

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	Walpole St. Peter, St. Andrew & Marsh			
	Flood Risk Summary	Highest risk flooding mechanism	Tidal / Coastal		
Most likely source of flooding		Surface Water			
Sources of flood risk	Existing drainage features	<ul style="list-style-type: none"> Small sections of open watercourse between culverts in the south-western section corner of Walpole St Peter settlement. Two small sections of open watercourse to the north of the community. 			
	Fluvial	No			
	Tidal	Flood Zone 3a – the community is surrounded by the tidal floodplain			
	Surface Water	Impact from 3.3% AEP event and above.			
	Residual Risk	Moderate risk from tidal breach on the 2 southern settlements.			
	IDB watercourse present?	<p>This community is completely 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"> Walpole West Drain Chase Drain Shire Drain Bustards Drain Pear Tree Cottage Drain 			
Flood history	<ul style="list-style-type: none"> There are no records of historical flooding in the Environment Agency recorded flood outlines, provided Section 19 reports, and sewer flooding records. An internet search provided evidence of flooding on 9th August 2014 in Walpole St Peter from surface water flooding. 				
Flood risk management infrastructure	Defences	Defence Type	Flooding Type	Standard of Protection	Condition
		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)
	The area benefitting from defences information extends across the majority 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"> 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	The whole community falls within the Environment Agency Flood Warning Services area for the 'Tidal river from Denver to the south of King's Lynn' and the Flood Alert area for the 'East of Wisbech'.	
	Access and egress	<ul style="list-style-type: none"> In a 5% AEP event there are no issues with access and egress. In events above the 0.5% AEP tidal event, access and egress out of the community will not be possible. Some localised access and egress issues in the 1% AEP surface water event. 	
Climate Change	Implications for the community	<ul style="list-style-type: none"> There is a small increase in the impact of surface water when taking into account the future effects of climate change. 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. 	
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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		<ul style="list-style-type: none"> • 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 suitable providing there are areas of the site not at high or medium ground water flood risk. • 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 suitable providing site slopes are <5% and the depth to the water table is >1m. If the site has groundwater issues, then a liner will be required. • All forms of conveyance features are likely to be suitable. Where slopes are >5%, features should follow contours or utilise check dams to slow flows. 	
NPPF and planning implications	Existing Local Considerations	<ul style="list-style-type: none"> • The Borough Council's Local Plan has grouped Walpole St. Peter, Walpole St. Andrew and Walpole Marsh to form a Rural Village. The Council has identified two preferred sites for development and has allocated the combined area a total of 20 new dwellings. Development at these sites must include SuDS. • 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. 	

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	Requirements and guidance for site - specific Flood Risk Assessment	<ul style="list-style-type: none"> • Early consultation with WMA is strongly recommended 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). • 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. • 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. • The Flood Risk Assessment (FRA) should address all forms of flood risk (coastal inundation, pluvial and groundwater). • 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. • Investigate the impacts of climate change from all flooding sources on the site. 		
Conclusions and recommendations		Tidal and Coastal	Tidal and Coastal	Surface Water
		0.5% AEP and Breach	No Risk	3.3% AEP
		<ul style="list-style-type: none"> • The community is mostly within an area benefiting from flood defences. • Consider contributions to the defences protecting the settlement. • Most of the community in Flood Zone 3a. • The Borough Council's Local Plan has identified two preferred sites for development and has allocated the combined area a total of 20 new dwellings. • Development in this area must include SuDS. • There are historical records of surface water flooding in this area. • Consider the impacts of tidal breach. • In a major tidal event the community could be completely cut off and emergency planning implications for new development are critical • Early consultation with WMA is strongly recommended in this area. 		
Mapping Information				

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Flood Zones		<ul style="list-style-type: none"> All Flood Zone information has been compiled from the outputs of The Wash, 2018 tidal model. 	