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

<table>
<tr><td rowspan="3">Community details</td><td>Community</td><td colspan="4">Marshland St James & St John's Fen End with Tilney Fen End</td></tr>
<tr><td rowspan="2">Flood Risk Summary</td><td colspan="2">Highest risk flooding mechanism</td><td colspan="2">Tidal / Coastal</td></tr>
<tr><td colspan="2">Most likely source of flooding</td><td colspan="2">Surface Water</td></tr>
<tr><td rowspan="7">Sources of flood risk</td><td>Existing drainage features</td><td colspan="4">• Smeeth Lode flows to the west of the settlements through St John's Fen End to a confluence with Five Mile Drain in the north of the community.
• There are several small areas of open watercourse between culvert surrounding the community, mainly concentrated around the Marshland St James settlement.</td></tr>
<tr><td>Fluvial</td><td colspan="4">Flood Zone 3a</td></tr>
<tr><td>Tidal</td><td colspan="4">Flood Zone 3a – the community is surrounded by the tidal floodplain</td></tr>
<tr><td>Surface Water</td><td colspan="4">Minimal impact in all AEP events.</td></tr>
<tr><td>Residual Risk</td><td colspan="4">Small impact from breach on the Tidal Nene.</td></tr>
<tr><td>IDB watercourse present?</td><td colspan="4">This community is completely covered by the King's Lynn Internal Drainage Board, in the admin area of the Water Management Alliance (WMA). The drains influencing the northern parts of the community are:
• Kimberly Cut Drain
• Smeeth Lode Drain
• Five Mile Drain</td></tr>
<tr><td>Flood history</td><td colspan="4">• There are no historical records of flooding within the Environment Agency recorded flood outlines, provided Section 19 data, or sewer records.
• Internet searches suggest that Marshland St James was affected by surface water flooding in August 2014</td></tr>
<tr><td rowspan="8">Flood risk management infrastructure</td><td rowspan="8">Defences</td><td>Defence Type</td><td>Flooding Type</td><td>Standard of Protection</td><td>Condition</td></tr>
<tr><td>Embankment (x4)</td><td>Fluvial</td><td>100</td><td>3 (Fair)</td></tr>
<tr><td>Embankment (x26)</td><td>Tidal</td><td>100</td><td>3 (Fair)</td></tr>
<tr><td>Wall (x13)</td><td>Tidal</td><td>100</td><td>3 (Fair)</td></tr>
<tr><td>Wall (x3)</td><td>Fluvial</td><td>100</td><td>3 (Fair)</td></tr>
<tr><td>Wall</td><td>Fluvial</td><td>100</td><td>4 (Poor)</td></tr>
<tr><td colspan="4">The area benefitting from defences information surrounds these communities and extends into some of the community boundaries.</td></tr>
<tr><td rowspan="2">Opportunities for sustainable development</td><td>Asset management</td><td colspan="4">No EA pipeline schemes at or near this community.</td></tr>
<tr><td>Capital investment policy and regeneration</td><td colspan="4">No current schemes identified for this community.</td></tr>
</table>

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	Flood Risk Summary	Highest risk flooding mechanism	Tidal / Coastal
		Most likely source of flooding	Surface Water
	Higher level policy	• 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. • This area is designated as low-lying fenland in the hinterland of the Wash Shoreline Management Plan (SMP) 2 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. • 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.	
Emergency planning	**Flood warning**	All of the settlement community area is covered by the Environment Agency Flood Alert (Tidal river from Denver to south of King's Lynn) and Warning Service (East of Wisbech along the A47 to Terrington St John and surrounding areas)	
	Access and egress	• Possible during all surface water flood events • Community would be cut off in major tidal events.	
Climate Change	**Implications for the community**	• 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. • There is a small increase in the impact of surface water when taking into account the future effects of climate change.	
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	**Bedrock Geology**	Mudstone
		Superficial Geology	Clay and silt
		Soil Type	Naturally high groundwater
		Groundwater Source Protection Zone	No
		Historic Landfill Site	No

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		• 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. • Source control techniques are likely to be suitable for this community. • Infiltration techniques will be unlikely to be suitable owing to the naturally wet soils. • Detention features may be feasible providing site slopes are <5% at the location of the detention feature. If the site has groundwater issues, then a liner will be required. • Filtration systems are probably unsuitable providing owing to the high depth of the groundwater table.	
NPPF and planning implications	**Existing Local Considerations**	• In the Borough Council's Local Plan, Marshland St James, St John's Fen End and Tilney Fen End are jointly designated as a Rural Village. The Council has proposed the development of 25 dwellings in this area, split between two sites. • As discussed in the Local Plan, both proposed development sites lie within Flood Zone 3 (high risk of flooding). Therefore, a site-specific flood risk assessment is required for each site, before development can begin. Also, the Surface Water Network is at capacity, so SUDS will be a priority. • The community is mostly within an area benefiting 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.	
	Requirements and guidance for site - specific Flood Risk Assessment	• The Flood Risk Assessment (FRA) should address all forms of flood risk (coastal inundation, fluvial, pluvial and groundwater). • 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. • Surface Water Network is at capacity and SUDS and surface water mitigation are therefore a priority. • Early consultation with WMA is strongly recommended in this area especially in the provision of SuDS features in this area. • 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). • 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.	
Conclusions and		Tidal and Coastal	Fluvial / Surface Water

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recommendations		5% AEP and Breach	Low Risk	1% AEP
		• A contribution towards community defences to mitigate surface water flooding issues should be considered • Large areas of the community are within Flood Zone 1 but in a major tidal event the community could be completely cut off and emergency planning implications for new development are critical • This area is suitable for SuDS. • Consider additional impacts of climate change and of breach on tidal flooding.		
Mapping Information				
Flood Zones		All Flood Zone information has been compiled from the outputs of The Wash, 2018 tidal model.		