FLOOD RISK ASSESSMENT

Introduction

The site is located at Greenworld Park, Sut on Bridge, Spalding, PE12 9RN and lies within the administrative area of South Holland District Council. The National Grid Reference for the centre of the site is TF47618 21018. **Plan 1**

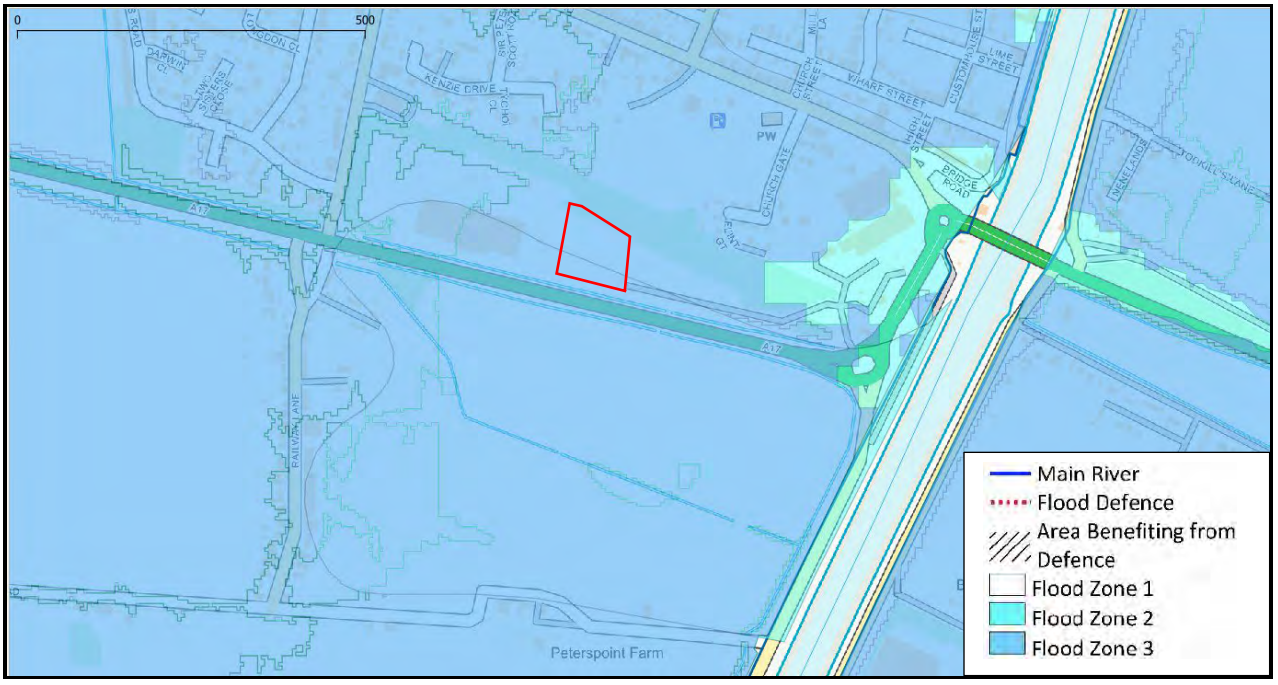
This flood risk assessment has been prepared for a planning permission, for the stationing of a semi-mobile asphalt plant on the site, with a temporary fence and gates erected around it for security reasons. An array of plant and machinery, together with aggregate storage bays make up the installation **Plans 2 & 3**

Applying the Flood Risk Vulnerability Classification in Table 2 of NPPG, the proposed industrial use for the site is classified as "Less Vulnerable".

The entire site is identified in the South East Lincolnshire Local Plan as allocation 'SB004' (Railway Lane East) which is an 'Established Employment Site' and suitable for B1 (now use class E), B2 (general industry) and B8 (warehousing or storage). The proposed use falls within use class B2 and is compatible in principle with the designated use of the site. It was previously occupied by Backkavor who have recently closed.

Flood Zone

The site is located in an area designated on the Flood Map and therefore is considered at risk from tidal flooding as it is all located within an area zoned as Flood Zone 3a. The maps indicate that the area would be flooded without flood defences, which are in place, (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).

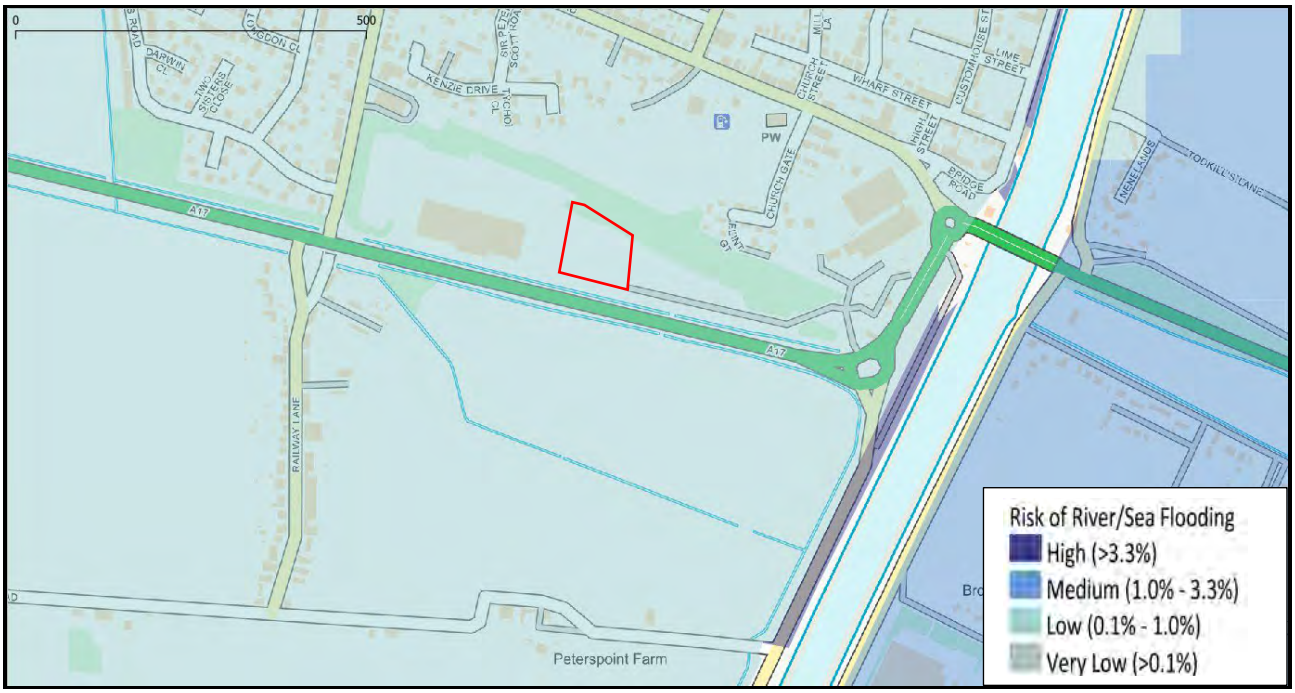


Flood Map for Planning (Source EA)

Risk of Flooding from Rivers & Sea

The Risk of flooding from Rivers and Sea map shows the site to be at Low Risk. Low means that each year, this area has a chance of flooding greater than 0.1%. 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.

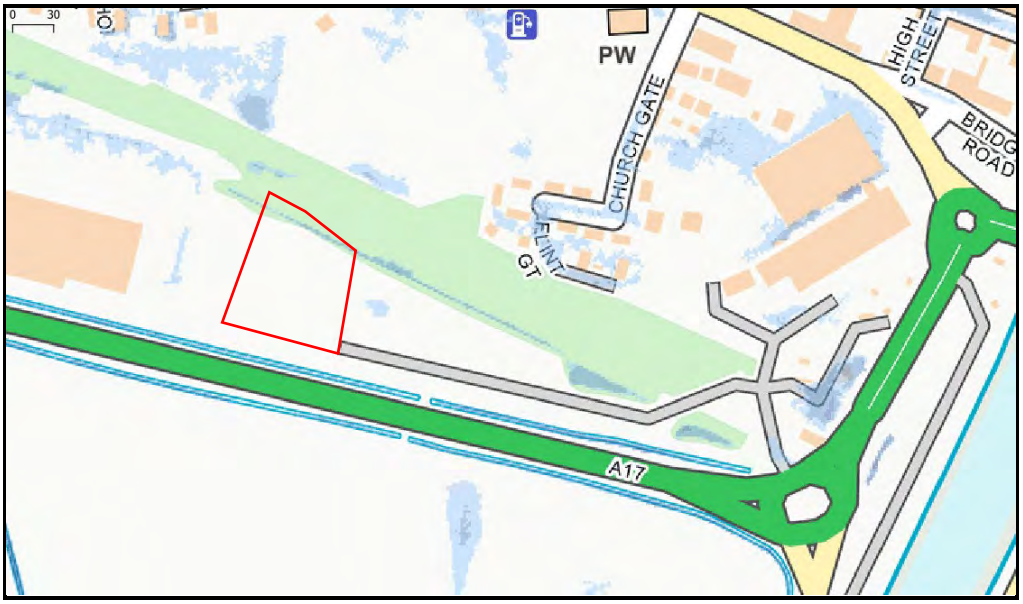


Flooding from Rivers & Sea Map (Source EA)

The River Nene is located some 480m east of the site and is the main source for the risk of flooding at the site. The crest level of the earth flood embankment is circa 6.95mODN.

Surface Water Flooding

The surface water flood maps shows that the site is not affected by from the 0.1% event for surface water flooding.



Risk of Flooding from Surface Water Map (Source EA)

Site Levels

Lidar 2m DTM data to Ordnance Datum Newlyn, reveals that the site is generally flat land levels around the proposed site are circa 3.41mODN.



Lidar Cross Section A - B

Breach Analysis to River Nene Tidal Defences

The base date for the data is 2017 for the East Coast and Wash: Immingham to the West Lighthouse Peak tide levels. The base date for the data is 2017 for the still water levels, the Peak tide levels Present Day (2017) at West lighthouse for the 50% confidence bound 0.1% (1 in 1000year) is 6.14mODN. With climate change from Table 3 (2017 – 2123) 1089mm = 7.13mODN

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

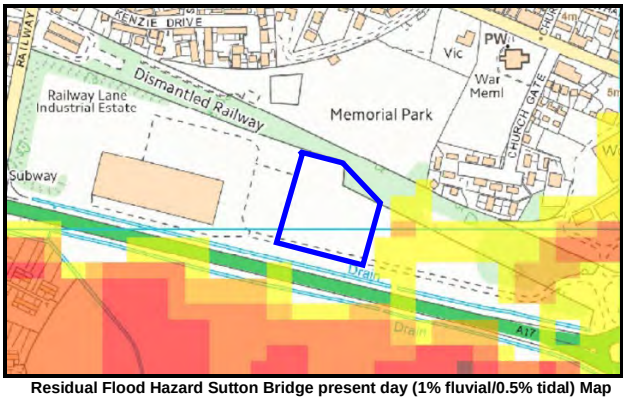
Where V = Flood flow velocity (m/sec) D = Flood depth (m)

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

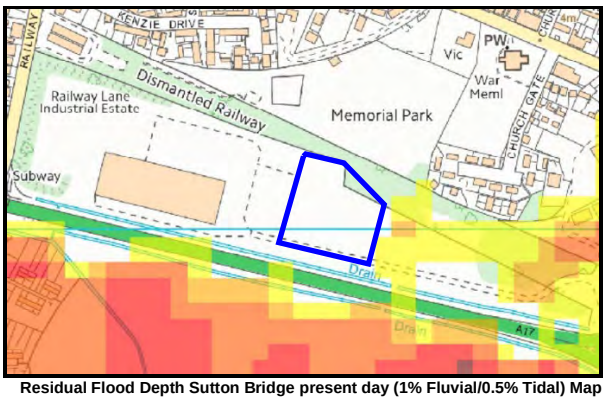
For the degree of Flood Hazard to be classified as low HR must be <0.75.

The 2017 Update to SHDC, SFRA provided Tidal & Fluvial Hazard Mapping, for Suto n bridge, following a

breach to the defences. The present-day maps for the Residual Flood Hazard, Depth and Velocity District – 1% fluvial and 0.5% Tidal Event Probability show that the site where the proposed development is to be located is within an area of no hazard.

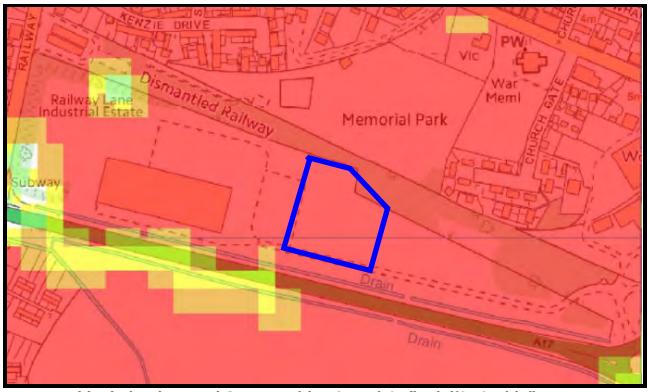


Residual Flood Hazard Sutton Bridge present day (1% fluvial/0.5% tidal) Map

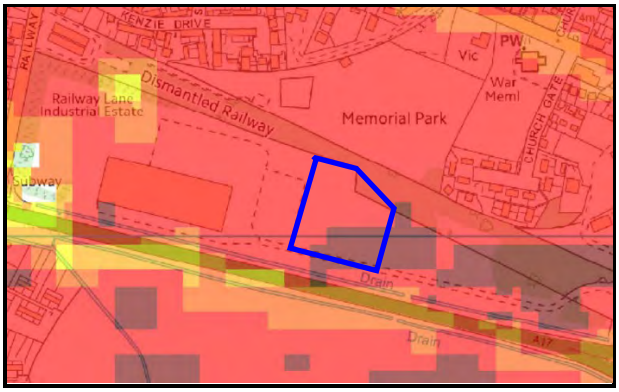


Residual Flood Depth Sutton Bridge present day (1% Fluvial/0.5% Tidal) Map

With climate change up to year 2115 the maps show that for Scenario annual chance 1 in 200-year that the site is within a hazard rating area between Greater than 2.0 (Danger for All), max depth 1.0 – 1.6m.



Residual Flood Hazard Sutton Bridge 2115 (1% fluvial/0.5% tidal) Map



Residual Flood Depth Sutton |Bridge 2115 (1% Fluvial/0.5% Tidal) Map

Mitigation Measures

It is therefore proposed that the asphalt plant be set at ground level. the plant is designed to be operated in all weathers.

Any impact of damage to the properties can be foreseen and mitigated against by relatively simpledesign 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).

- All electrical connections are housed in waterproof cabinets.
- The existing office and warehouse building on site will provide a safe haven for all personal at first floor level in times of flood.
- The plant will be closed down in the event of a severe flood warning be issued by the Environment

Agency

- As this site is in an area that is capable of receiving flood warnings from the Environment Agency Floodline Warning Direct system. It is recommended that the property Owner if not already registered contact the Environment Agency's Floodline on 0345 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 flood defences which are well maintained by the Environment Agency.

- The site is shown to be within Flood Zone 3 'High Probability' as detailed on the Environment Agency's Flood Zone Maps without defences.

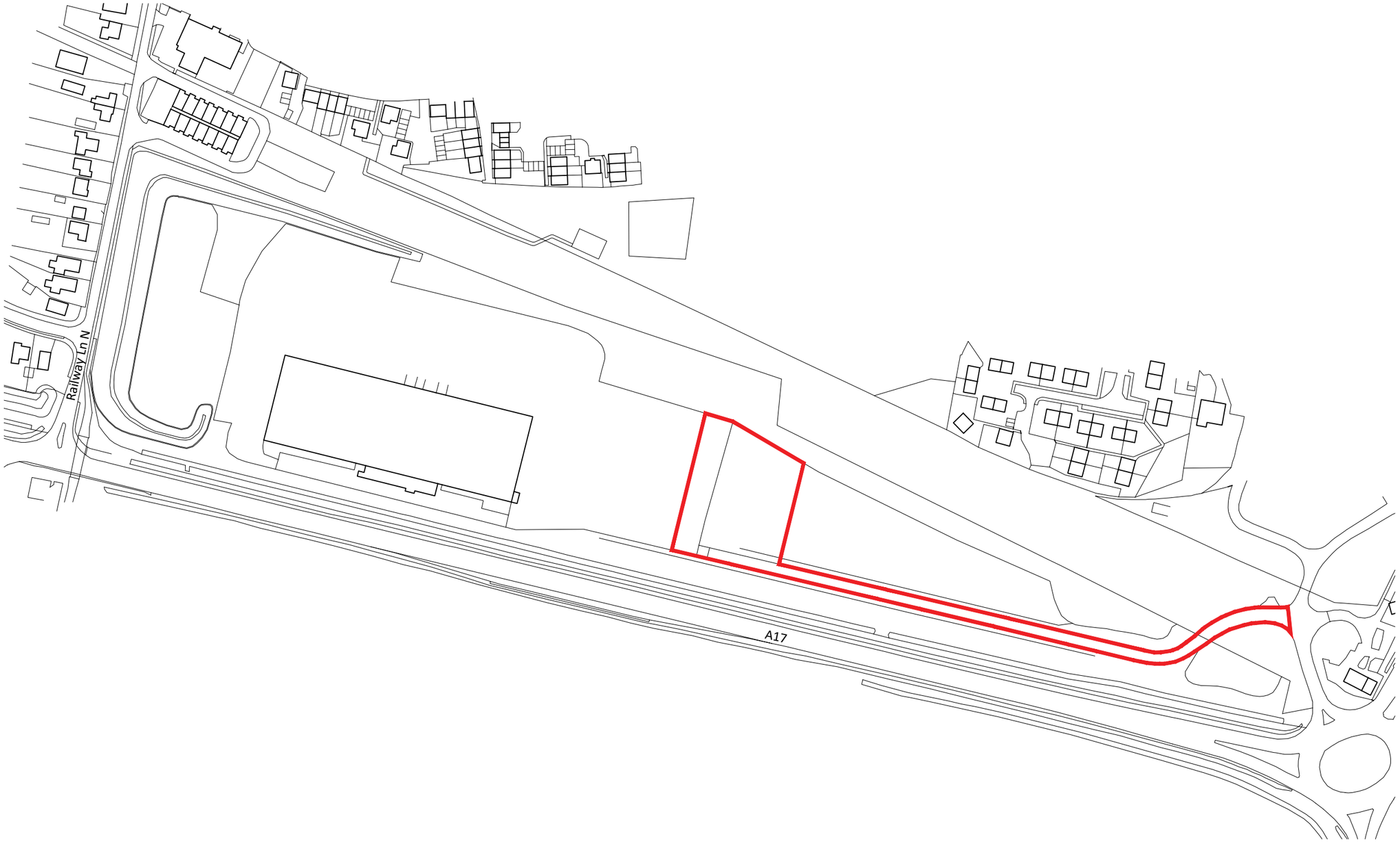
- The maps from the Lincolnshire & Northamptonshire Area Tidal Breach Hazard Maps, for scenario year present day, for the 1 in 100-year event, shows that the site is not within a Hazard Rating area.

- With climate change With climate change up to year 2115 the maps show that for Scenario annual chance 1 in 200-year that the site is within a hazard rating area between Greater than 2.0 (Danger for All), max depth 1.0 – 1.6m.

- The asphalt plant is designed to operate in all weathers, therefore should the site be subject to a flood this would not affect the plant.

- If the Environment Agency issued a flood warning for the are the plant would cease to operate. A safe haven is provided for all employees in the nearby two storey building.

Plan 1



Notes

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N

0 20 40 60 80 100m

Rev	Description	Date
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Client
Franklin Bros Limited

Project
Asphalt Plant
Sutton Bridge

Drawing
Location Plan

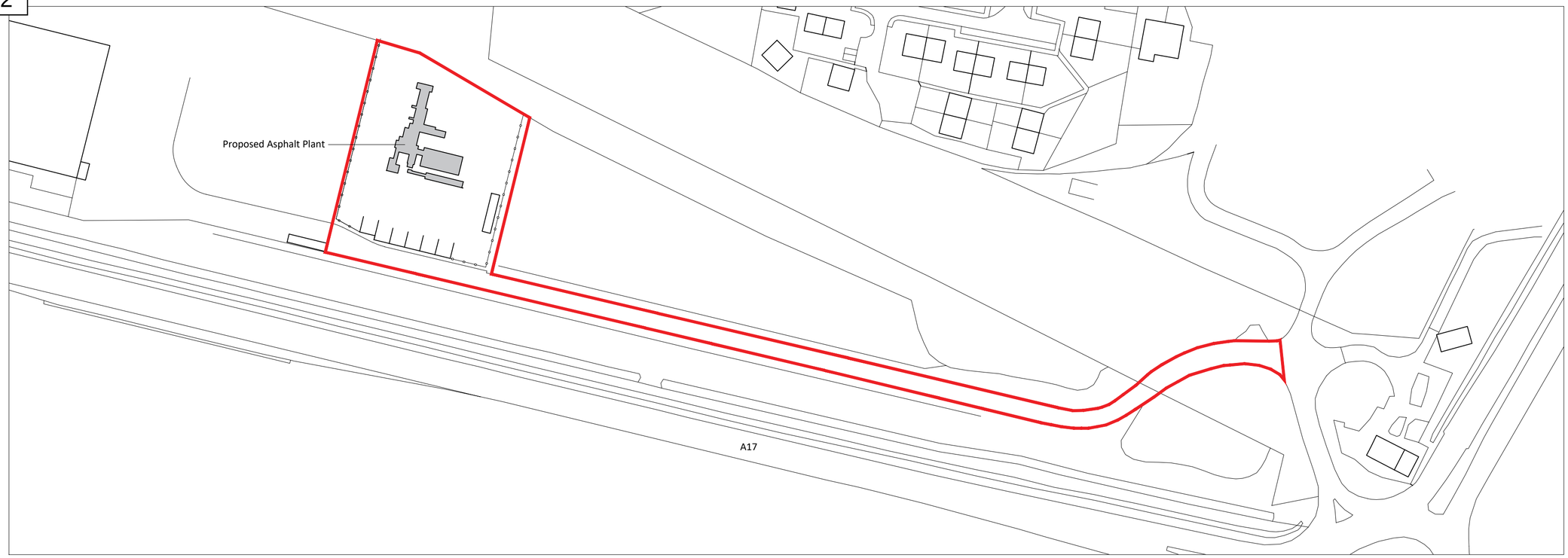
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Drawn By	Checked By
WW	LMS

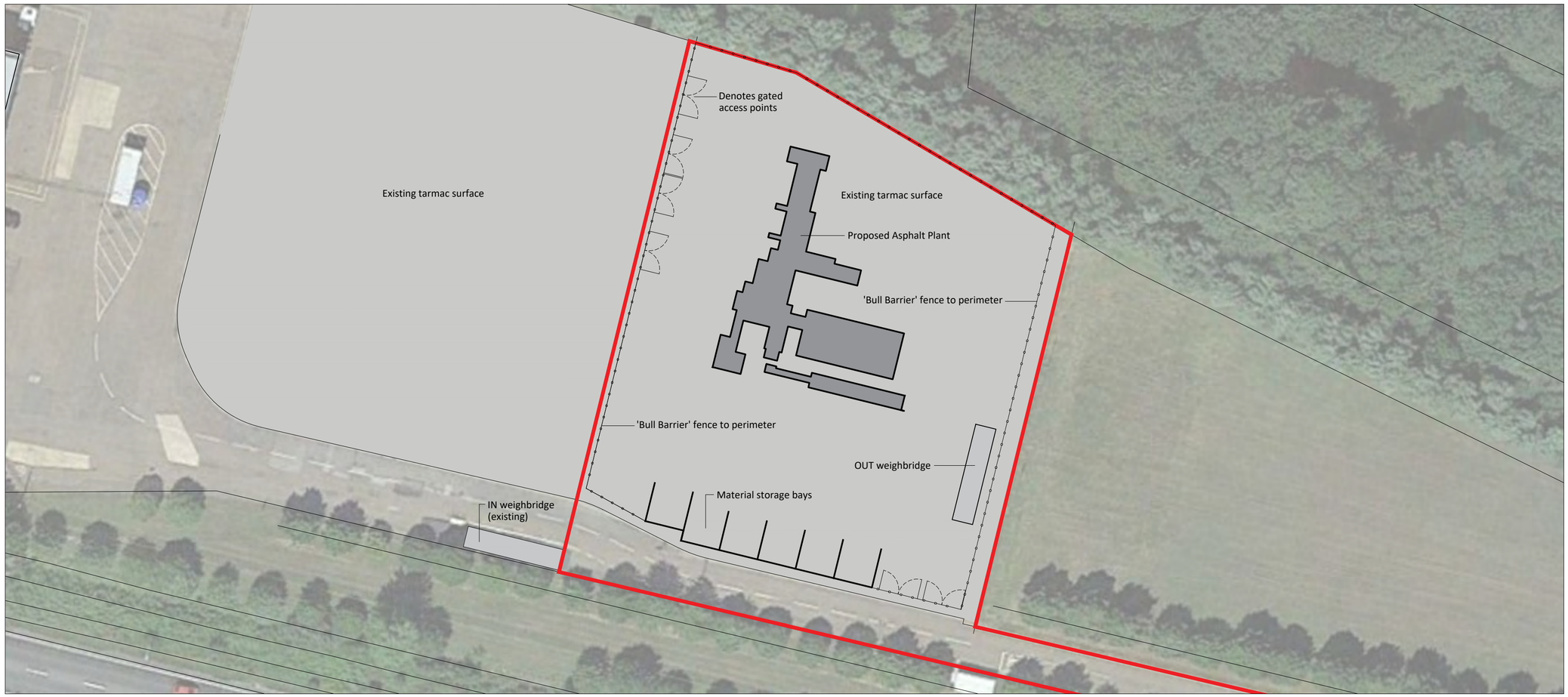
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1589-1	PL	Planning

Drawing No.	Rev
1589-1_PL_LP01	-

Plan 2



Above: Proposed Site Plan 1:1250



Above: Proposed Site Plan 1:500

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Dimensions
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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.

N

0 10 20 30 40 50m

1.1250

0 5 10 15 20 25m

1.500

Rev	Description	Date
-	-	-

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Proposed Site Plan

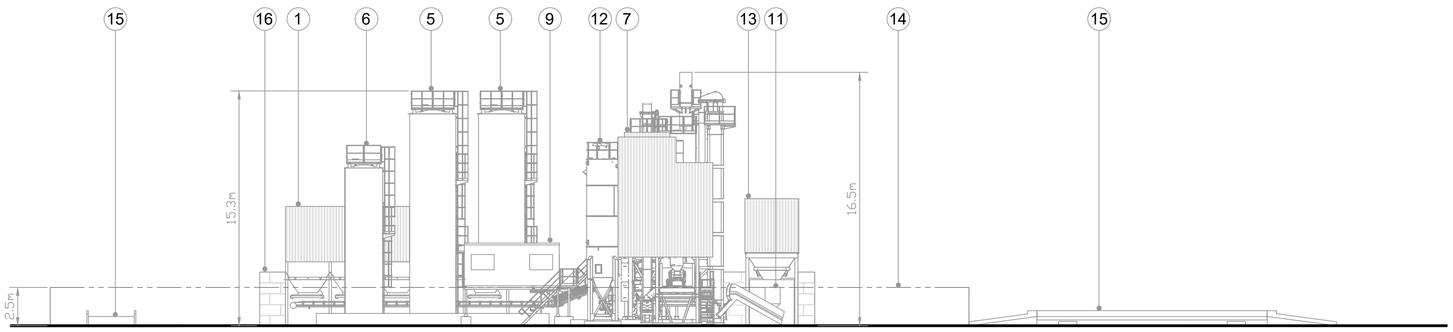
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WW	LMS

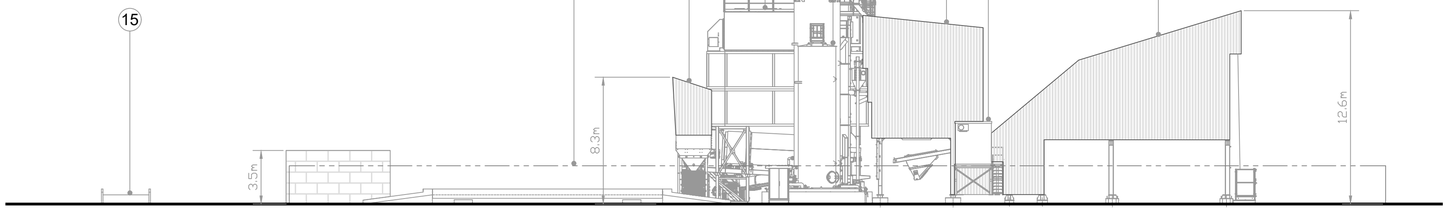
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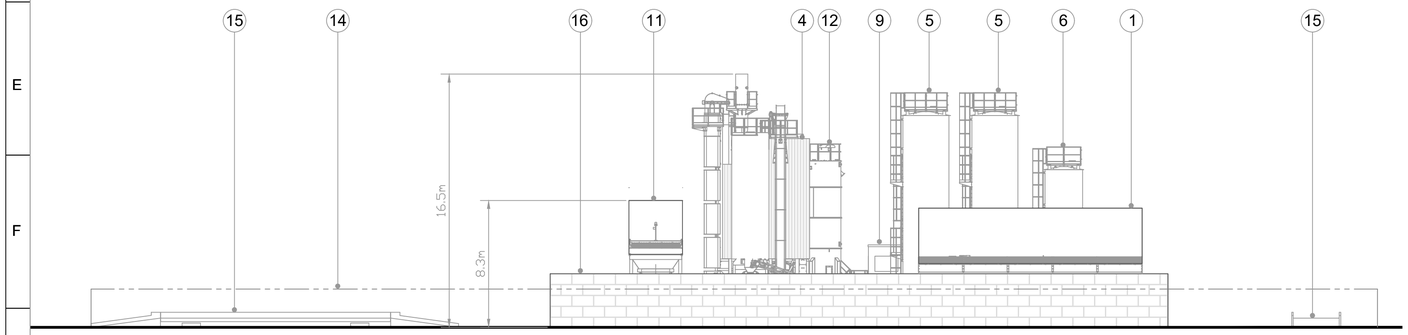
Plan 3



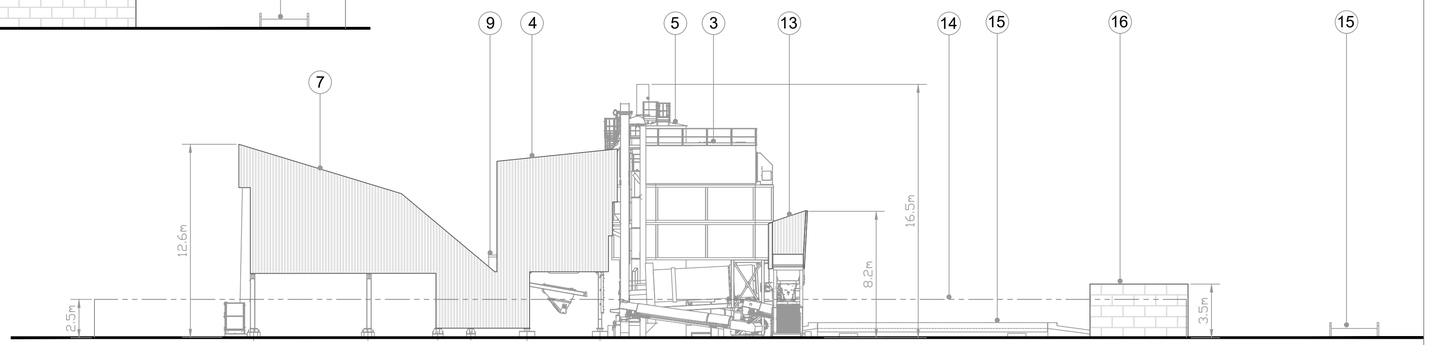
Elevation On "A" - "A"



Elevation On "B" - "B"



Elevation On "C" - "C"



Elevation On "D" - "D"

Ref No	DESCRIPTION
1	COLD FEEDERS 5x8 m3
2	DRUM DRYER D200
3	BAGHOUSE FILTER F324
4	T1s BATCH MIXING TOWER
5	BITUMEN TANKS - 2 x 50 m3
6	FUEL TANK - 1 x 35 m3
7	HOT STORAGE MIX - 100 Tn
8	HOT STORAGE MIX - DIRECT
9	CONTROL ROOM
10	RAP FEEDER
11	MIXER RAP
12	MINERAL FILLER SILO 2
13	RAP HOPPER
14	POST & WIRE FENCE
15	WEIGHBRIDGE (2 No)
16	AGGREGATE STOCK BAYS



SCALE BAR 1:200

For Site Plan See Drawing No SB/001/A

TITLE

ASPHALT PLANT ELEVATIONS AT FRANKLIN BROS LIMITED, SUTTON BRIDGE.

REV	DATE

DRAWN BY	CHECKED BY	APPROVED BY
REVISION		

IDENT	FINISH	QTY REQ'D
DRAWN BY	D.T.	
CHECKED BY		
APPROVED BY		
DATE	20/11/23	
SHEET 1 OF 1		

SCALE	SIZE	DRG No.	REV
1:200	A1	SB/002	