

## 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

<b>Community details</b>	<b>Community</b>	Terrington St. Clement			
	<b>Flood Risk Summary</b>	Highest risk flooding mechanism	Tidal / Coastal		
		Most likely source of flooding	Surface Water		
<b>Sources of flood risk</b>	<b>Existing drainage features</b>	<ul style="list-style-type: none"> <li>Coastline is approximately 6.5km to the north.</li> <li>Two small area of open watercourse between culvert in the south-west of the community and in the south-east of the community.</li> <li>Two minor drains in the north and south-east of the community.</li> <li>Three small drains surrounding the community.</li> </ul>			
	<b>Fluvial</b>	No			
	<b>Tidal</b>	Flood Zone 3a – the community is surrounded by the tidal floodplain			
	<b>Surface Water</b>	Impact from 3.3% AEP event and above.			
	<b>Residual Risk</b>	Large impact from breach on the Tidal Nene.			
	<b>IDB watercourse present?</b>	<p>This community is entirely covered by the King's Lynn IDB, in the administration area of the Water Management Alliance (WMA). The drains influencing the community are:</p> <ul style="list-style-type: none"> <li>Experimental Drain</li> <li>Chapple Dyke Drain</li> <li>Church Bank Drain</li> <li>Playing Field Drain</li> <li>New Cut Drain</li> </ul>			
	<b>Flood history</b>	<ul style="list-style-type: none"> <li>An internet search provided evidence of flooding on 28<sup>th</sup> December 2017 on Northgate Way from surface water flooding.</li> <li>Norfolk County Council flood investigations show that in Summer 2014 2 properties flooded internally from surface water flooding.</li> <li>There are sewer records which show previous flooding in November 2012, January 2013 and February 2017.</li> </ul>			
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Flooding Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		Embankment (x3)	Coastal	200	3 (Fair)
		Embankment	Coastal	0	3(Fair)
		Embankment (x3)	Tidal	200	3 (Fair)
		Wall	Tidal	25	4 (Poor)
		Embankment (x3)	Coastal	150	2 (Good)
	Terrington St. Clement is almost entirely within an area benefiting from flood defences as identified in the Environment Agency's 'Areas Benefiting from Defences dataset'.				
<b>Opportunities for sustainable development</b>	<b>Asset management</b>	No EA pipeline schemes at or near this community.			
	<b>Capital investment policy and regeneration</b>	No current schemes identified for this community.			

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	Higher level policy	<ul style="list-style-type: none"> <li>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. Actions should be taken to manage the increase in risk.</li> <li>Terrington St.Clement 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	The Environment Agency provides a Flood Alert and Flood Warning Service to all of Terrington St. Clement.	
	Access and egress	<ul style="list-style-type: none"> <li>Access and egress is possible in the 5% AEP flood event.</li> <li>Access and egress will not be possible in the 0.5% and 1% AEP tidal events.</li> <li>During a surface water flooding event localised impacts in the 3.3% AEP event with more difficulty with access and egress in higher AEP events.</li> </ul>	
Climate Change	Implications for the community	<ul style="list-style-type: none"> <li>There is a small increase in the impact of surface water when taking into account the future effects of climate change.</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	Mudstone, siltstone and sandstone
		Superficial Geology	Clay, silt and sand
		Soil Type	Naturally high groundwater
		Groundwater Source Protection Zone	No
		Historic Landfill Site	No

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		<ul style="list-style-type: none"> <li>• Areas Susceptible to Groundwater 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.</li> <li>• Source control techniques are likely to be suitable for this community.</li> <li>• Infiltration techniques will be suitable providing there are areas of the site not at high or medium ground water flood risk.</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.</li> <li>• Filtration systems are probably suitable providing site slopes are &lt;5% and the depth to the water table is &gt;1m. If the site has groundwater issues, then a liner will be required.</li> <li>• All forms of conveyance features are likely to be suitable. Where slopes are &gt;5%, features should follow contours or utilise check dams to slow flows.</li> </ul>		
NPPF and planning implications	Existing Local Considerations	<ul style="list-style-type: none"> <li>• The Borough Council's Local Plan has designated Terrington St. Clement as a Key Rural Service Centre and has been allocated 62 new dwellings, which will be divided between 3 sites. One of the sites is within a high flood risk area (Flood Zone 3).</li> <li>• The community is mostly within an area benefiting from flood defences. Developers should liaise with the Environment Agency and consider whether a financial contribution towards the long-term maintenance and/ or upgrade of the defences would be appropriate to help safeguard against increasing flood risk over the lifetime of the development.</li> </ul>		
	Requirements and guidance for site - specific Flood Risk Assessment	<ul style="list-style-type: none"> <li>• Early consultation with WMA is strongly recommended in this area.</li> <li>• Safe access and egress will need to be considered, taking into account the additional impact of climate change. 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>• The Flood Risk Assessment (FRA) should address all forms of flood risk (coastal inundation, fluvial, pluvial and groundwater).</li> <li>• The FRA must demonstrate how the development would provide wider sustainability benefits to the community that outweigh the risk associated with flooding and that the development would be safe for its lifetime without increasing flood risk elsewhere and, where possible, would reduce flood risk overall.</li> <li>• Investigate the impacts of climate change from all flooding sources on the site.</li> </ul>		
<b>Conclusions and</b>		Tidal and Coastal	Tidal and Coastal	Surface Water

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Most likely source of flooding		Surface Water		
<b>recommendations</b>	0.5% AEP and Breach	No Risk	3.3% AEP	
	<ul style="list-style-type: none"> <li>The community is mostly within an area benefiting from flood defences.</li> <li>Consider contributions to the defences protecting the community.</li> <li>Most of the community in Flood Zone 3a.</li> <li>Terrington St. Clement has been allocated 62 new dwellings, which will be divided between 3 sites.</li> <li>Historical records of surface water flooding.</li> <li>Consider the impacts of tidal breach.</li> <li>In a major tidal event the community could be completely cut off and emergency planning implications for new development are critical</li> <li>Early consultation with WMA is strongly recommended in this area.</li> </ul>			
<b>Mapping Information</b>				
<b>Flood Zones</b>	<ul style="list-style-type: none"> <li>Flood Zone 3a is comprised of Environment Agency supplied outlines from the tidal Wash, 2018 model and from Environment Agency Flood Zones 3 containing fluvial / tidal model outlines.</li> <li>Flood Zone 2 is comprised of Environment Agency supplied outlines from the tidal Wash, 2018 model and from Environment Agency Flood Zones 2 containing fluvial / tidal model outlines.</li> </ul>			