

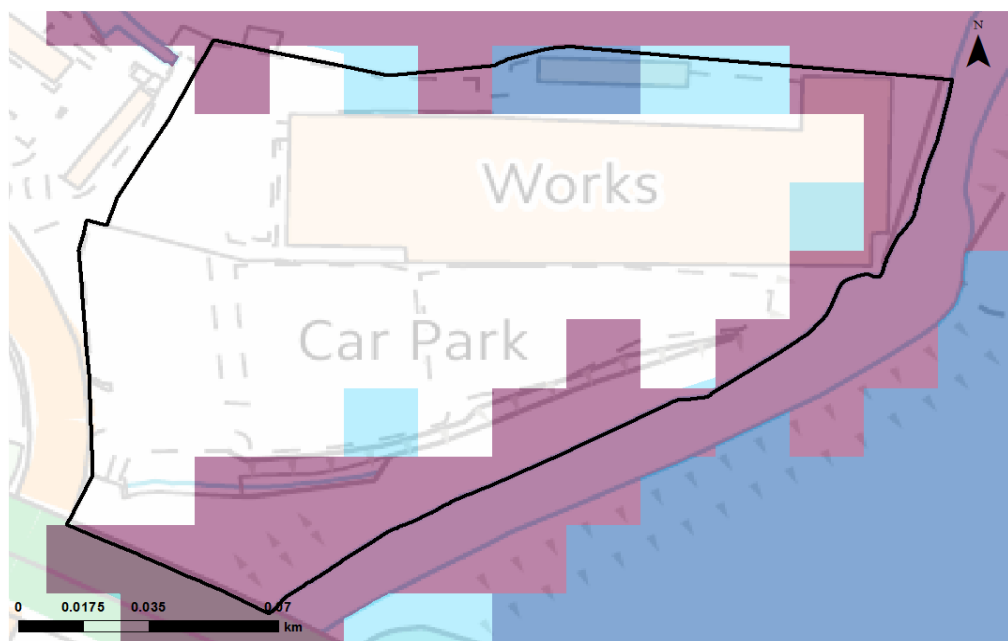
RGE Engineering, Godmanchester

OSNGR: 524490,271381	Area: 2.57ha		Brownfield	
Flood Zone Coverage:	FZ3b 24%	FZ3a 3%	FZ2 7%	FZ1 66%

Sources of flood risk:
 The site is potentially at risk from flooding from the Cooks Stream and the River Great Ouse. The Cooks Stream flows past the eastern boundary of the site whilst the River Great Ouse is located further away to the north and west of the site. However, interaction between the two watercourses means either watercourse, or both watercourses, could contribute to fluvial flood risk at the site.
 Surface water flood risk to the site is minimal, with a small area to the south affected by the 0.1% AEP event.

Exception Test Required?
 Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.
 Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.
 More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.
 Essential Infrastructure in Flood Zone 3b will require the Exception Test.

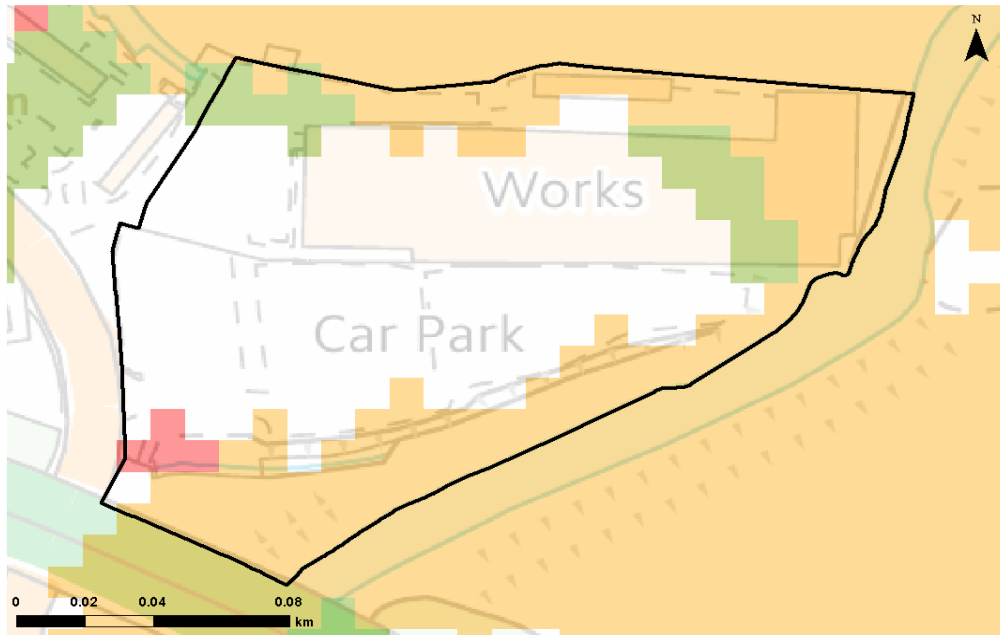
Flood Zone Map



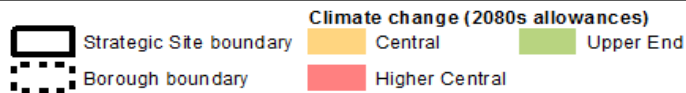
Reproduced from Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown copyright and database rights 2016

Potential development location	Flood Zone 3b	Flood Zone 3a
Council boundary	Indicative Extent of Flood Zone 3b	Flood Zone 2

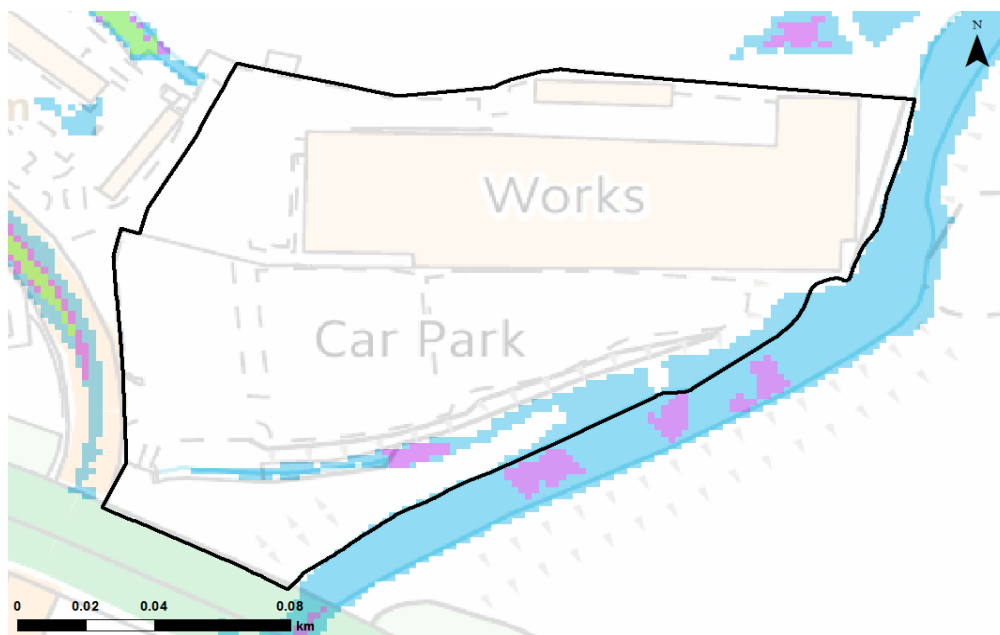
Climate Change Map



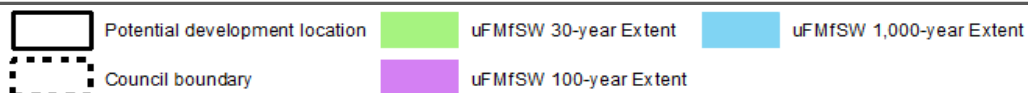
Reproduced from Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown copyright and database rights 2016



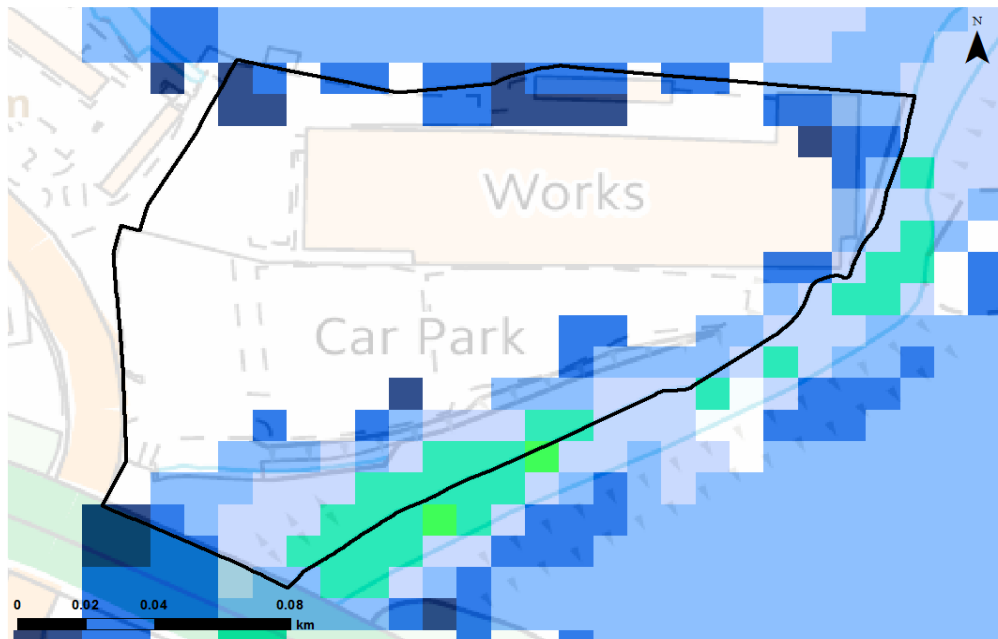
Surface Water Map



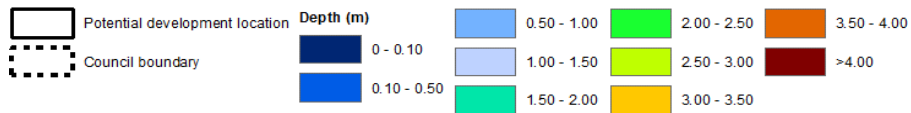
Reproduced from Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown copyright and database rights 2016



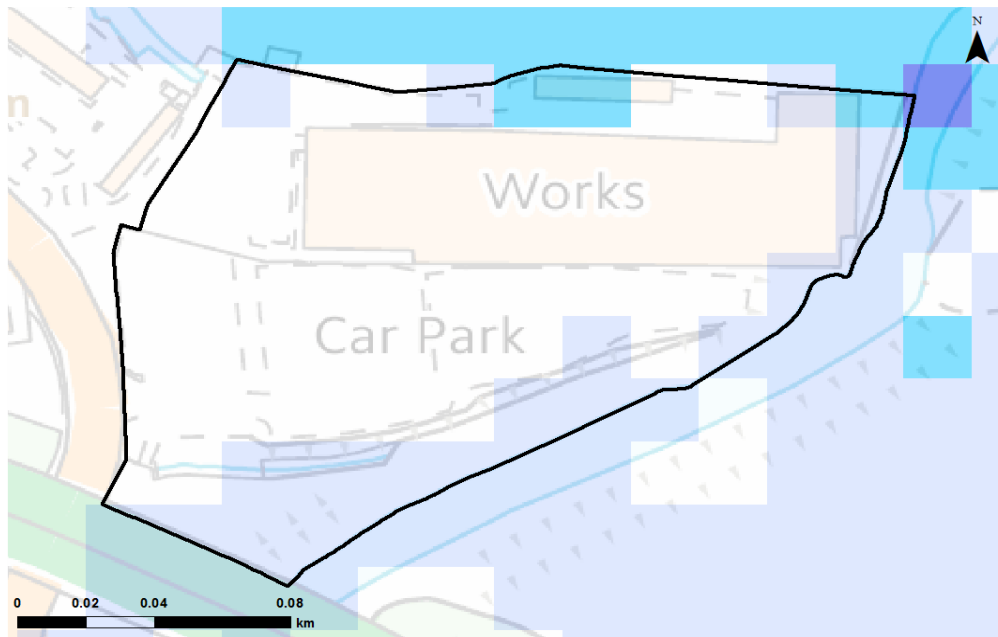
Depth Map - fluvial flooding (1% Annual exceedance probability)



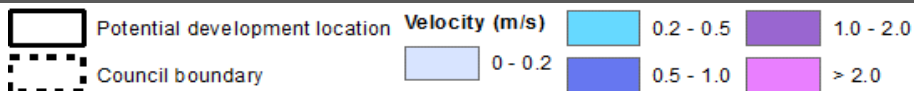
Reproduced from Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown copyright and database rights 2016



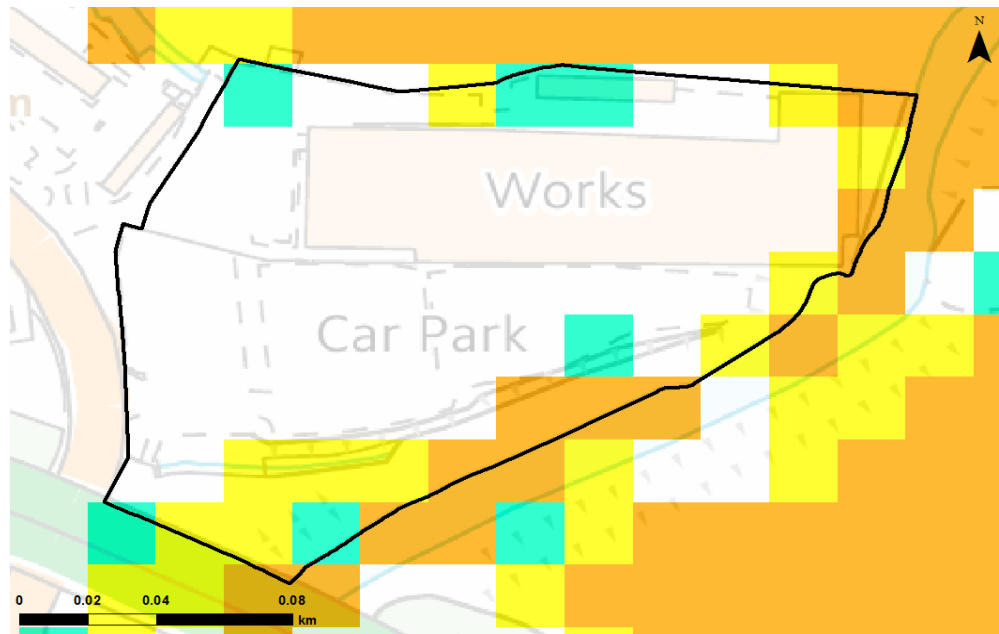
Velocity Map - fluvial flooding (1% Annual exceedance probability)









Reproduced from Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown copyright and database rights 2015 Ordnance Survey 100019651.








Hazard Map - fluvial flooding (1% Annual exceedance probability)



Reproduced from Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown copyright and database rights 2016

	Potential development location	Hazard Rating		Danger for some		Danger for all
	Council boundary		Very low hazard - caution		Danger for most	

SuDS & the development site:

SuDS Type	Suitability	Comments
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non-infiltrating systems given the possible risk from groundwater and that the site is classified as Brownfield.
Infiltration		Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is possible infiltration techniques will not be suitable.
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner may be required to prevent the egress of groundwater and if there are any contamination issues.
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. A liner may be required to prevent the egress of groundwater and if there are any contamination issues.
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner may be required to prevent the egress of groundwater and if there are any contamination issues.

Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from the LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

Flood Defences:

There are no flood defences at this site.

Emergency Planning:

This site is partially covered by the Huntingdon and Hartford Flood Warning Area

Access & Egress:

The B1044 is the only access and egress route from the site and is at risk from fluvial flooding to the north and to the south of the site.

Climate Change:

The floodplains of the Cooks Stream and River Great Ouse appear to be fairly constrained within this area - there is not much difference in extent between the 1% AEP event and the 1% AEP event with the 2080s climate change allowances applied. Therefore, it is likely that climate change will not have a significant impact on the extent of flooding from these watercourses. It may, however, increase the depth of flooding in the area affected. Climate change may also increase the extent, depth and frequency of surface water flooding in the future.

Implications for Development:

Use of the Sequential Approach will be required to place vulnerable development outside of high risk areas. Safe access and egress is potentially an issue as the B1044 is affected by fluvial flooding to the north and the south of the site. Climate change may increase the extent of surface water flooding in the future and have the potential to affect routes further.

Broadscale assessment of suitable SuDS has indicated a number of different types may be possible; however, given the size of the site and the proportion of the site at risk from flooding, the type of SuDS system used may be influenced by amount of land available; depending on the system used there may be an impact on the amount of land available for development and the cost of development.

The site is not covered by the Environment Agency's Flood Warning Service. The Hen Brook is classed as Ordinary Watercourse in this location and, as the Flood Warning Service is limited to Main River, it is unlikely a Flood Warning Service would be offered in this area in the future.

The site is not known to benefit from any flood defences. Given the size and location of the site, it is unlikely the site itself could be used to implement strategic solutions to alleviate flood risk elsewhere in the catchment.

Guidance for Developers:

[Mapping in this table is based on results from the Environment Agency's Downstream Ouse 1D-2D model.](#)

At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 and 3. Other sources of flooding should also be considered. Where a site specific FRA has produced modelling outlines which differ from the Flood Map for Planning then a full evidence based review would be required; where this is acceptable to the EA then amendments to the Flood Map for Planning may take place. Resilience measures will be required if buildings are situated in the flood risk area.

The peak flows on the River Great Ouse should be considered when considering drainage. Assessment for runoff should include allowance for climate change effects.

New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

Onsite attenuation schemes would need to be tested against the hydrographs of the River Great Ouse to ensure flows are not exacerbated downstream within the catchment.

Safe access and egress will need to be demonstrated; currently access and egress is affected by surface water flooding and fluvial flooding from a 5% AEP event.

New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

- o Reducing volume and rate of runoff
- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.