Environment Agency

Flood map for planning

Your reference	Location (easting/northing)	Created
Stevedon	**527519/322246**	**19 Feb 2021 16:27**

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

This means:

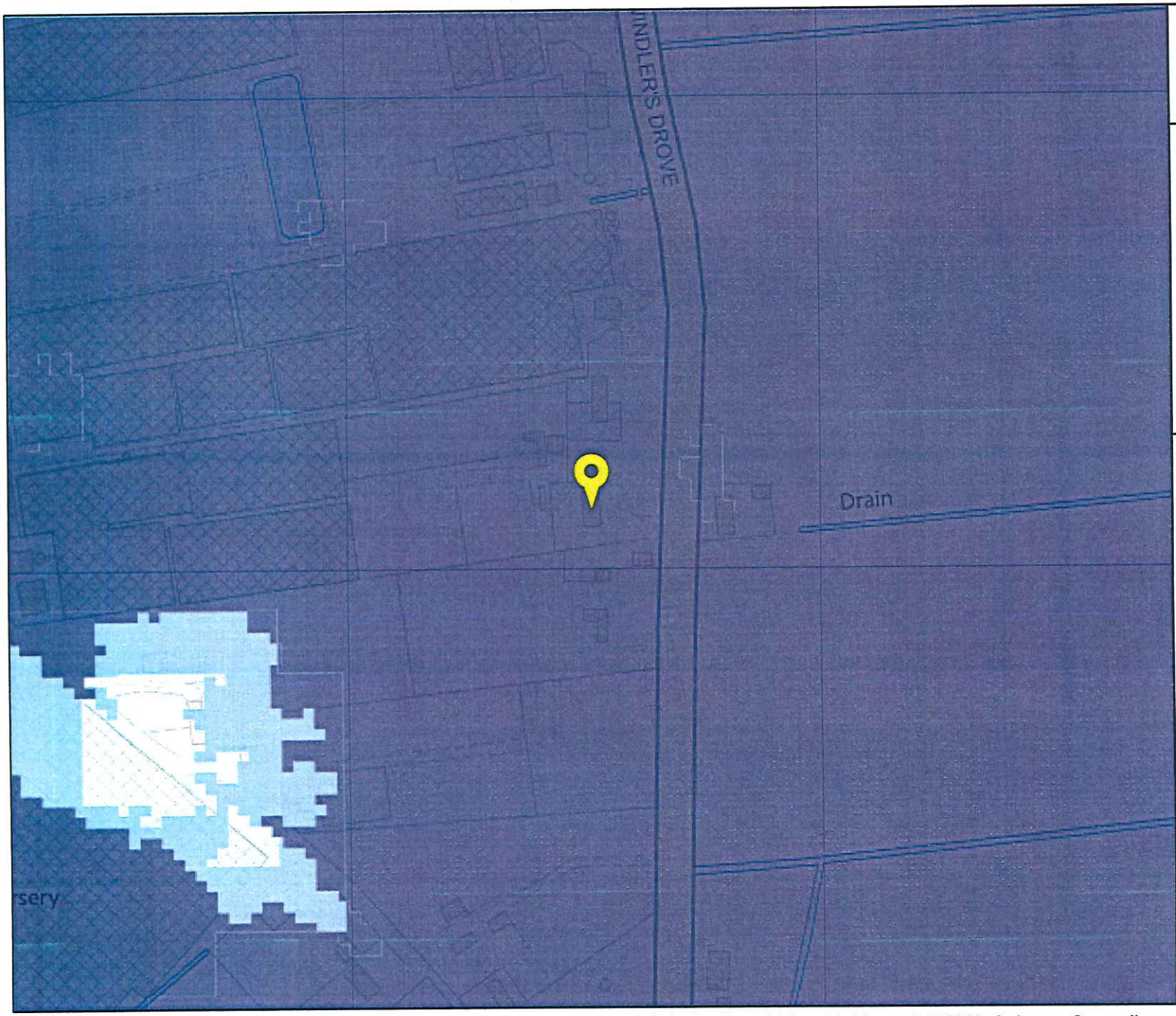
- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

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.

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https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/



Environment Agency

Flood map for planning

Your reference
Stevedon

Location (easting/northing)
527519/322246

Scale
1:2500

Created
19 Feb 2021 16:27

- 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

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PLATE 2

The proposed development is within Flood Zones 3(a) as detailed on the Environment Agency's flood zone maps without defences, as defined in Table 1 of the Technical Guidance.

Applying the flood risk vulnerability classification in Table 2 of the Guidance, a development of a dwelling house is classified as "more vulnerable".

Table 3 of the Guidance is shown 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 †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓*

Therefore it can be seen that "More vulnerable" development is only appropriate in Flood Zone 3 after the sequential and the exception test have been applied.

Sequential Test

As the proposed development is located in Flood Zone 3(a) the NPPF requires the sequential test to be applied to determine if there are any reasonably available and suitable alternative sites in a lower flood risk zone for this type of development.

It is unlikely that a site with a lower flood risk can be identified in the Fulney area. The plan showing the flood risk zones on the previous page shows that all of the Fulney area is within flood zone 3 and no alternative sites are available in this area with a lower flood risk.

The South Holland District Council Core Strategy states that there is a limited number of sites outside the town of Spalding available for residential development. Some greenfield land will need to be identified to enable the Council to meet the RSS and Structure Plan requirement for 2021. Therefore there is a requirement for further land to be brought forward and used for residential development.

With the above evidence it is considered that the proposed site passes the Sequential Test as there are no other more suitable sites in this area in Flood Zones 1 or 2 with a lower flood risk.

Exception Test

The Sequential Test has demonstrated that it is not possible, consistent with wider sustainability objectives, for the development to be located in zones with a lower probability of flooding. Therefore the Exception Test must be applied and for this to be passed:

- It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risks, informed by the Strategic Flood Risk Assessment; and
- A site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking into account of the vulnerability of its users, without increasing flood risk elsewhere, and where possible will reduce flood risk overall.

Both parts of this test must be satisfied in order for the development to be considered appropriate in terms of flood risk. There must be robust evidence in support of every part of the test.

The first section will be demonstrated by the Supporting Planning Statement and compliance with South Holland District Council's planning policies.

This flood risk assessment will demonstrate that the development will be safe for its lifetime and it will not increase flood risk elsewhere.

Strategic Flood Risk Assessment

Consultants have produced a Strategic Flood Risk Assessment (SFRA) for the South Holland District Council (SHDC). This document provides details of the flood risk in the Council's area. Reference to the maps in this document give the following information for the flood risk and hazard at the site for the 1% fluvial event and 0.5% tidal event.

- The maps illustrate the actual flood hazard which is as follows:

For the present day	Depth of flooding ... zero
	Extent of flooding .. Low or medium flood probability
	Peak Velocity ..... Nil
For year 2115	Depth of flooding ... 0 – 500mm
	Extent of flooding.... High flood probability
	Peak Velocity ..... 0 – 0.1 m/sec

- The maps also illustrate the residual flood hazard which is as follows:-

For the present day	Depth of flooding ...0 – 500mm
	Extent of flooding .. High flood probability

Peak Velocity .. 0 – 0.1 m/sec

For the year 2115 Depth of flooding ... 0 – 500mm

Extent of flooding .. High flood probability

Peak Velocity .. 0 – 0.1m/sec

Figure 16 of the general maps show that the site is not within the rapid inundation zone.

Tables in the SFRA show the following details of the defence bank on the east side of the tidal section of the River Welland north of the A16 road bridge, between chainage 19.8km and 20.8km.

	2007	2055	2115
Peak 1 in 200 year extreme tide level	5.98m OD	6.31m OD	7.12m OD
Peak 1 in 1,000 year extreme tide level	6.27m OD	6.60m OD	7.41m OD

With an average defence crest level between 7.80 and 7.90 m OD the freeboards are as follows:

	2007	2055	2115
Peak 1 in 200 year freeboard	1870mm	1540mm	730mm
Peak 1 in 1,000 year freeboard	1580mm	1250mm	440mm

Tables in the SFRA show the following details for the defence bank on the east side of the Coronation Channel between chainage 0 km and 2.0 km.

	2007	2115
Peak 1 in 100 year extreme tide level	4.32m OD	4.69m OD
Peak 1 in 1,000 year extreme tide level	4.34m OD	4.69m OD

The bank levels on this section vary between 5.35m OD and 6.0m OD. Therefore it can be seen there is a minimum freeboard of 650mm to the predicted design maximum levels in 2115.

Existing Flood Alleviation Measures

The site is within a defended flood plain, as defined in Appendix 1 of the Environment Agency's "Policy and Practice for the Protection of Flood Plains", which is considered to be passive until such time that a flood greater than the defences can withstand occurs. The likelihood of flooding occurring due to overtopping or failures of the defences is considered to be very low.

The site is located approximately 2.8 km from the tidal section of the River Welland, which has a tidal defence bank which is maintained by the Environment Agency.

The site is located approximately 1.4 km from the Coronation Channel which is maintained by the Environment Agency.

The arterial system of watercourses in the area are maintained by South Holland IDB. The watercourse on the southern side of Weston Hills Road opposite the site is a drain maintained by the IDB.

Existing Ground Levels

A survey of the ground levels on the site has been produced and this is shown on page 11. The levels on the site vary between 2.60m and 2.95m OD, and the land level on the centre of the site where it is proposed to locate the new house is approximately 2.90m OD. The level of Weston Hills Road in front of the site is also 2.90m OD.

The water level in the IDB drain on 23rd February 2016 was 1.35m OD and the level in the dyke in front of the property (on the north side of Weston Hills Road) was 1.45m OD.

Potential Sources of Flooding

The potential sources of flooding to the site are:-

1. Overtopping or breaching in the Coronation Channel
2. Failure or overtopping of tidal defences of the River Welland
3. Failure of Little Holland Pumping Station (IDB)
4. Blockages in IDB drains or culverts
5. Surface Water Flooding

1. **Overtopping or breaching in the Coronation Channel**

The SFRA states that the maximum design water level in the Coronation Channel is 4.69m OD. The minimum crest level of the east bank of the Channel is 5.14m OD, which gives a minimum freeboard of 450mm. However, generally there is a freeboard of 600 mm along this bank of the Channel.

If the Channel were to breach water would flow eastwards towards the site. However, it would be retained for a short time by the A16 which is higher than the surrounding land. The SFRA indicates that with a serious breach water would not reach the site in a 1 in 100 year event.

With the site being only 1.4 km from the Coronation Channel there is a risk that flood water from this source could reach the development site if a breach occurred in the east bank of the watercourse. As the most common cause of a breach is from overtopping of a bank the risk at this location can be considered very low. If a breach were to form the flood water would be held up on the western side of the new A16 for some time, because the road is higher than the surrounding grounds levels, giving residents in the Fulney area time to prepare for flooding.

2. Failure or overtopping of tidal defences

As shown above, the east bank of the River Welland, which is approximately 2.8 km from the site, has at least a 1 in 200 year standard of protection. If the eastern bank of the tidal section of the River Welland breached then the maps in the SFRA indicate that flood water could flow as far as the site in a 1 in 200 year event in 2115.

3. Failure of Little Holland Pumping Station

The dyke on the north side of Weston Hills Road discharges into the IDB drain on the south side of the road through a culvert under the road 280 metres east of the site opposite Mallard Road. The water level in this IDB drain is controlled by Little Holland Pumping Station which is 10.0 km south east of the development site. The South Holland IDB have advised that the maximum 1 in 100 year predicted level at the pumping station is 0.30m OD. and the maximum 1 in 100 year level in the western end of the Little South Holland Drain is not likely to exceed 1.70m OD.

If levels in the system exceeded 2.5m OD low land south of Weston would start to flood and this would prevent levels rising and it follows that the possibility of levels rising to 2.90m OD and above and causing flooding to the proposed site is remote.

4. Blockages in local watercouses and culverts

The watercourse in front of the site flows into the IDB drain through a culvert under Weston Hills Road 280 metres east of the site. This IDB drain flows eastwards and then flows southwards along a watercourse called Delgate Drain which is maintained by South Holland IDB. All drains maintained by the South Holland IDB have a regular maintenance programme. The normal water level in the drain is approximately 0.9m OD.

The flow in the Delgate Drain runs southwards and joins into a larger channel alongside Austendyke Road which runs eastwards to join a drain which runs southwards to flow into the Little South Holland Drain.

The South Holland IDB have a regular maintenance programme which ensures that drains and culverts are regularly inspected and any blockages in the system are quickly rectified. The risk of a large blockage in the system causing very high water levels which would flood the proposed houses is extremely low.

5. Surface Water Flooding

There is a risk that a blockage in the dyke in front of the site could lead to high water levels and in extreme circumstances waterlogging and flooding of the site. This did happen a number of years ago but the high water levels in the dyke were seen by the local residents and remedial measures were taken before water levels became high enough to cause flooding to the gardens of the local properties or the road.

Therefore the risk of flooding to the proposed development from this source can be considered remote.

Extent of known Flooding

During the preparation of this assessment, no evidence was discovered of the site or any of the adjoining properties being flooded in the last fifty years.

Probabilities and Trends of Flooding

The probability of this development flooding from Environment Agency main river is very low. In an extreme event any effect on this location would not be sudden and there would be time for residents to take precautionary measures to limit the impact of any flooding that may occur.

Residual Risk – Extreme Events

The residual risk from extreme events is very low on this site. The major risk to the site is from a breach or overtopping of the tidal defences

The risk of this happening in this case is low and the hazard from any flooding is also low.

Conclusions

The maps in the SFRA predict that the site could be flooded to a depth of between 0 and 500mm in a 1 in 200 year tidal or a 1 in 100 year fluvial event in 2115. The SFRA does not state whether the source of flooding is the tidal Welland or the Coronation Channel. As the lowest levels on the site are approximately 2.70m OD then the highest predicted flood level is 3.20m OD. Therefore it is recommended that the proposed new building should have a minimum ground floor level of 3.30m OD which will be 100mm above the predicted floor level in 2115.

The risk of flooding from IDB drains can be considered very low. The proposed floor level of 3.30m OD is higher than much of the land in the area which will flood to a depth of at least 500mm before the house is affected, and this would prevent the level of any flood water from this source from rising above 3.00m OD. If the pumping stations were to fail then the IDB have adequate arrangements to operate pumps with alternative motive power, or to bring in mobile pumps.

It can be assumed that the IDB will continue to monitor predicted water levels in the area and carry out improvements to the system over the next 100 years to retain the present standard of defence.

The proposed development is not in a functional flood plain as defined by PPS 25.

Although the site is in flood zone 3, the actual risk of the site flooding from any Environment Agency or IDB watercourse is very low.