%
Central	5%	10%	20%

The annual sea rise due to climate change is given in NPPF and the recommended contingency allowances are stated in Table 3

Table 3 Peak sea level allowance for each epoch in (mm) per year with cumulative sea level rise for each epoch in brackets (use 1990 baseline)					
Area of England) (Use River Basin maps	1990 to 2025	2026 to 2050	2051 to 2080	2081 to 2115	Cumulative Rise 1990 to 2115 (m)
East, Midlands, London, South East	4 (140mm)	8.5 (212.5mm)	12 (360mm)	15 (525mm)	1.24m

The climate change allowances for Peak Sea Allowance in Table 3 are used in the Hazard maps.

SEQUENTIAL APPROACH

When applying the sequential approach for flood risk in accordance with the NPPF, the site would fall into Zone 3 (High Probability) as the site is shown to be within the fluvial flood plain as shown on the Environment Agency's Flood Map without defences in place.

The Environment Agency categorise land into one of three Flood Zones.

- Flood Zone 1 is Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)

- Flood Zone 2 is Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)

- Flood Zone 3a is Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)

Applying the Flood Risk Vulnerability Classification in Table 2 of the NPPG, the proposed temporary residential use is classified as, "More Vulnerable" use, Table 1 of NPPG states that such uses are appropriate in this zone (as summarised in Table 3 of the NPPG).

TABLE 3: Flood risk vulnerability and flood zones 'compatibility'

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Flood Zone 1	✓	✓	✓	✓	✓
	Flood Zone 2	✓	✓	Exception Test Required	✓	✓
	Flood Zone 3a	Exception Test Required	✓	✗	Exception Test Required	✓
	Flood Zone 3b Functional Floodplain	Exception Test Required	✓	✗	✗	✗

Sequential Test

NPPF Guidance Paragraphs 155 - 165 requires development within high areas of flood risk be determined using a sequential risk-based approach to the location of development to avoid where possible flood risk to people and property and manage any residual risk, taking account the impacts of climate change.

The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. The NPPF states that development should not be permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. It is important to note that the Sequential Test does not specifically mean that sites such as this cannot be developed, rather that sites at less risk should be developed first.

The Sequential Test will be defined by local circumstances relating to the catchment area for the development., when applying the Sequential Test, a pragmatic approach on the availability of alternative sites should be taken in considering for example, planning applications for extensions of existing business premises such as farm holdings, where it might be impracticable to suggest that there are more suitable alternative locations for that development elsewhere. In this case, the farm business is centred on the land owned and farmed by the applicant and to consider areas outside the farm holding would not be practical.

The whole of the farm holding is at a similar level within a Flood Zone 3a area (without defences), the chosen site for the residential units, for use by agricultural workers, have been located on ground adjacent to the existing farmhouse.

The Exception Test

The next step is to assess the proposal in relation to the Exception Test, and this requires the development to:

- provide wider sustainability benefits to the community that outweigh the flood risk,
- a site-specific FRA should demonstrate the proposal would be safe and not increase the risk of flooding elsewhere.

In relation to the first element, it has been demonstrated that this proposed development is in connection with a farm holding and that the development is required to provide accommodation for the seasonal workers employed by the applicant.

In relation to the second part, this Flood Risk Assessment demonstrates that the proposal is safe in terms of flood risk and would not increase the risk of flooding elsewhere. The floor level of the proposed living units is raised a minimum 600mm above the ground level, which ensures that this would be set above the likely 1 in 1000- year breach flood level.

DRAINAGE STATEMENT

Surface Water

The surface water from the roofs of the units will discharge to soakaways designed in accordance with BRE 365.

All new access roads and parking areas will be constructed using permeable hardcore topped with granite chippings or gravel.

Foul Drainage

As the site is not located within an area served by public sewers an appropriate sized package treatment plant will be provided for the new residential units.

FLOOD PROTECTION

Any impact of damage to the properties can be foreseen and mitigated against by relatively simple design and construction techniques. There are two forms of flood protection works: -

- **Flood-resistance or proofing works**: - these try to reduce the amount of water entering a building.
- **Flood-resilient works: -** these reduce the amount of damage caused by water entering the building.

The proposed development will have the following resilient measures incorporated in the construction in accordance with “Improving the flood performance of new buildings” CLG (2007).

- The static caravans are securely anchored to the ground using an appropriate mechanism such as chains and ground anchors.



Typical Anchor Chains

- The proposed floor level for the accommodation units will be set at 600mm above the existing average ground level set at 4.35mODN.

- Arrange for all service circuits to be routed at high level where practical socket outlets, boilers etc. to be a minimum of 0.5m above the raised ground floor level.

- As this site is in an area that can receive flood warnings from the Environment Agency Floodline Warning Direct system. It is recommended that the property Owner contact the Environment Agency's Floodline on 0845 988 1188 to register the property to receive advance warning of flooding by telephone, mobile, fax, SMS text, email or pager. The Environment Agency aim to issue a 'severe flood warning' approximately 2 hours before existing defences are overtopped.

CONCLUSION

- The site does have the protection of both tidal and fluvial flood defences which are well maintained by the Environment Agency.

- Following a breach to the defences, the Tidal Hazard Maps (2009) for Scenario year 2006 for the 1 in 1000-year event show that the site is not within a Hazard Rating area. With climate change up to year 2115 the maps show that the site is within a Hazard Rating area of between 0.75 – 1.25 (Danger for Some), with depth between 0 - 0.25m and velocity 0 - 0.3m/sec., therefore the site is subject to tidal flooding following a breach to the defences.

- Applying the Flood Risk Vulnerability Classification in Table 2 of NPPF. The proposed change to residential use falls within the "More Vulnerable" uses shown in Table 2 Flood Risk Vulnerability Classification.

- The Sequential and exception test is met as the proposed development is in connection with a farm holding and that the development is required to provide accommodation for the seasonal workers employed by the applicant. The units will only be occupied for 9 months of any one year.

- The ground floor level for the units is to be set 600mm above existing ground level at 4.35mODN.

- Flooding from other sources is unlikely to affect the site and therefore the risk is low.

- No obvious constraints have been identified that may impact the proposed development and the type of mitigation measures that can be used to reduce the flood risk.

****

APPENDIX

Map 1	Environment Agency Flood Map
Map 2	Risk of Flooding from Rivers and Sea Map
Map 3	Lincolnshire & Northamptonshire Area Tidal Model Analysis Map
Map 4	Lincolnshire & Northamptonshire Area Tidal Breach Hazard Mapping 2006 1 in 1000year event
Map 5	Lincolnshire & Northamptonshire Area Tidal Breach Hazard Mapping 2115 1 in 1000year event
Map 6	Lincolnshire & Northamptonshire Area Tidal Overtopping Hazard Mapping 2115 1 in 1000year
Map 7	Surface Water Flooding Map
Plan 1	Site Location Plan
Plan 2	Site layout with OS Datum Levels
Plan 3	Proposed Caravan Details
Plan 4	Proposed Lodge Details

Flood map for planning

Your reference	Location (easting/northing)	Created
Vickers Park	**533012/329748**	**19 Sep 2019 15:52**

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

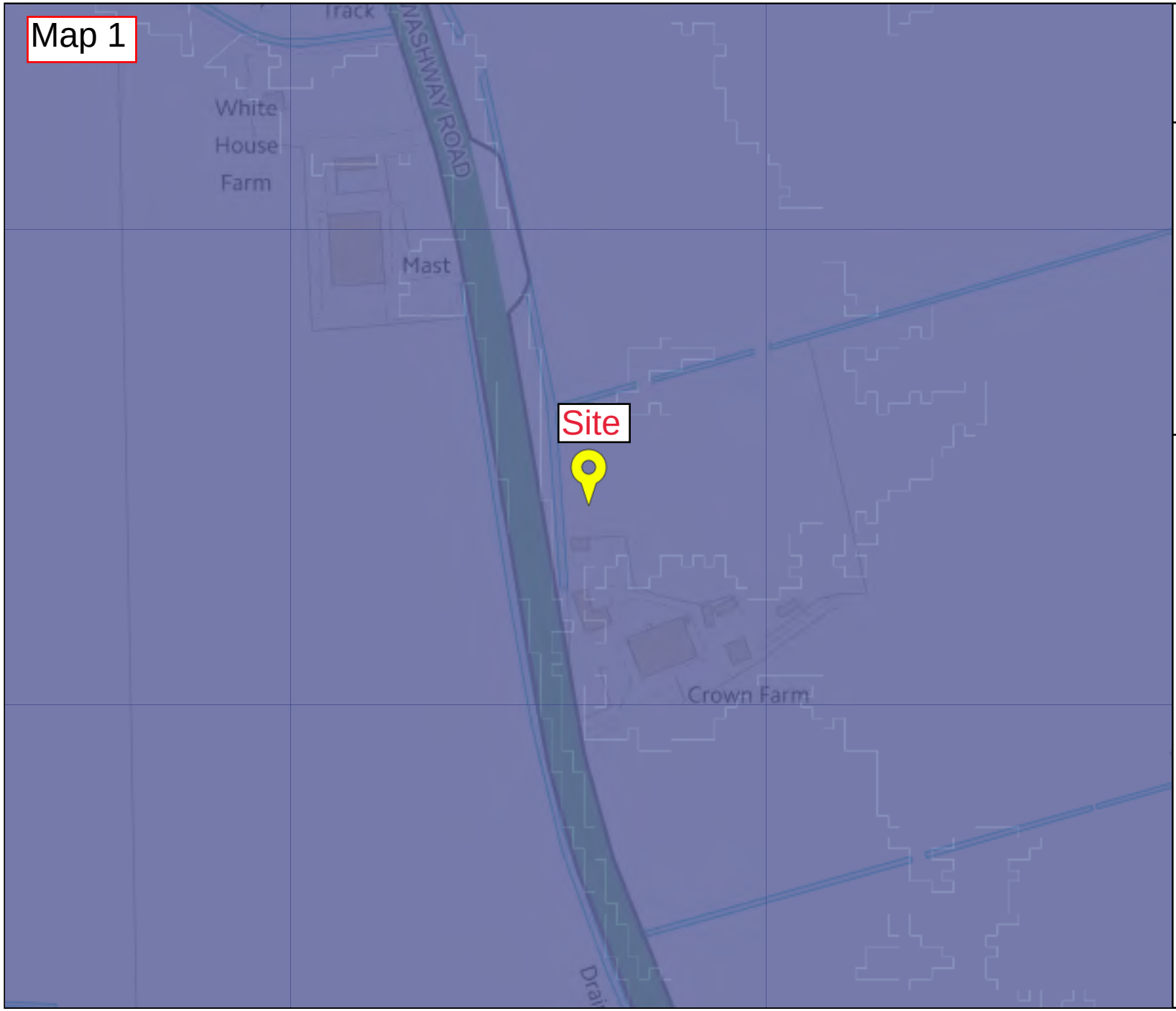
- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

The Open Government Licence sets out the terms and conditions for using government data. https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/



Environment Agency

Flood map for planning

Your reference
Vickers Park

Location (easting/northing)
533012/329748

Scale
1:2500

Created
19 Sep 2019 15:52

- Selected point
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Flood storage area

0 20 40 60m

© Environment Agency copyright and / or database rights 2018. All rights reserved. © Crown Copyright and database right 2018. Ordnance Survey licence number 100024198.

Basic view | Detailed view

Location PE12 6LP

Flood risk from rivers or the sea

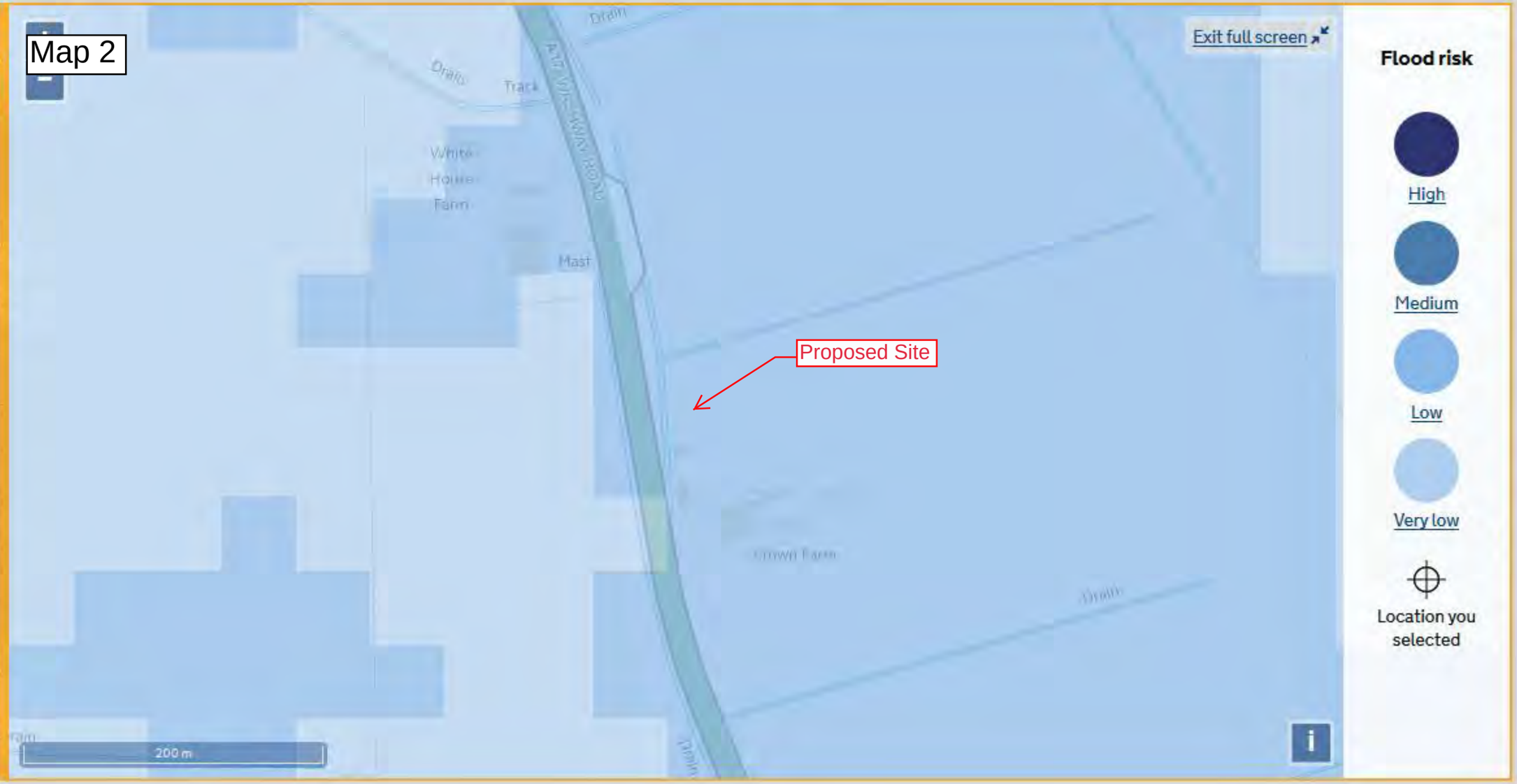
- (•) Extent of flooding
- ( ) Depth and flow estimates at monitoring stations

Flood risk from surface water

- ( ) Extent of flooding
- ( ) High risk: depth
- ( ) High risk: velocity
- ( ) Medium risk: depth
- ( ) Medium risk: velocity
- ( ) Low risk: depth
- ( ) Low risk: velocity

Flood risk from reservoirs

- ( ) Extent of flooding



Tidal Level Location Map
Lincolnshire & Northamptonshire Area

Map 3



Produced May 2017

Produced by Partnerships & Strategic Overview Team

© Environment Agency copyright and / or database rights 2018. All rights reserved. © Crown Copyright and database right. All rights reserved. Environment Agency,10002638 2018.

Tidal Water Levels for the South Humber, East Coast and The Wash

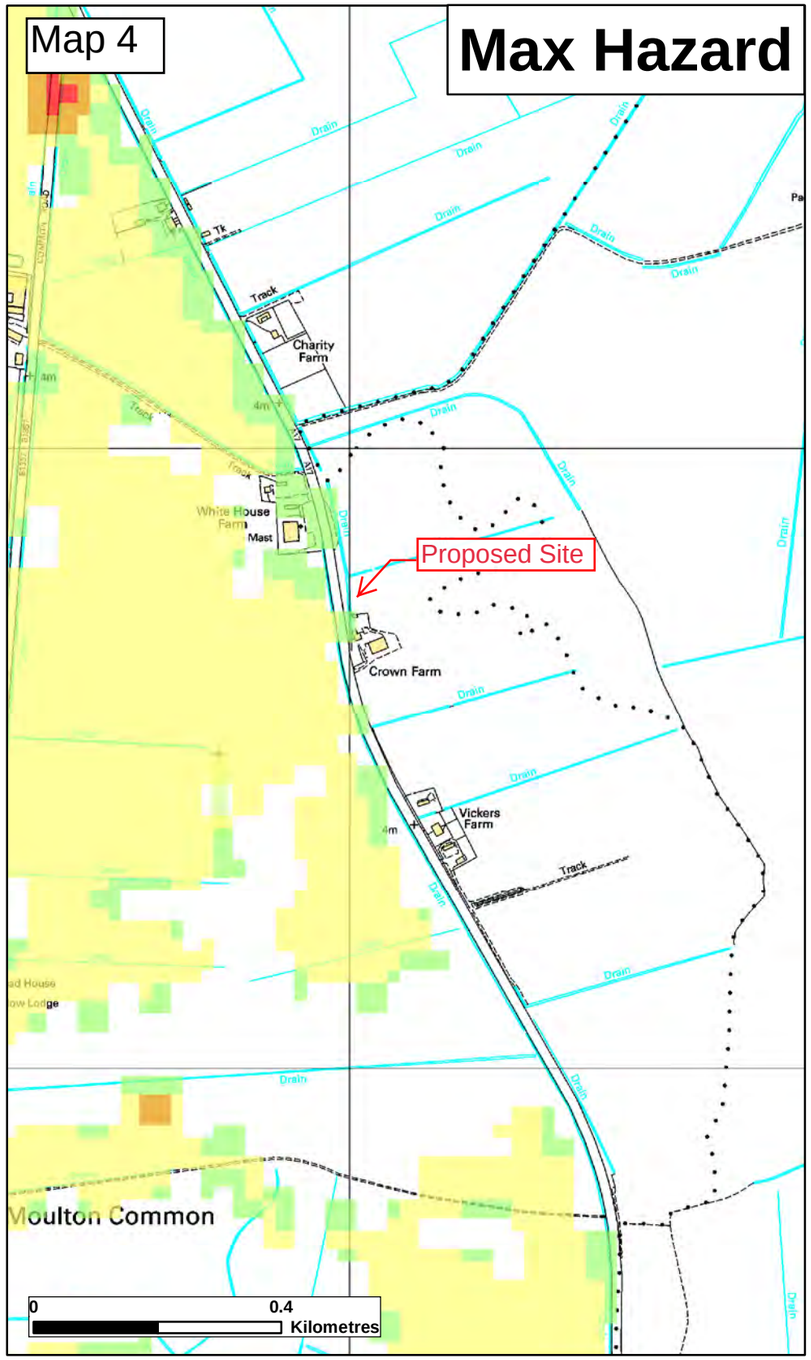
The table below shows still water levels for locations, from the above location map, around the South Humber Estuary, East Coast and The Wash. It is important to note the following:

- The base date for the data is 2014 for the South Humber and 2006 for the East Coast and The Wash.
- The data are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- The water level quoted is the 'Best Estimate' water level. Depending on the use of the data it may be necessary to carry out sensitivity testing. Upper and Lower 95% confidence bandings are available upon request.
- Levels for other annual chance scenarios are available if required.

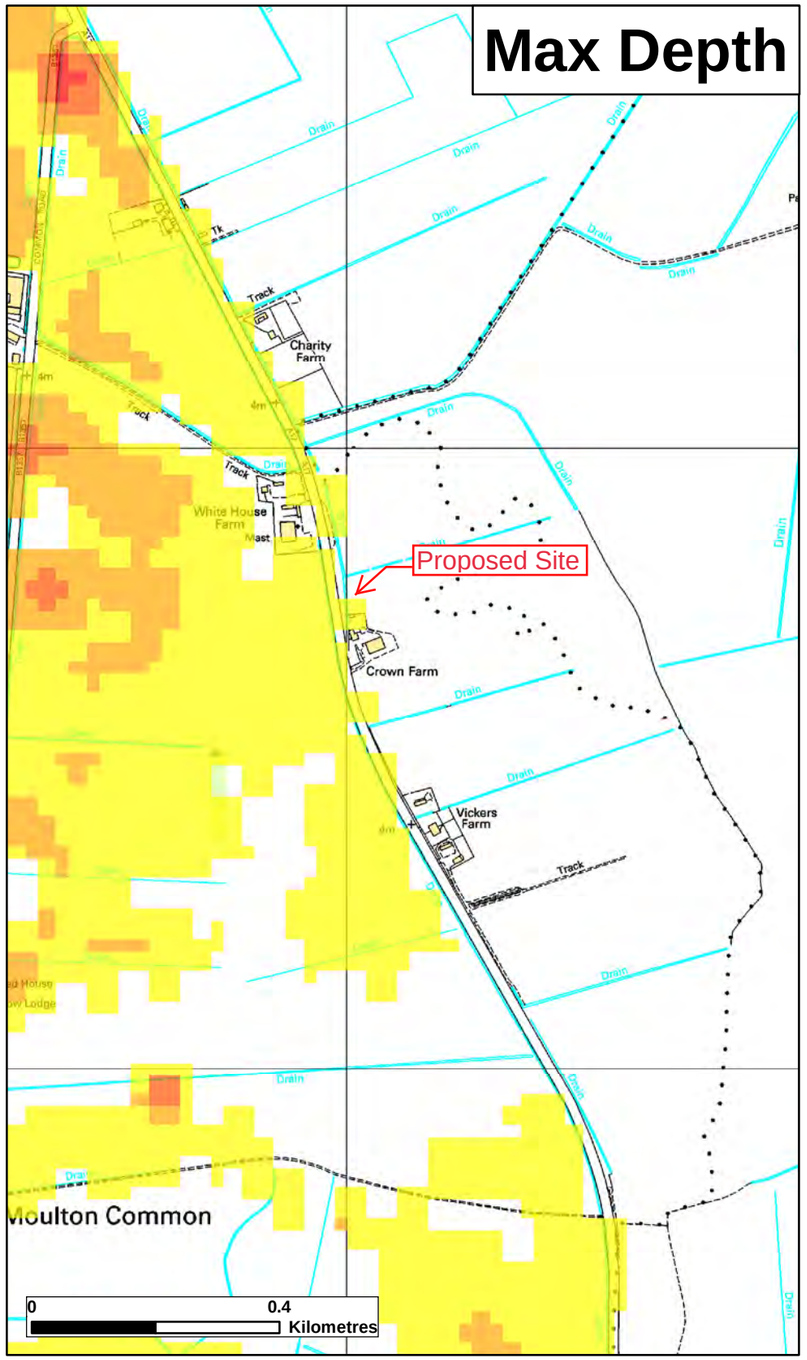
Ref	Location	Easting	Northing	Annual Chance (1 in x) of Tide Level					
				metres ODN					
				1	10	50	100	200	1000
HUMBER									
H030	Tetney	535420	403180	3.94	4.29	4.56	4.69	4.82	5.15
H050	Buck Beck	532700	406580	4.03	4.36	4.62	4.74	4.87	5.18
H060	Grimsby	527878	411346	4.10	4.43	4.70	4.82	4.95	5.27
H080	Haborough Marsh	520790	415740	4.26	4.61	4.88	5.01	5.14	5.47
H090	Immingham	519141	417449	4.26	4.61	4.88	5.01	5.14	5.47
H100	South Killingholme	518700	417120	4.41	4.77	5.05	5.18	5.32	5.66
H130	North Killingholme	516530	420000	4.51	4.87	5.15	5.28	5.42	5.77
H150	East Halton	514450	422870	4.59	4.96	5.25	5.39	5.53	5.89
H170	Goxhill	511970	425440	4.67	5.04	5.34	5.47	5.61	5.95
H200	New Holland	508020	424330	4.87	5.26	5.55	5.68	5.81	6.12
H210	Barrow Haven	506380	422620	4.92	5.31	5.60	5.73	5.86	6.17
H220	Ferriby	497550	421150	5.04	5.42	5.67	5.77	5.86	6.04
H230	Winterton	493420	422830	5.14	5.51	5.74	5.83	5.90	6.02
H250	Blacktoft	484247	424190	5.25	5.62	5.83	5.90	5.96	6.04
H270	Goole	474857	422960	5.46	5.85	6.07	6.15	6.21	6.29
East Coast									
~	Great Eau	545500	393800	3.80	4.19	4.46	4.57	4.69	4.96
~	Boygrift	553300	379800	3.84	4.24	4.53	4.65	4.77	5.05
~	Burgh Sluice	555190	358620	4.26	4.45	4.76	4.90	5.03	5.34
Wash									
~	Hobhole	536610	339940	4.82	5.30	5.64	5.78	5.93	6.27
~	Lawyers Sluice	540750	334550	4.84	5.32	5.66	5.80	5.95	6.29
~	West Lighthouse	549150	325750	4.88	5.37	5.71	5.86	6.01	6.35
~	Grand Sluice	532400	344500	4.88	5.33	5.65	5.78	5.93	~
~	Fosdyke Bridge	531700	332200	4.91	5.38	5.71	5.85	5.99	~
~	Marsh Road	526000	324000	5.04	5.44	5.73	5.85	5.98	~
~	Wisbech	546100	310000	4.83	5.25	5.53	5.66	5.78	~
~	Dog In Doublet	527300	299300	3.67	4.00	4.22	4.32	4.42	~

Map 4

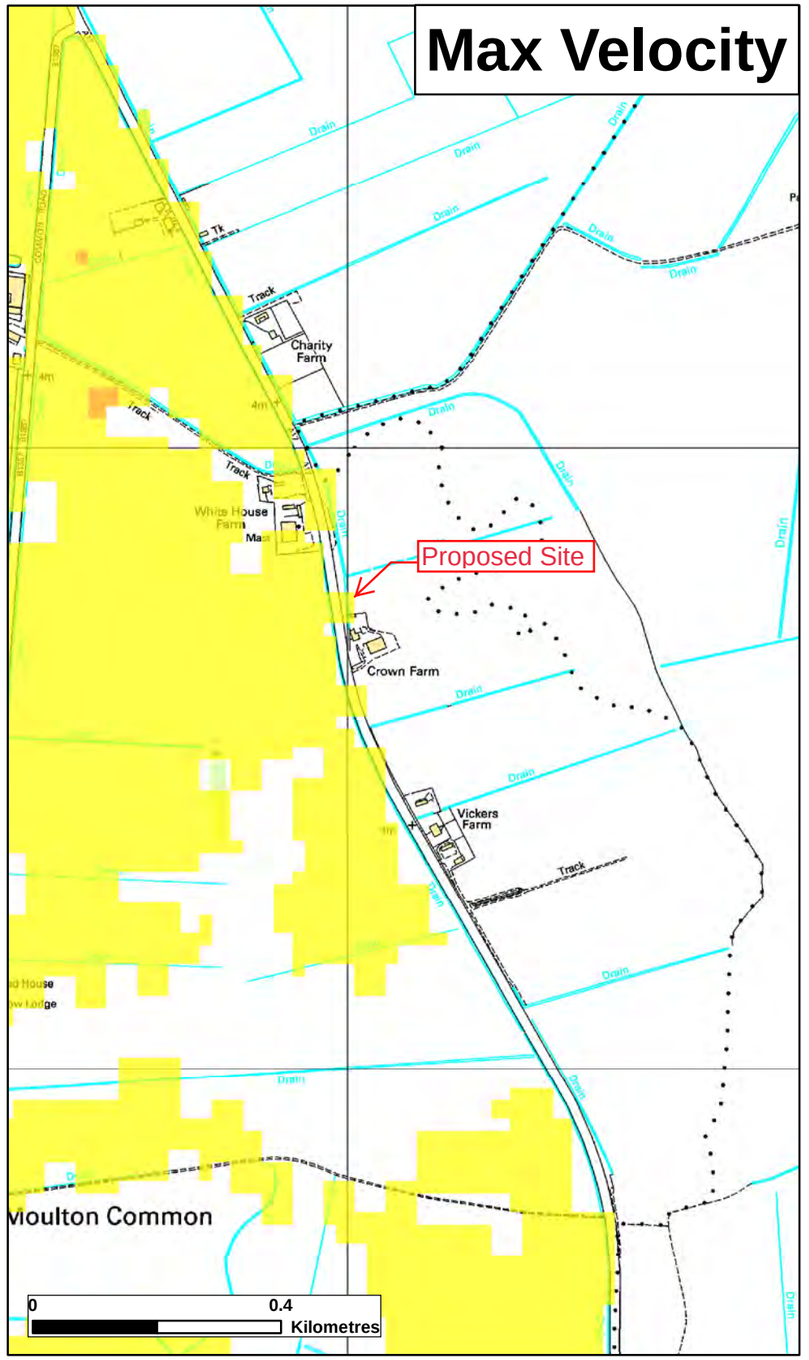
Max Hazard



Max Depth



Max Velocity



★ **Modelled Breach Locations** - see also the accompanying plan "Location of Modelled Breaches"

Max Hazard
(Flood Risk to People : FD2320)

- Less than 0.75 (Low Hazard)
- Between 0.75 and 1.25 (Danger for Some)
- Between 1.25 and 2.0 (Danger for Most)
- Greater than 2.0 (Danger for All)

Max Depth (m)

- 0 - 0.25
- 0.25 - 0.50
- 0.50 - 1.0
- 1.0 - 1.6
- 1.6 +

Max Velocity (m/s)

- 0 - 0.3
- 0.3 - 1.0
- 1.0 - 1.5
- 1.5 - 2.5
- 2.5 +

Date Printed	December 2016	**Scenario year**	2006	**Scenario Annual Chance**	0.1% (1 in 1000)	**CCN Number**	CCN-2016-30754

This map shows the level of flood hazard to people (called a hazard rating) if our flood defences are breached at certain locations, for a range of scenarios. The hazard rating depends on the depth and velocity of floodwater, and maximum values of these are also mapped.

The map is based on computer modelling of simulated breaches at specific locations. Each breach has been modelled individually and the results combined to create this map. Multiple breaches, other combinations of breaches, different sized tidal surges or flood flows may all give different results.

The map only considers the consequences of a breach, it does not make any assumption about the likelihood of a breach occurring. The likelihood of a breach occurring will depend on a number of different factors, including the construction and condition of the defences in the area. A breach is less likely where defences are of a good standard, but a risk of breaching remains.

General Enquiries No: 03708 506 506. Weekday Daytime calls cost 5p plus up to 6p per minute from BT Weekend Unlimited. Mobile and other providers' charges may vary

Environment Agency

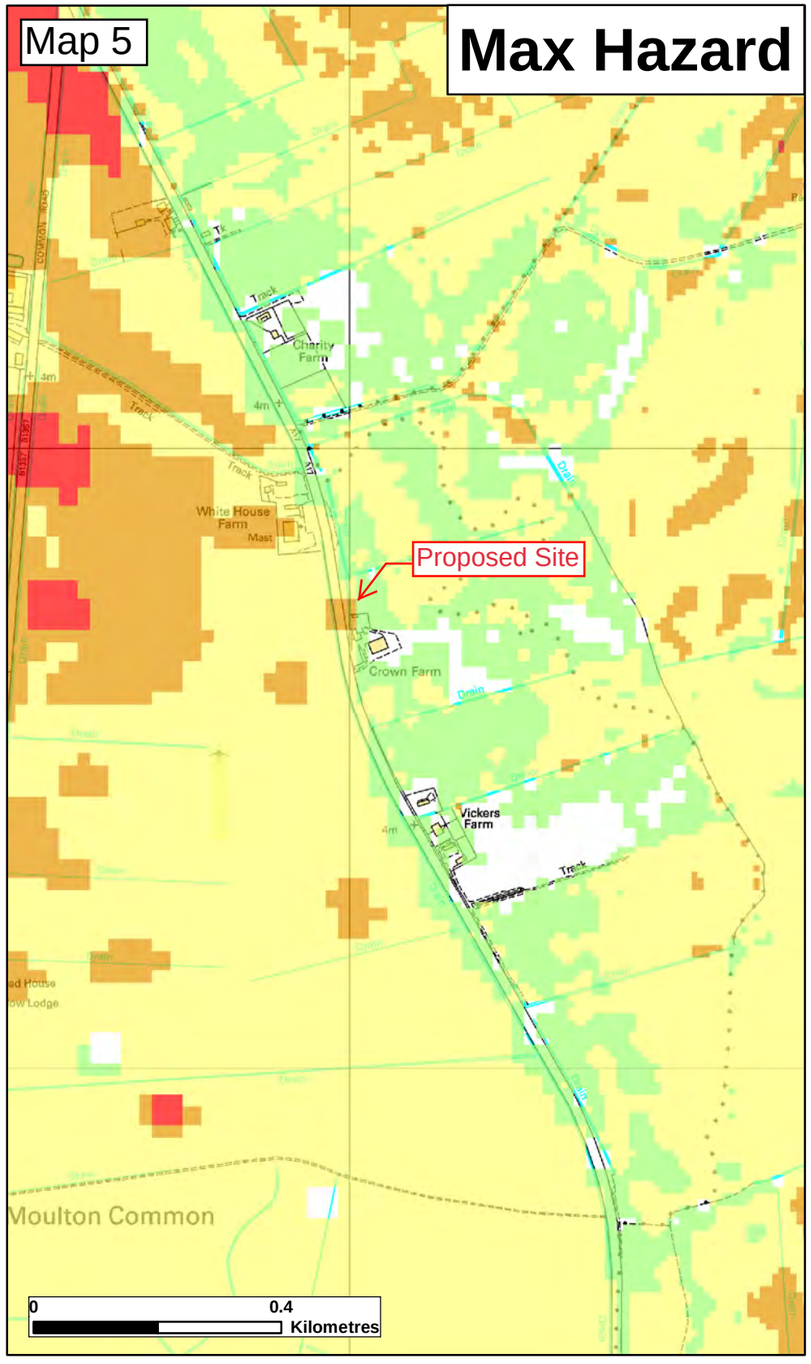
Lincolnshire and Northamptonshire Tidal Breaching Hazard Mapping

Map Centred on TF3309029625

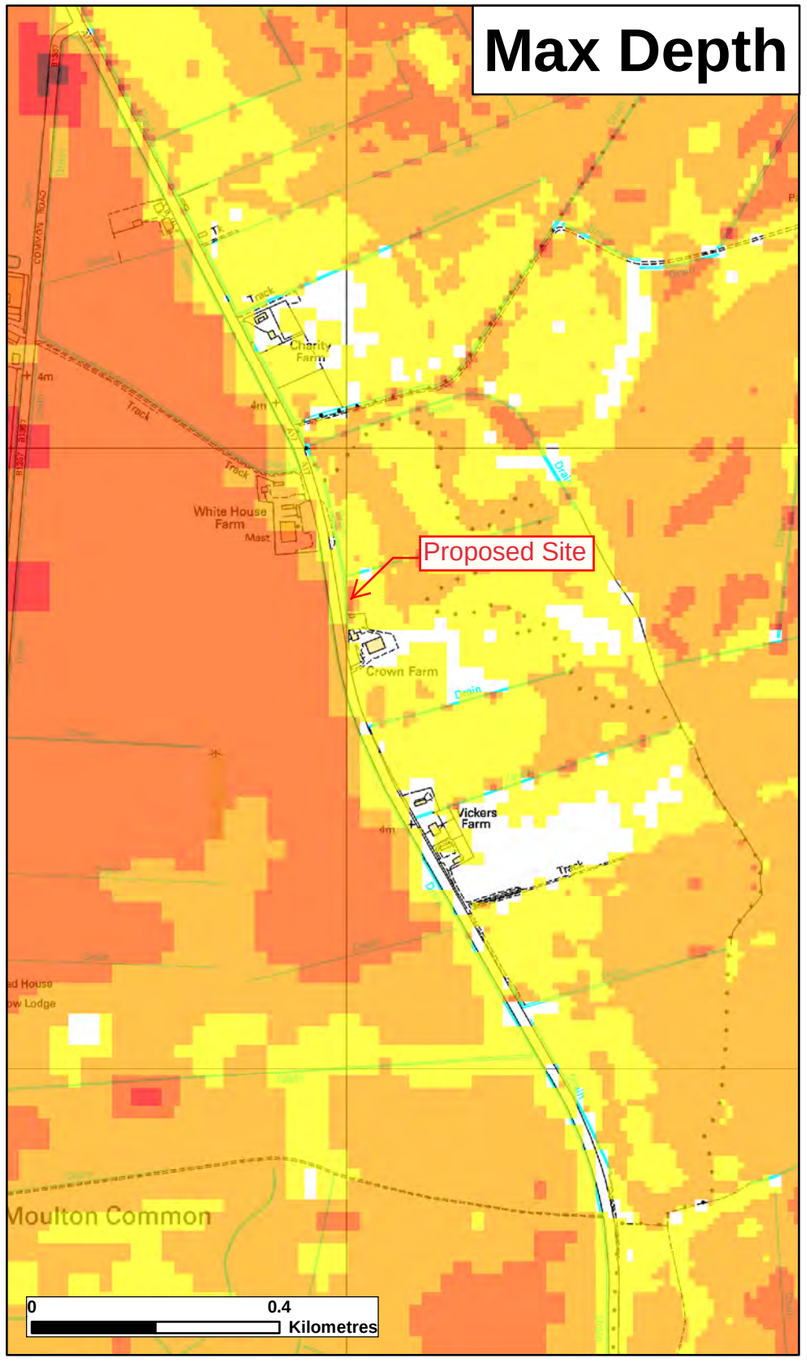
This map is reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationary Office. Crown copyright. All rights reserved. Environment Agency 100026380, 2016. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings.

Map 5

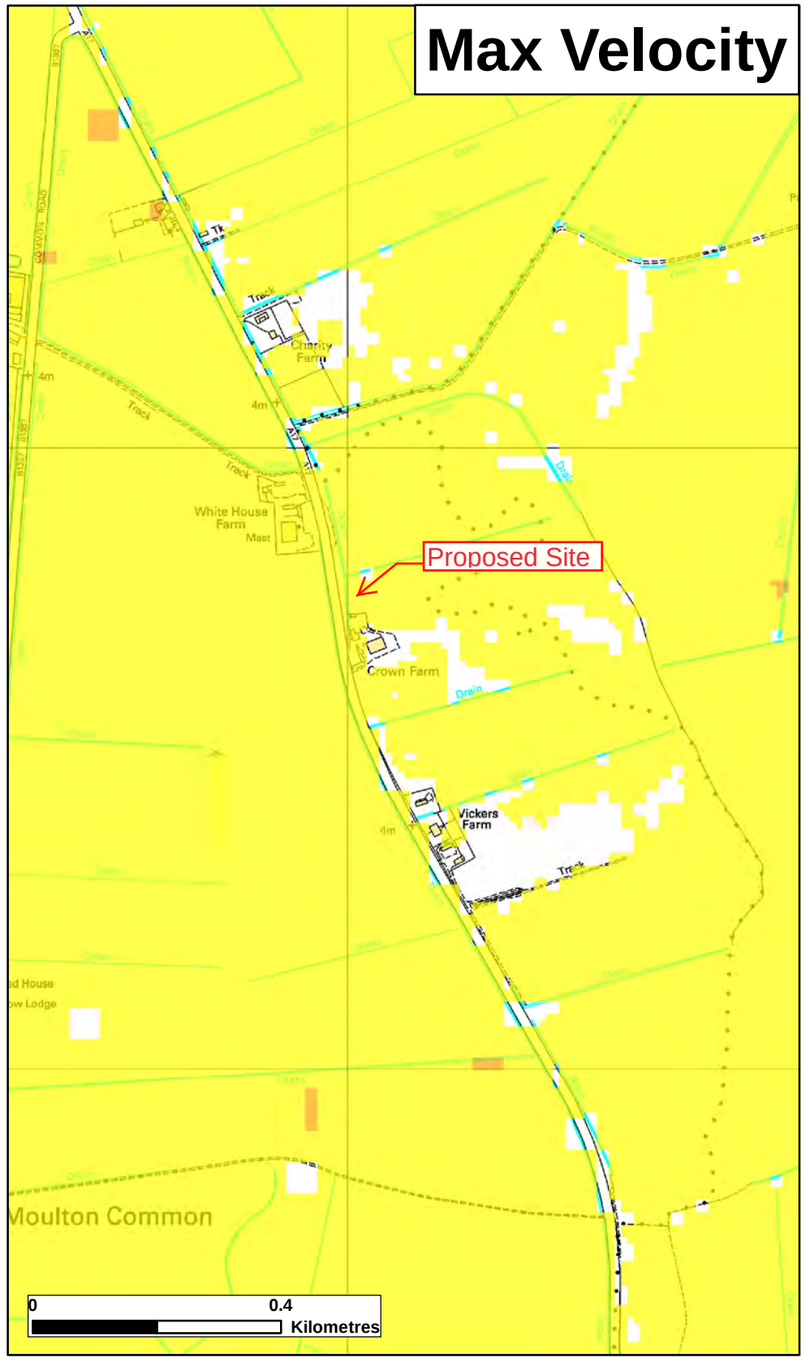
Max Hazard



Max Depth



Max Velocity



★ **Modelled Breach Locations** - see also the accompanying plan "Location of Modelled Breaches"

Max Hazard
(Flood Risk to People : FD2320)

- Less than 0.75 (Low Hazard)
- Between 0.75 and 1.25 (Danger for Some)
- Between 1.25 and 2.0 (Danger for Most)
- Greater than 2.0 (Danger for All)

Max Depth (m)

- 0 - 0.25
- 0.25 - 0.50
- 0.50 - 1.0
- 1.0 - 1.6
- 1.6 +

Max Velocity (m/s)

- 0 - 0.3
- 0.3 - 1.0
- 1.0 - 1.5
- 1.5 - 2.5
- 2.5 +

Date Printed	December 2016	Scenario year	2115	Scenario Annual Chance	0.1% (1 in 1000)	CCN Number	CCN-2016-30754

This map shows the level of flood hazard to people (called a hazard rating) if our flood defences are breached at certain locations, for a range of scenarios. The hazard rating depends on the depth and velocity of floodwater, and maximum values of these are also mapped.

The map is based on computer modelling of simulated breaches at specific locations. Each breach has been modelled individually and the results combined to create this map. Multiple breaches, other combinations of breaches, different sized tidal surges or flood flows may all give different results.

The map only considers the consequences of a breach, it does not make any assumption about the likelihood of a breach occurring. The likelihood of a breach occurring will depend on a number of different factors, including the construction and condition of the defences in the area. A breach is less likely where defences are of a good standard, but a risk of breaching remains.

General Enquiries No: 03708 506 506. Weekday Daytime calls cost 5p plus up to 6p per minute from BT Weekend Unlimited. Mobile and other providers' charges may vary

Environment Agency

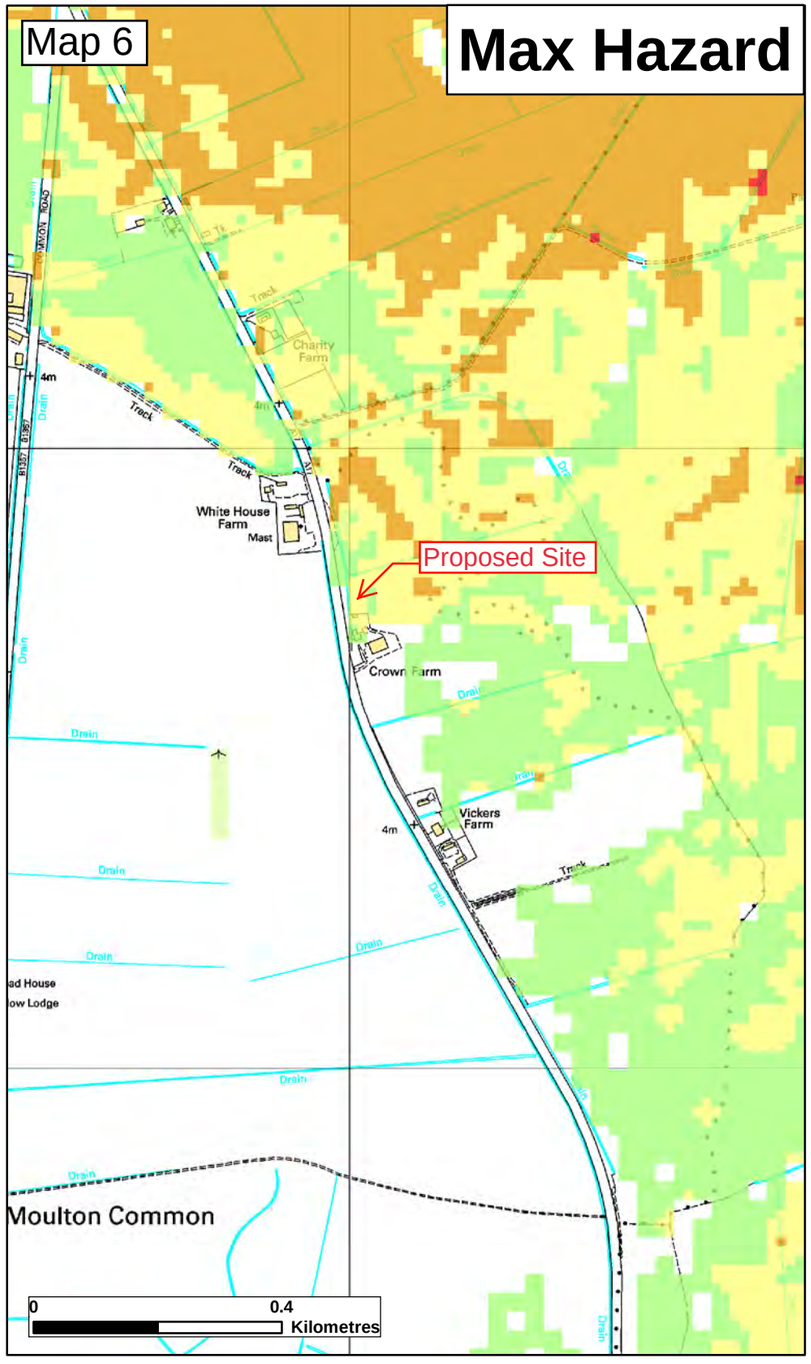
Lincolnshire and Northamptonshire Tidal Breaching Hazard Mapping

Map Centred on TF3309029625

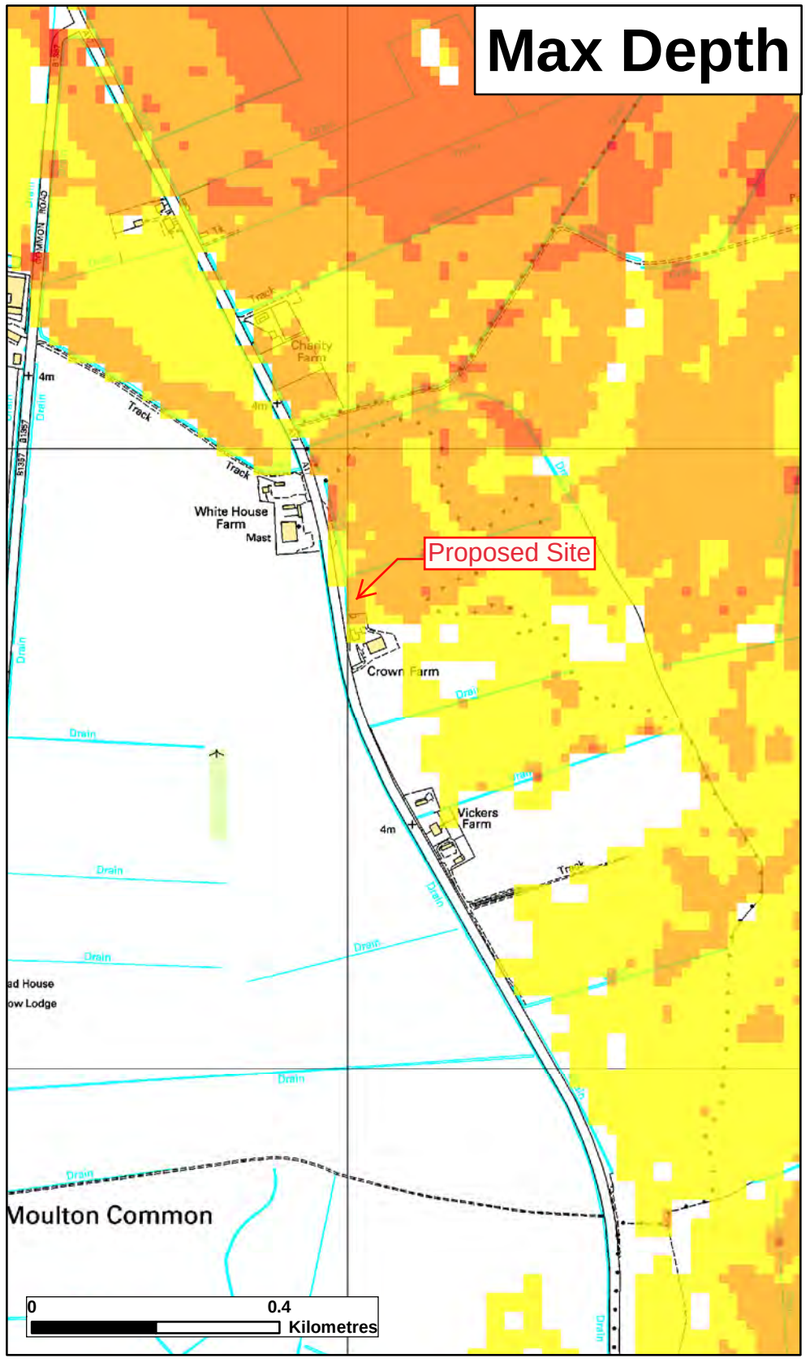
This map is reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationary Office. Crown copyright. All rights reserved. Environment Agency 100026380, 2016. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings.

Map 6

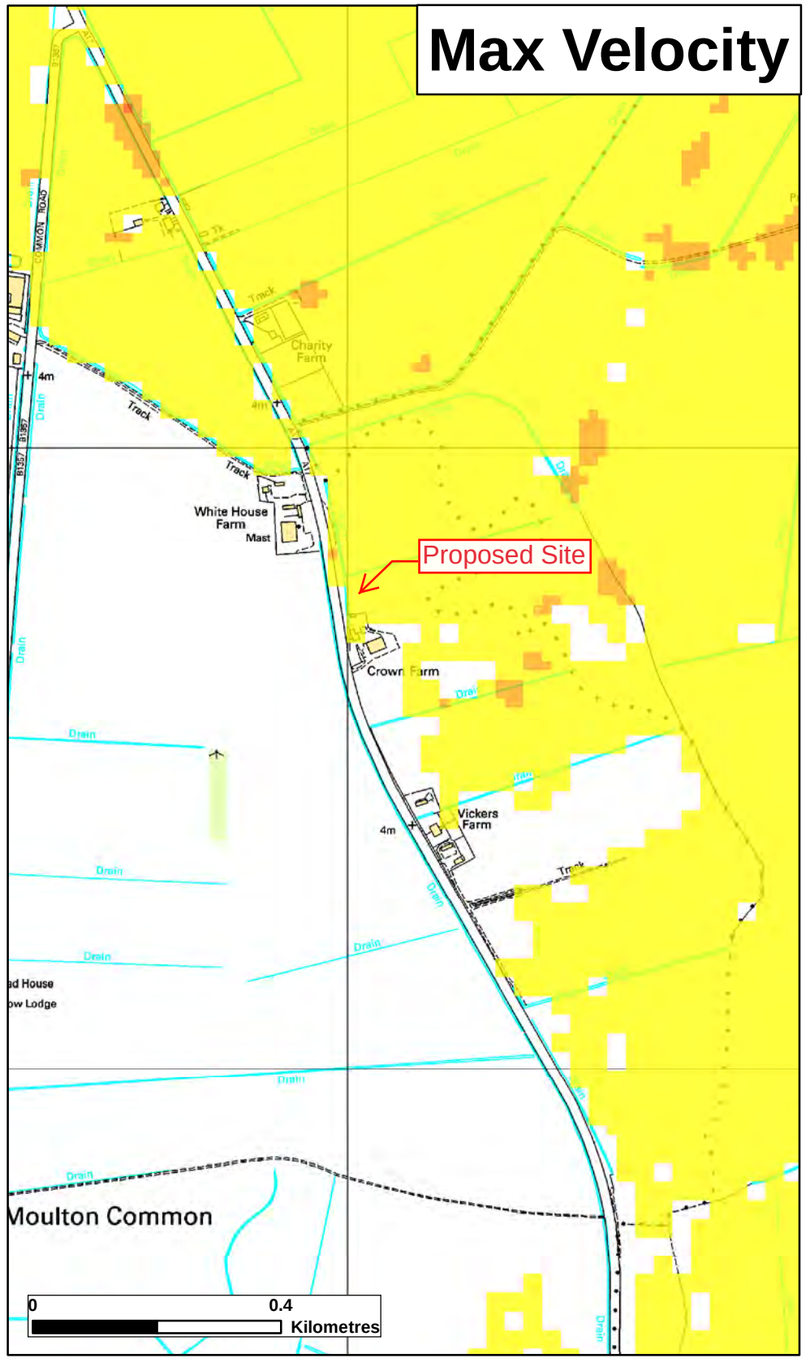
Max Hazard



Max Depth



Max Velocity



Max Hazard
(Flood Risk to People : FD2320)

- Less than 0.75 (Low Hazard)
- Between 0.75 and 1.25 (Danger for Some)
- Between 1.25 and 2.0 (Danger for Most)
- Greater than 2.0 (Danger for All)

Max Depth (m)

- 0 - 0.25
- 0.25 - 0.50
- 0.50 - 1.0
- 1.0 - 1.6
- 1.6 +

Max Velocity (m/s)

- 0 - 0.3
- 0.3 - 1.0
- 1.0 - 1.5
- 1.5 - 2.5
- 2.5 +

Date Printed	December 2016	Scenario year	2115	Scenario Annual Chance	0.1% (1 in 1000)	CCN Number	CCN-2016-30754

The map is based on computer modelling of simulated overtopping of the main coastal defences for specific tidal scenarios. It does not include overtopping along the following tidal rivers which are currently being investigated: Witham Haven (upstream of Hobhole), and Welland (upstream of Fosdyke Bridge)

The map only considers the consequences of overtopping of the defences, and does not show the possible consequences of breaches of the tidal defences. Separate maps of the flood extent from just breaching of the defences are available.

For future climate change scenarios it is assumed that defences remain at 2006 heights.

These maps do not replace the flood zone maps used in the National Planning Policy Framework (NPPF)

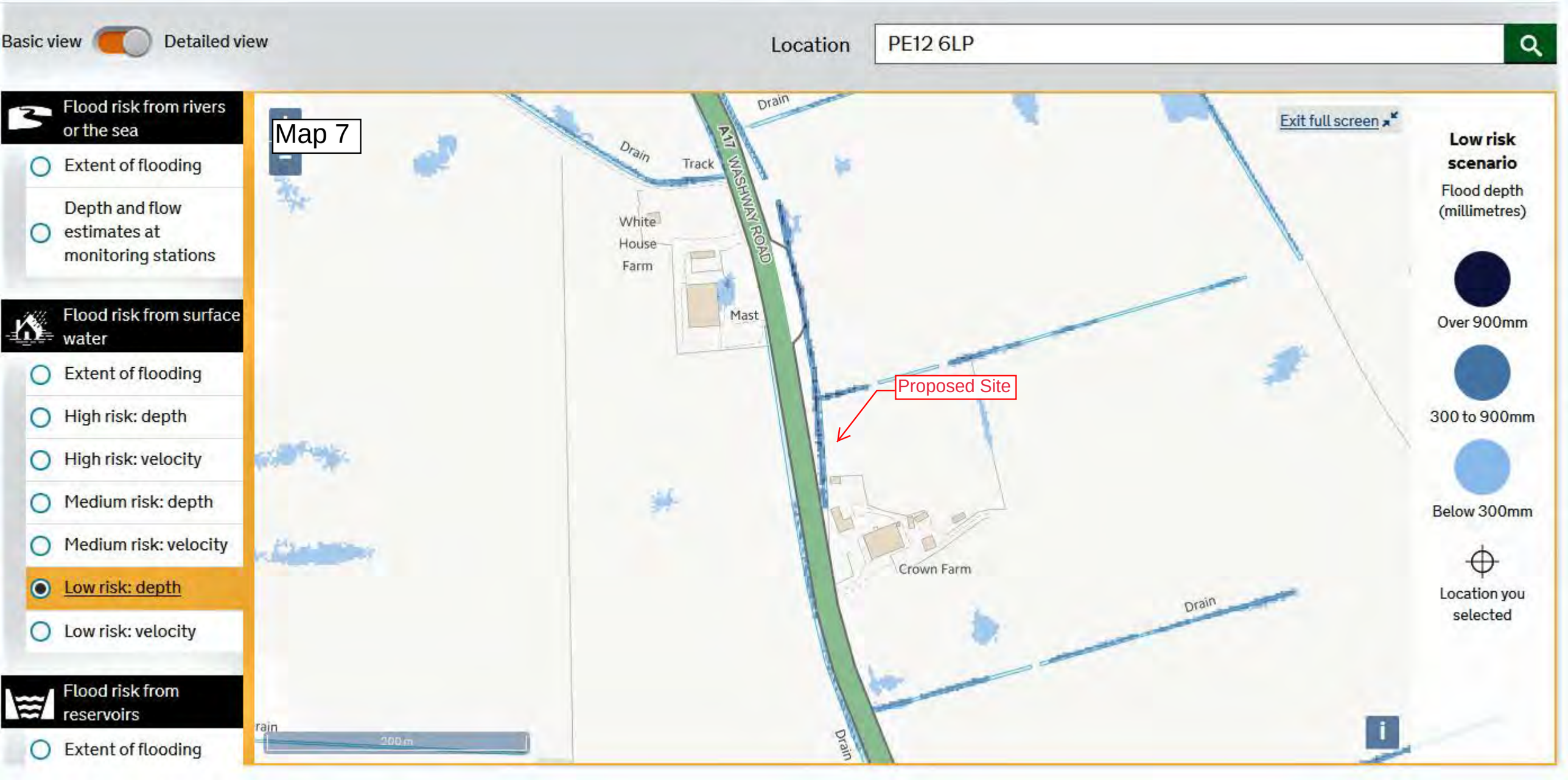
General Enquiries No: 03708 506 506. Weekday Daytime calls cost 5p plus up to 6p per minute from BT Weekend Unlimited. Mobile and other providers' charges may vary

Environment Agency

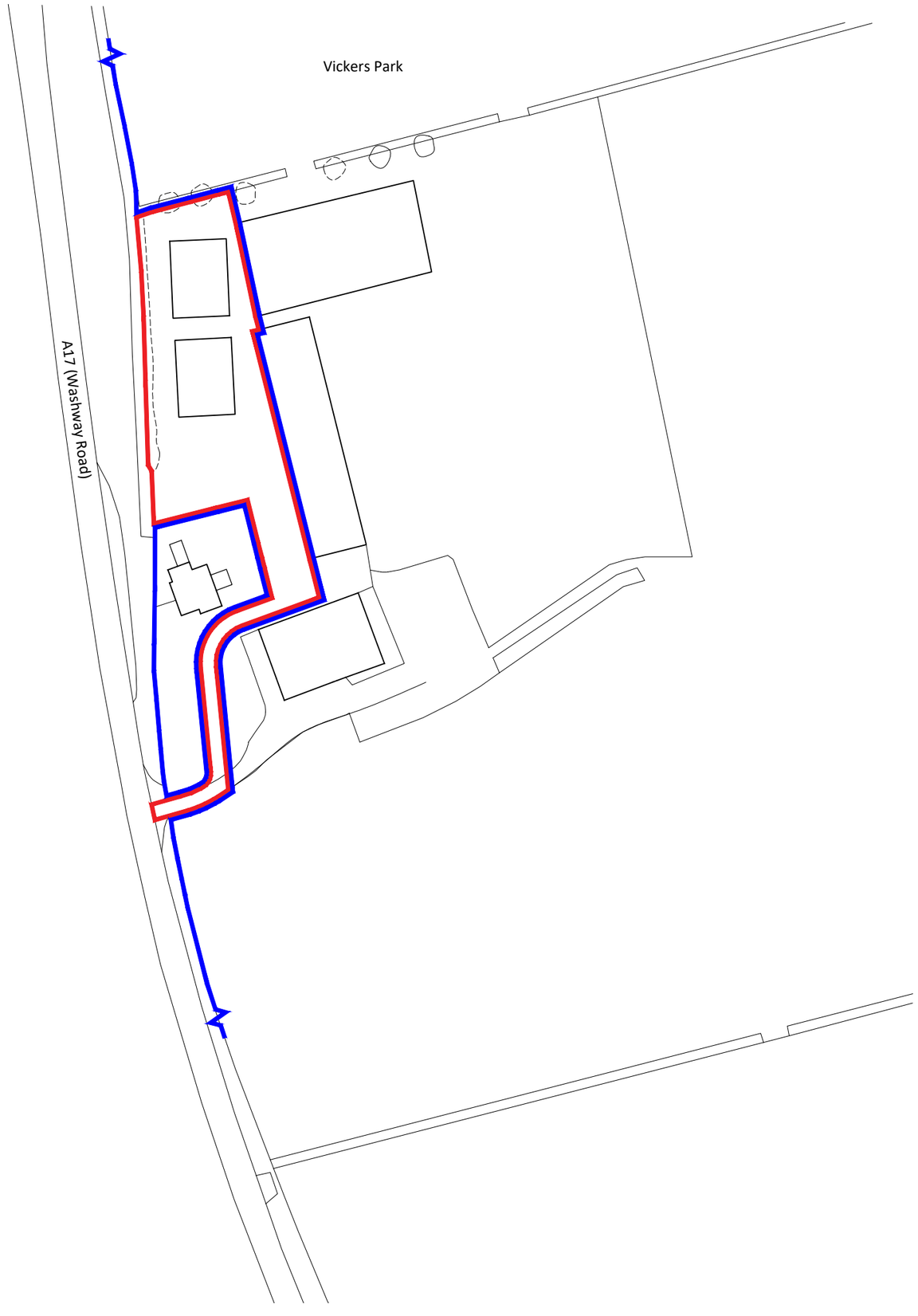
Lincolnshire and Northamptonshire Tidal Overtopping Hazard Mapping

Map Centred on TF 3309029625

This map is reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationary Office. Crown copyright. All rights reserved. Environment Agency 100026380, 2016. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings.


Basic view
Detailed view
Location
PE12 6LP
Flood risk from rivers or the sea
Extent of flooding
Depth and flow estimates at monitoring stations
Flood risk from surface water
Extent of flooding
High risk: depth
High risk: velocity
Medium risk: depth
Medium risk: velocity
Low risk: depth
Low risk: velocity
Flood risk from reservoirs
Extent of flooding
Map 7
Exit full screen
Drain
Track
A17 WASHWAY ROAD
White House Farm
Mast
Proposed Site
Crown Farm
Drain
Drain
Drain
200 m
Low risk scenario
Flood depth (millimetres)
Over 900mm
300 to 900mm
Below 300mm
Location you selected

Plan 1



Notes

Copyright
© Robert Doughty Consultancy Limited.
All rights described in the Copyright, Designs and Patents Act 1988 have been asserted.

Ordnance Survey Map
© Crown Copyright. OS Licence No: AR 100010613.

Rev	Description	Date
-	-	-

rdc
Robert Doughty Consultancy

32 High Street, Helpringham
Sleaford, Lincolnshire, NG34 0RA

Tel: 01529 421646
Email: admin@rdc-landplan.co.uk
Web: www.rdc-landplan.co.uk

Client
Naylor Flowers Limited

Project
Change of use
Vickers Park, Washway Road

Drawing
Existing Block Plan

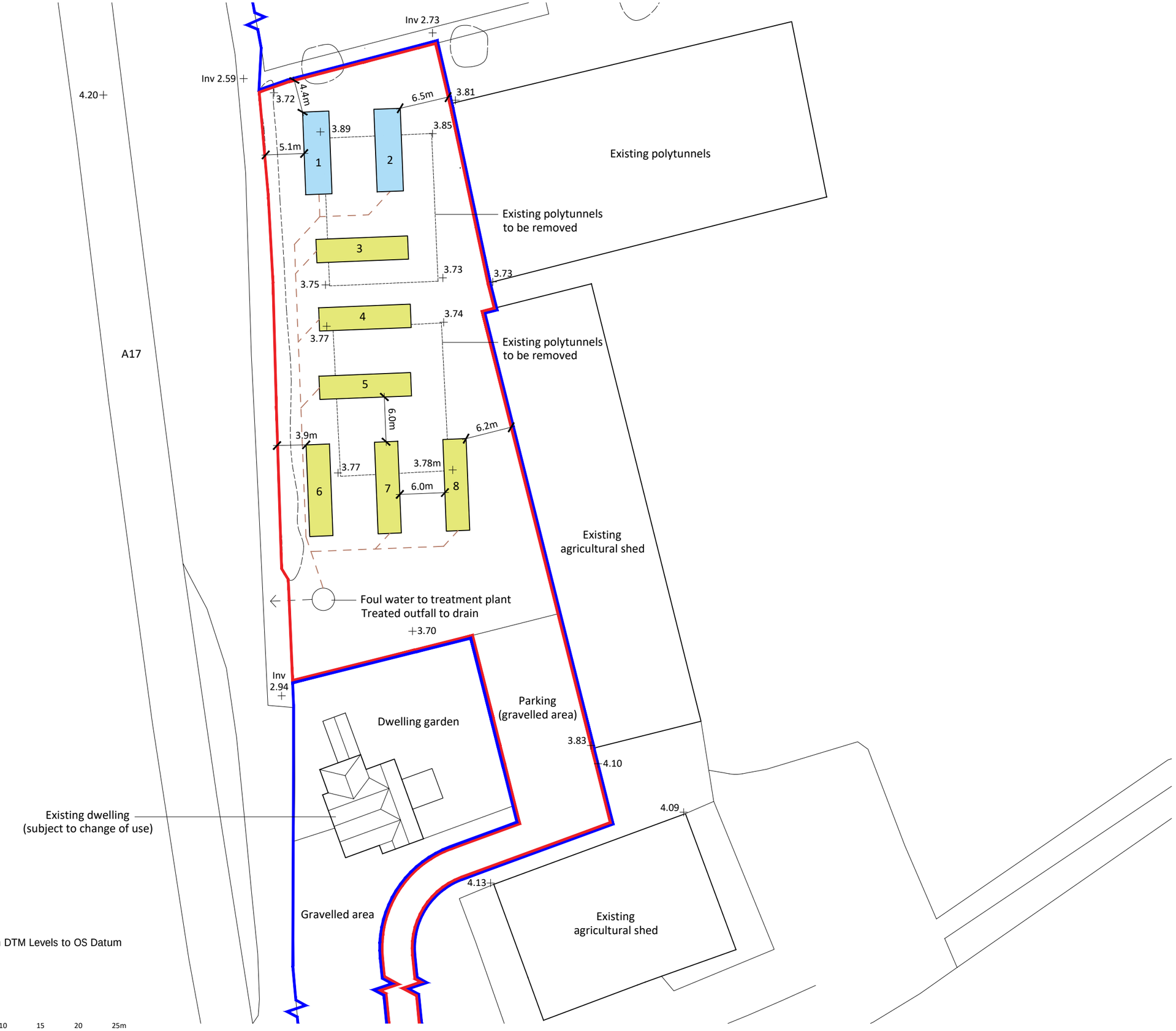
Scale @ A3	Date
1:1250	29/08/19

Drawn By	Checked By
WW	LMS

Job Number	Status	Purpose of Issue
1246-3	PL	Planning

Drawing No.	Rev
1246-3_PL_LP01	-

Plan 2



Notes

Dimensions
Use figured dimensions only. All dimensions should be checked against on site conditions and any discrepancies should be brought to the attention of Robert Doughty Consultancy Limited.

Copyright
© Robert Doughty Consultancy Limited.
All rights described in the Copyright, Designs and Patents Act 1988 have been asserted.

Ordnance Survey Map
© Crown Copyright. OS Licence No: AR 100010613.

CDM 2015
This drawing is for illustrative purposes and/or obtaining the relevant planning permission only. It should not be used for construction and accordingly, risk identification under the Construction (Design & Management) Regulations 2015 has not been undertaken.

2 x Lodges	11 x 3.5m
6 x Static caravans	12.2 x 3.1m

Rev	Description	Date
C	Levels shown	19.09.19
B	Red line revised	17.09.19
A	Foul drainage revised	16.09.19

rdc
Robert Doughty Consultancy

32 High Street, Helpringham
Sleaford, Lincolnshire, NG34 0RA

Tel: 01529 421646
Email: admin@rdc-landplan.co.uk
Web: www.rdc-landplan.co.uk

Client
Naylor Flowers Limited

Project
Change of use
Vickers Park, Washway Road

Drawing
Proposed Block Plan

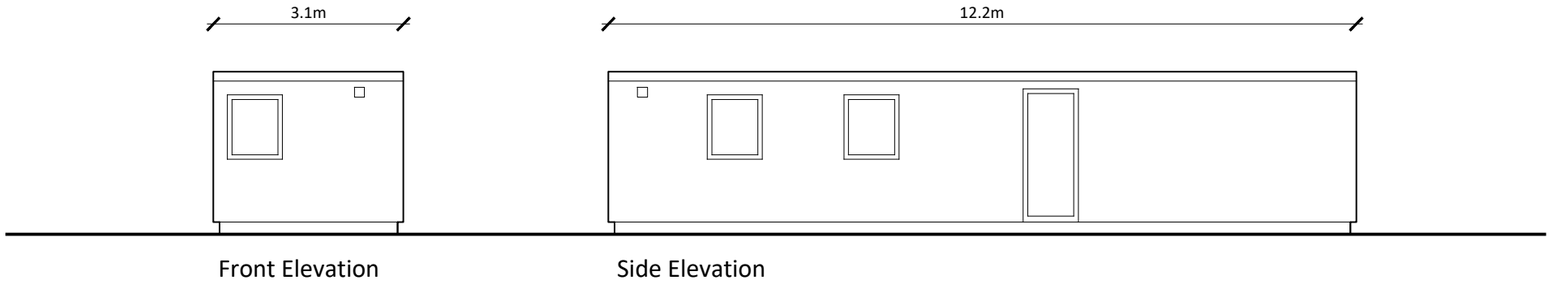
Scale @ A3	Date
1:500	29/08/19

Drawn By	Checked By
WW	LMS

Job Number	Status	Purpose of Issue
1246-3	PL	Planning

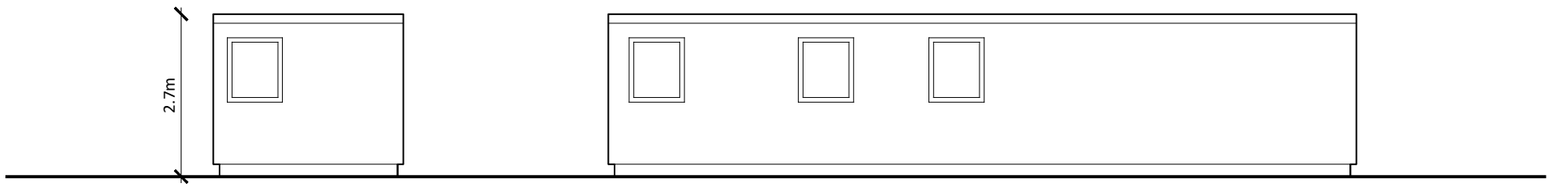
Drawing No.	Rev
1246-3_PL_BP02	C

Plan 3



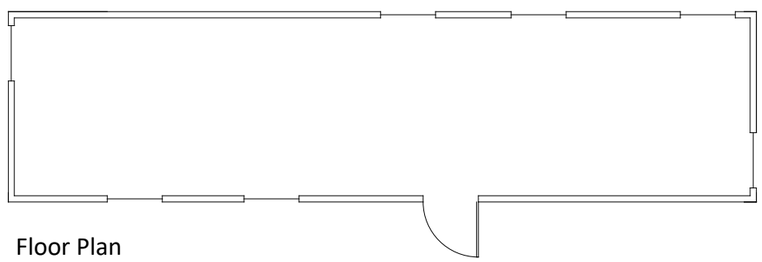
Front Elevation

Side Elevation



Rear Elevation

Side Elevation



Floor Plan

0 1 2 3 4 5m

Notes

Dimensions
Use figured dimensions only. All dimensions should be checked against on site conditions and any discrepancies should be brought to the attention of Robert Doughty Consultancy Limited.

Copyright
© Robert Doughty Consultancy Limited.
All rights described in the Copyright, Designs and Patents Act 1988 have been asserted.

CDM 2015
This drawing is for illustrative purposes and/or obtaining the relevant planning permission only. It should not be used for construction and accordingly, risk identification under the Construction (Design & Management) Regulations 2015 has not been undertaken.

Rev	Description	Date
-	-	-

rdc
Robert Doughty Consultancy

32 High Street, Helpringham
Sleaford, Lincolnshire, NG34 0RA

Tel: 01529 421646
Email: admin@rdc-landplan.co.uk
Web: www.rdc-landplan.co.uk

Client
Naylor Flowers Limited

Project
Change of use
Vickers Park, Washway Road

Drawing
Proposed Static Caravan Elevations & Plans

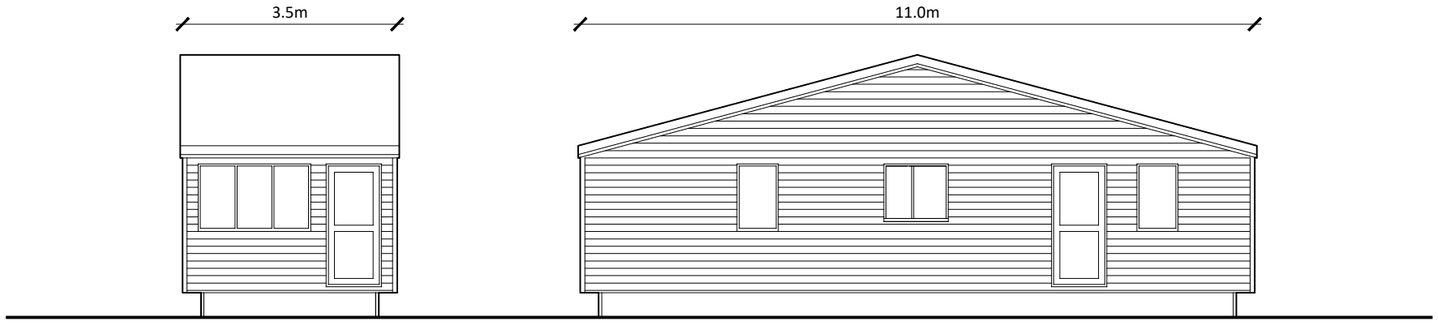
Scale @ A3	Date
1:100	29/08/19

Drawn By	Checked By
WW	LMS

Job Number	Status	Purpose of Issue
1246-3	PL	Planning

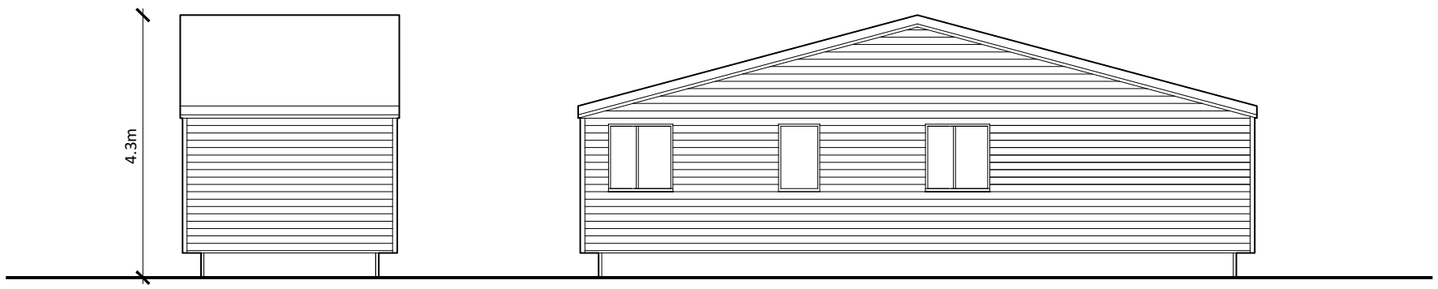
Drawing No.	Rev
1246-3_PL_GA02	-

Plan 4



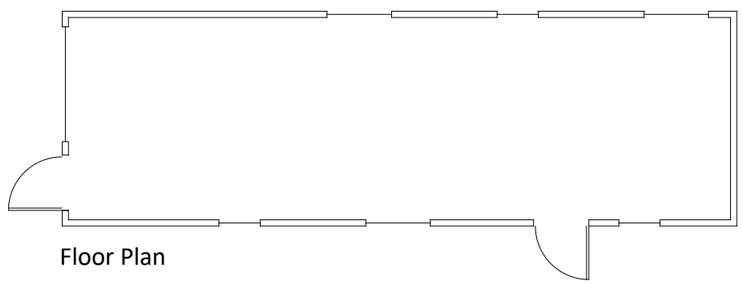
Front Elevation

Side Elevation



Rear Elevation

Side Elevation



Floor Plan

0 1 2 3 4 5m

Notes

Dimensions
Use figured dimensions only. All dimensions should be checked against on site conditions and any discrepancies should be brought to the attention of Robert Doughty Consultancy Limited.

Copyright
© Robert Doughty Consultancy Limited.
All rights described in the Copyright, Designs and Patents Act 1988 have been asserted.

CDM 2015
This drawing is for illustrative purposes and/or obtaining the relevant planning permission only. It should not be used for construction and accordingly, risk identification under the Construction (Design & Management) Regulations 2015 has not been undertaken.

Rev	Description	Date
-	-	-

rdc
Robert Doughty Consultancy

32 High Street, Helpringham
Sleaford, Lincolnshire, NG34 0RA

Tel: 01529 421646
Email: admin@rdc-landplan.co.uk
Web: www.rdc-landplan.co.uk

Client
Naylor Flowers Limited

Project
Change of use
Vickers Park, Washway Road

Drawing
Proposed Lodge Elevations & Plans

Scale @ A3	Date
1:100	29/08/19

Drawn By	Checked By
WW	LMS

Job Number	Status	Purpose of Issue
1246-3	PL	Planning

Drawing No.	Rev
1246-3_PL_GA01	-