

## King's Lynn and West Norfolk Borough Strategic Flood Risk Assessment Level 2 Community Level Guidance Tables

Completed by	JBA consulting
Date	March 2019
Author	Freyja Scarborough
Reviewer / Sign-off	Hannah Coogan
Version Number	Version 2.0

Community details	Community	North and South Wootton			
	Flood Risk Summary	Highest risk flooding mechanism	Surface Water		
		Most likely source of flooding	Surface Water		
Sources of flood risk	Existing drainage features	<p>Coastline approximately 5km to the north of the community.</p> <ul style="list-style-type: none"> <li>There are multiple drainage features surrounding the community with the majority located on the western side.</li> <li>Within the community are several small areas of open watercourse between culvert.</li> </ul>			
	Fluvial	No			
	Tidal	Small encroachment from Flood Zone 3a along the western boundary.			
	Surface Water	Impact from 3.3% AEP event and above.			
	Residual Risk	Minor influence from a tidal breach on the Tidal Great Ouse on the western boundary of the community.			
	IDB watercourse present?	<p>This community is partially covered by the King's Lynn Internal Drainage Board (IDB), in the admin area of the Water Management Alliance (WMA). The drains influencing the community are:</p> <ul style="list-style-type: none"> <li>North Wootton Drain – which splits into two drains and bisects the community.</li> <li>Rainbow Drain.</li> </ul>			
Flood history	<ul style="list-style-type: none"> <li>The Environment Agency's recorded flood outline dataset and an internet search indicate no record of flooding.</li> <li>NCC flood reports show evidence of internal flooding: <ul style="list-style-type: none"> <li>In North Wootton on 29<sup>th</sup> July 2017. No flooding mechanism information provided.</li> <li>In North Wootton on 27<sup>th</sup> July 2018 from a large rainfall event.</li> </ul> </li> <li>There are records of sewer flooding in this community from November 2012 and February 2013 in North Wootton, and March 2009 and February 2013 in South Wootton.</li> </ul>				
Flood risk management infrastructure	Defences	<b>Defence Type</b>	<b>Flooding Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		Embankment (x3)	Tidal	200	3 (Fair)
		The Environment Agency's areas benefitting from defences data extends into the western boundary of the community.			
Opportunities for sustainable development	Asset management	No EA pipeline schemes at or near this community.			
	Capital investment policy and regeneration	No current schemes identified for this community.			

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	Higher level policy	<ul style="list-style-type: none"> <li>The Great Ouse CFMP highlights that current defences provide significant protection from flooding in the King's Lynn and South Wootton area. However, rises in sea level and other effects of climate change will result in a profound increase of flood risk, due to overtopping of flood defences. The CFMP recommends that the EA work with local planning authorities to ensure that development and urban regeneration helps to manage flood risk. This area is within the Great Ouse Catchment Flood Management Plan and sub area 10, the Fens. Within this sub-area the current flood risk is appropriately managed. However, the risk is expected to significantly rise in the future with impacts from climate change.</li> <li>This North and South Wootton is designated as low-lying fenland in the hinterland of the Wash Shoreline Management Plan (SMP) 2 and is protected by defences along the wash coastline and is therefore relevant to the SMP. The policy within this area (PDZ1) is to maintain the current defences into the future, considering an 'envelope of potential developments' for all future scenarios.</li> <li>CFMP/ SMP policies set the high level and strategic direction for flood risk and coastal change management. There is no guarantee that funding will be available from national, regional or local sources to implement the policy. More detailed strategy and scheme work considers funding needs and availability at a community level.</li> </ul>	
Emergency planning	Flood warning	A small area in the west of the community is covered by the 'Coast from north of King's Lynn to Snettisham' Flood Alert Area and the 'King's Lynn, West Lynn and the wash frontage' Flood Warning Area.	
	Access and egress	Safe access and egress is possible during all fluvial and tidal events. In the event of surface water flooding dry access and egress will be limited in the 1% AEP event and will not be possible in the 0.1% AEP event	
Climate Change	Implications for the community	<ul style="list-style-type: none"> <li>Significant increase in the impact of surface water flooding under climate change scenarios.</li> <li>Climate change modelling does not show any impact to the defended tidal scenario (which assumes no breach occurs). However, it may have a significant impact on the frequency and severity of storm surges which have not been modelled for the SFRA.</li> </ul>	
Requirements for drainage control and impact mitigation	Broad scale assessment of possible SuDS	Bedrock Geology	Central areas – sand Western areas – mudstone
		Superficial Geology	Diamicton, gravel and clay, silt, sand and gravel
		Soil Type	Naturally wet.

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		<b>Groundwater Source Protection Zone</b>	No
		<b>Historic Landfill Site</b>	Small site in the south of South Wootton
		<ul style="list-style-type: none"> <li>• Areas Susceptible to Groundwater Flooding data is not available for this community, as such the potential of broadscale assessment is limited and the suitability of SuDS will need to be determined by on-site investigations and due to the location of historical landfill sites in some areas of the community.</li> <li>• Source control techniques are likely to be suitable for this community.</li> <li>• Infiltration techniques will be unlikely to be suitable owing to the naturally wet soils. As areas of the community have been designated as historic landfill, further site investigation should be carried out to assess potential for drainage by infiltration.</li> <li>• Detention features may be feasible providing site slopes are &lt;5% at the location of the detention feature. If the site has groundwater issues, then a liner will be required. If landfill contamination is a risk to the site, then a liner may be required to mitigate against potential contamination issues.</li> <li>• Filtration systems are probably unsuitable providing owing to the high depth of the groundwater table. If the site has contamination issues, then a liner will be required.</li> </ul>	
<b>NPPF and planning implications</b>	<b>Existing Local Considerations</b>	<ul style="list-style-type: none"> <li>• The Borough Council's Local Plan highlights that South Wootton is designated as one of the strategic 'urban expansion' areas around King's Lynn. However, the community has not been allocated a specific number of dwellings. A development site off Hall Lane will accommodate around 300 new houses. The local plan recognises that a substantial proportion of this area lies within Flood Zones 2 and 3 and are not suitable for housing. Non-residential land uses which are less vulnerable to flood risk will be developed here instead.</li> <li>• South Wootton Neighbourhood Plan (2015-2026) works alongside the Borough Council's Local Plan and allows local people to have more say on how the area is developed.</li> <li>• There are a number of defences in King's Lynn. It should be considered, to mitigate the impacts of flooding in this community, that a contribution to the maintenance of this defence infrastructure may be considered to assist with safeguarding of residual risk from defence breach within the community.</li> </ul>	

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	<b>Requirements and guidance for site - specific Flood Risk Assessment</b>	<ul style="list-style-type: none"> <li>• Ensure safe access and egress in all flood events, especially in the western area of the community.</li> <li>• Early consultation with WMA (dependent on-site location) is strongly recommended.</li> <li>• Detailed hydraulic modelling will need to consider any drains within and surrounding the community that are likely to affect the site to assess fluvial flood risk in the community (including IDB drains). Hydraulic modelling should also seek to understand the impact of residual risk from culvert blockage to any proposed site from structures along these watercourses.</li> <li>• The FRA should address all forms of flood risk impacting this community (coastal inundation, fluvial, surface water and groundwater).</li> <li>• Consider the impacts of climate change on all flooding mechanisms. An FRA should also suggest appropriate mitigation (flood resilience measures).</li> <li>• Consider the impact of a tidal breach by sequentially placing the highest vulnerability part of the development in the areas of lowest flood risk, applying the Councils Flood Risk Design Guidance and creating a site-specific emergency plan for flood events.</li> <li>• Surface water drainage should be considered as part of a Surface Water Drainage Strategy and should be appropriate to the scale, nature, and location of the development that is proposed, taking into account the requirements set out in national and local policy.</li> <li>• Areas Susceptible to Groundwater Flooding data is not available for this community, as such the potential of broadscale assessment is limited and the suitability of SuDS will need to be determined by on-site investigations and due to the location of historical landfill sites in some areas of the community.</li> </ul>		
<b>Conclusions and recommendations</b>		Tidal and Coastal	Fluvial	Surface Water
		200-year 0.5% AEP and Breach	No risk	3.3% AEP

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		<ul style="list-style-type: none"> <li>The majority of the community is located in Flood Zone 1.</li> <li>The Borough Council's Local Plan highlights that South Wootton is designated as one of strategic 'urban expansion' areas around King's Lynn. The local plan recognises that a substantial proportion of this area lies within Flood Zones 2 and 3 and are not suitable for housing. Non-residential land uses which are less vulnerable to flood risk will be developed here instead.</li> <li>Current defences provide significant protection from flooding in South Wootton. However, rises in sea level and other effects of climate change will increase flood risk, due to overtopping of flood defences. Consideration should be given to providing a contribution to the defences protecting this community.</li> <li>Ensure safe access and egress from the community in fluvial, tidal and surface water events including consideration of flood resilience measures and evacuation plans.</li> <li>Consider the impacts of tidal breach.</li> <li>Early consultation with WMA (dependent on-site location) is strongly recommended.</li> </ul>	
<b>Mapping Information</b>			
<b>Flood Zones</b>		<ul style="list-style-type: none"> <li>Flood Zone 3a is comprised of supplied outlines from The Wash, 2018 tidal model and outlines from Environment Agency Flood Zone 3 from fluvial and tidal models.</li> <li>Flood Zone 2 is comprised of supplied outlines from The Wash, 2018 tidal model and outlines from Environment Agency Flood Zone 2 from fluvial and tidal models.</li> </ul>	