

Proposed Residential Development Site

Oakington Road, Girton

Technical Note on Flood Risk

Introduction

This technical Note has been prepared in support of residential development at land adjacent to Oakington Road, Girton as part of the representation being made by Abbey Properties Cambridgeshire Limited to the South Cambridgeshire Call for Sites (March 2019) for this site to be included as potential land for development in Greater Cambridge (which comprises the administrative districts of Cambridge and South Cambridgeshire).

This note has been prepared for Abbey Properties Cambridgeshire Limited and is intended for review by the Council for the purposes noted above and may not be used by any other part without written permission from Amazi Consulting Ltd. This Note concludes that a future flood risk assessment would be able to demonstrate that the land is suitable for residential development.

Fluvial Flooding

As shown in Figure 01, the site is located between Oakington Road and the Main River Beck Brook.

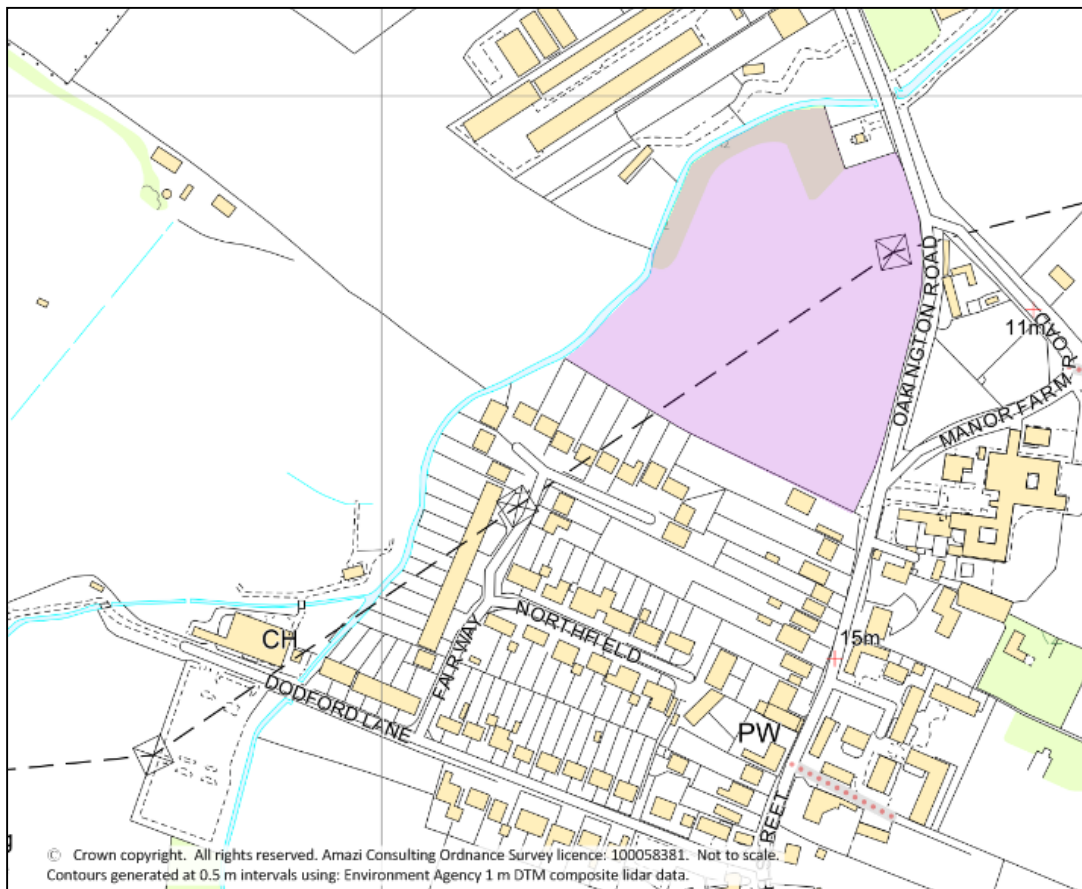


Figure 01 - Site setting

The flood map for planning associated with this watercourse system is shown in Figure 02 below.

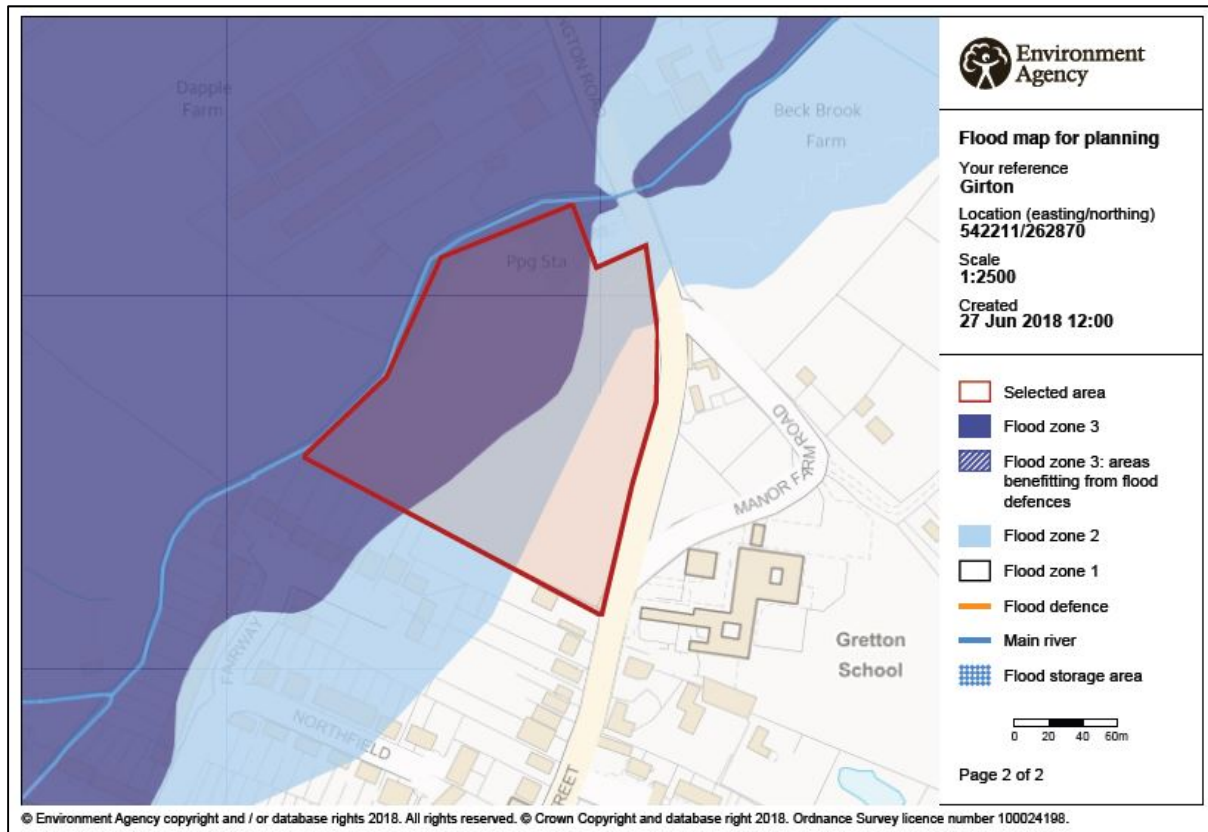


Figure 02 - Fluvial flood zones

The watercourse flows from south to north and has an upstream catchment of 18 km². From review of this flood map and topographical information, it is clear that the ground east of the watercourse rises up out of the floodplain, hence the reason why the high risk flood zone (1:100 year/flood zone 3*) flood zone is only shown at the west of the site.

The Risk of Flooding from Surface Water mapping, shown in Figure 03 also indicates flooding on the west part of the site, and the east of the site is not at risk.

* Refer to National Planning Policy Framework, Planning Practice Guidance *flood risk and coastal change*, table 1.

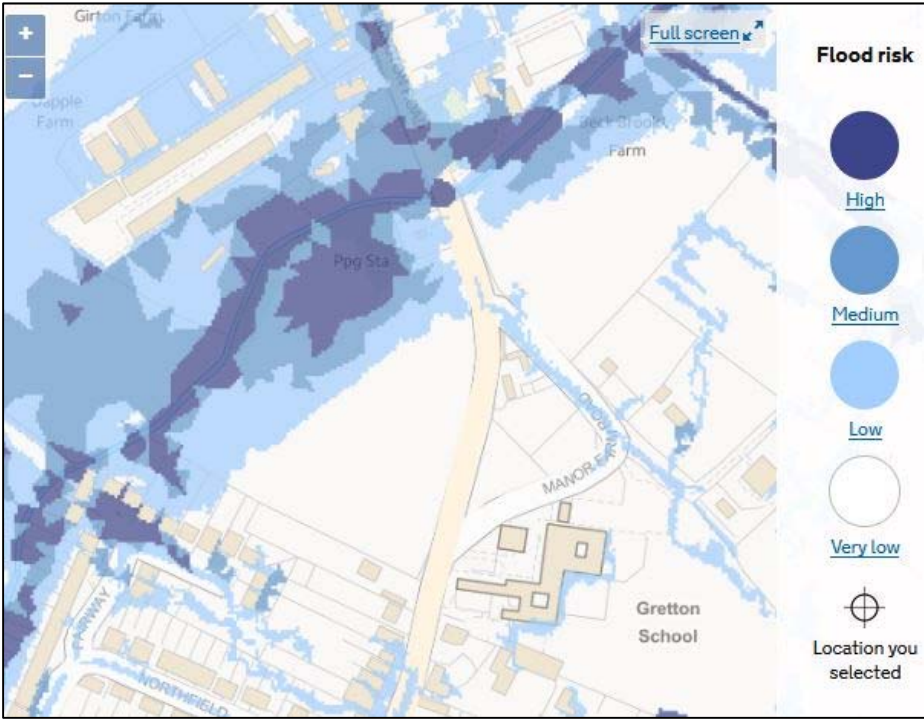


Figure 03 - Risk of flooding from surface water
 (high = 1:30, medium = 1:100, low = 1:1,000)

The Environment Agency has supplied flood level data derived from detailed hydraulic modelling of Beck Brook. Figure 04 shows the peak flood levels at the site. Note: these flood levels are taken from the south/upstream end of the site, and do actually reduce as flow passes the site, so at the north of the site flood levels are typically a bit over 100 mm lower than shown in Figure 04.

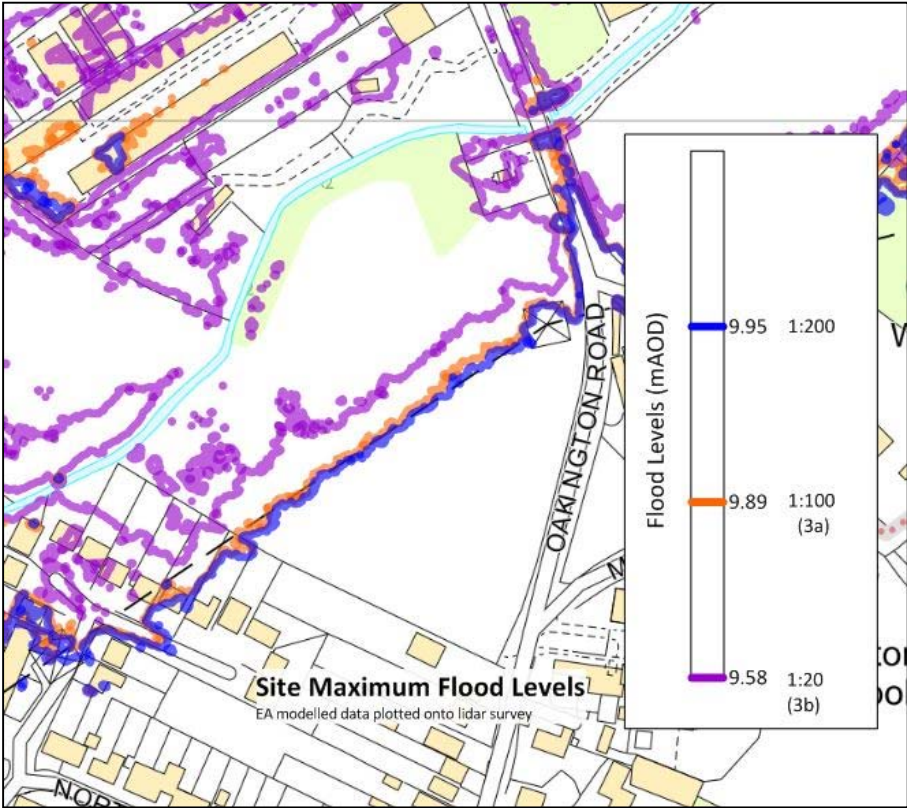


Figure 04 - Flood Extents

The site ground levels used to plot these flood extents is given on Figure 05. It's clear that the extent of the 1:100 and 1:200 year flooding almost coincide and Figure 05 confirms that this is the location where site ground levels start to rise more steeply, out of the floodplain. The site ground levels are around 9.8 - 10 mAOD where the ground rises up more steeply. The levels along Oakington Road road downstream are at c 9.8 - 10, so if flood levels on site reach this level, they will spill over the road, preventing flood levels on site rising much more. The site ground level continues to rise to the east boundary up to over 13 mAOD.

So although the west part of the land being represented includes areas at risk of flooding, proposed residential development would be possible in the east of the site where land is within flood zone 1, without any mitigating measures. The site vehicular access would also be in flood zone 1. There is also the possibility of reviewing flood data further and assessing whether there are some areas at the west of the site which could be developed, if ensuring they remain safe and do not increase flood risk elsewhere.

There is no data currently available for the modelled climate change scenario, but we can confirm that the 1:100 + 35% climate change flood extent will be slightly greater than the 1:200 year (because its flow is slightly greater). We do not have 1:1,000 year (FZ2) data.

We note that at the north (downstream) of the site Beck Brook flows under Oakington Road through an arch bridge. Up until 2015, the inlet to this bridge was obscured by several piped service crossings. These were re-routed, significantly improving the flow path through the crossing.



This Environment Agency model output has been supplied for use in a Flood Risk Assessment, although we will advise that this 2003 data is reviewed against: contemporary gauged flow data (there is a flow gauge a short distance upstream), flow estimation methodologies, 1:100 year event and ensure it includes removal of the pipes at the Oakington Road bridge.

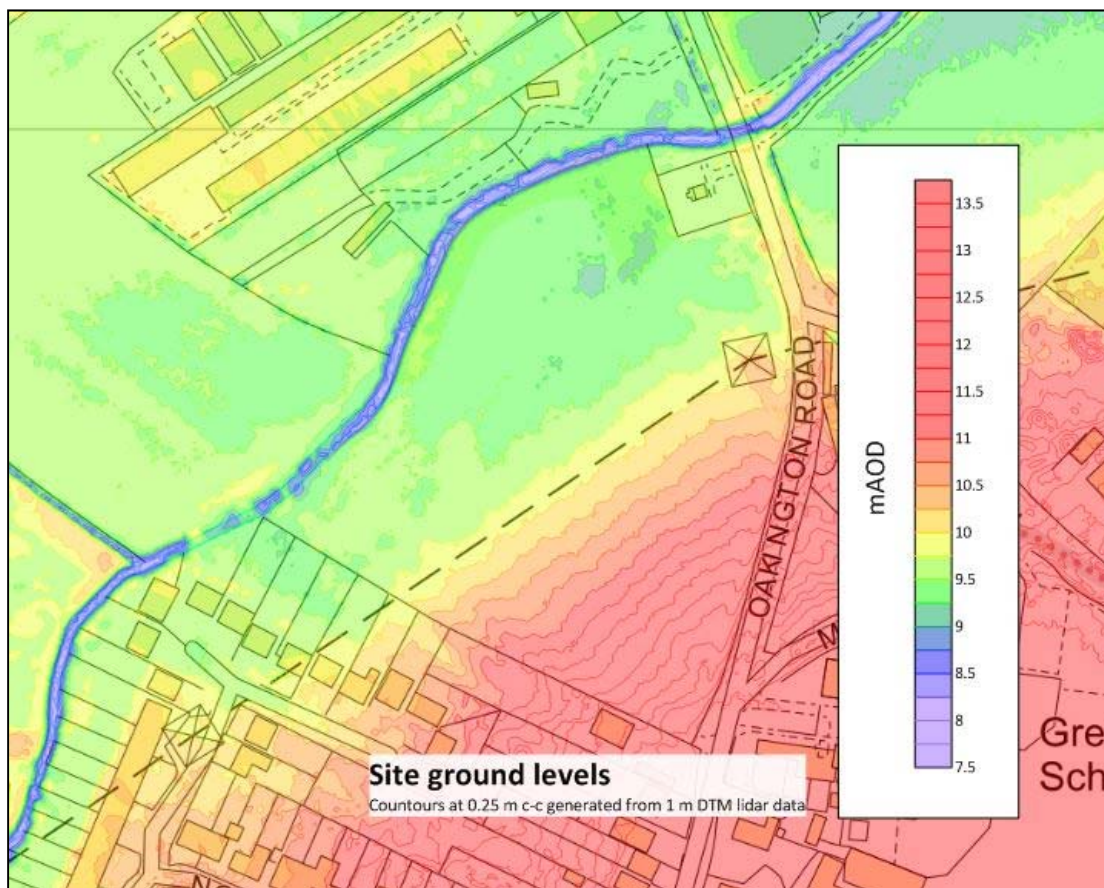


Figure 05 - Local topography

Site Surface water Drainage

The site is greenfield and any development would introduce drained hard surfacing so would therefore result in the generation of additional surface water runoff if measures are not taken to mitigate against the impact of introducing hard surfaces. The proposed site surface water drainage strategy would therefore include sustainable drainage systems (SuDS) to control runoff rates. The proposed site runoff would be reduced to the existing 1:1 year return period greenfield rate, in accordance with National Planning Policy Framework Guidance and the Cambridgeshire County Council SuDS Guidance.

It is anticipated that attenuation storage would be provided on site serving the new development. The restricted outflow would enter the existing adjoining watercourse, to mimic the existing site runoff regime. The attenuation systems are likely to include an open system, such as a new attenuation basin, along with other techniques to provide additional storage at source, e.g. tanked permeable paving. These systems would provide the required attenuation storage along with treatment to the quality of site runoff.

Local borehole records include a borehole on the site. This borehole log confirms that the site is underlain by clay and would therefore be unsuitable for using infiltration drainage systems.

Summary

This site is therefore suitable for development, as long as the developed areas remain safe and do not increase flood risk elsewhere. The higher ground at the east of the site within flood zone 1 (and out of flood zone 3 plus climate change) will be fully suitable for development without any mitigating measures.

Site surface water drainage for opposed development would be managed on site to reduce runoff to existing greenfield rates, in accordance with national and local guidance.