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**	Heacham	
	Flood Risk Summary	Highest risk flooding mechanism	Tidal / Coastal
		Most likely source of flooding	Surface Water
Sources of flood risk	**Existing drainage features**	• Coastal boundary to the west of the community. • Influence from the Heacham River. • Other small drains surround the community. • There are multiple small open drains identified within the community boundary.	
	Fluvial	Flood Zone 3b – minor impact	
	Tidal/ coastal	Flood Zone 3a	
	Surface Water	Small impact from 3.3% AEP event. More significant impact in 1% and 0.1% AEP events.	
	Residual Risk	• Risk from reservoir breach from Stony Hills Reservoir • Risk from breach in coastal defences	

	IDB watercourse present?	• 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:
		  ○ Heacham Main Drain
		  ○ Heacham River Drain
		• The Rivers Babingley, Ingol and Heacham are managed by the King's Lynn IDB. The Norfolk Rivers Trust are working with King's Lynn IDB to develop a management plan for these drains with the aim of benefitting wildlife and protecting against flooding.	

	Flood history	• Major coastal flooding in 1953 and 1978
		• The provided Section 19 data indicates no record of flooding.
		• An internet search provided textural and visual evidence of flooding:
		  ○ In several locations in Heacham including Station Road in June 2017. The source of the flooding is not provided.
		  ○ In June 2009 with several roads in Heacham being cut off and internal property flooding from heavy rainfall.
		• There are records of sewer flooding in this community from Winter 2015.	

Flood risk management infrastructure	**Defences**	**Defence Type**	**Flooding Type**	**Standard of Protection**	**Condition**
		Embankment	Coastal	200	3 (Fair)
		Embankment (x3)	Coastal	0	3 (Fair)
		Flood Gate	Coastal	0	3 (Fair)
		Wall	Coastal	100	2 (Good)
		Embankment	Coastal	200	2 (Good)
		Wall	Coastal	100	3 (Fair)

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**	Heacham	
	Flood Risk Summary	Highest risk flooding mechanism	Tidal / Coastal
		Most likely source of flooding	Surface Water
		• Coastal defences lie to the west of the community. • The area benefitting from defences information extends into this community with the greatest benefit along the western community boundary. It is recorded by the Environment Agency that: 'the shingle banks at Heacham have to rebuilt every year to repair the erosion that has taken place over autumn and winter. This beach recycling is the most sustainable way to protect the coast at this location'.	
Opportunities for sustainable development	**Asset management**	Schemes following on from the Wash East Coastal Management Strategy are currently under construction to protect 280 households as part of the Environment Agency pipeline of works. The Strategy confirms that it is sustainable to hold the line for the short and medium term. It has also confirmed that it is preferable to continue with the existing balance of hard and soft defences in this area, including maintaining the existing groynes. In the longer term, continued beach recycling may not be sustainable, for economic, social or environmental reasons. The Strategy has developed an 'adaptable' approach to the future management of this coastline which does not preclude any future opportunities to further improve the standard of protection - dependent on available funding. The Strategy identifies the need for the authorities and the community to work together to fund the on-going maintenance of the defences. 75% of the costs of beach recharge works have been committed by the 'East Wash Community Interest Company'.	
	Capital investment policy and regeneration	No current schemes identified for this community.	

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**	Heacham	
	Flood Risk Summary	Highest risk flooding mechanism	Tidal / Coastal
		Most likely source of flooding	Surface Water
	Higher level policy	• The Local FRM Strategy promotes the enhancement of chalk watercourses in this area and works have been undertaken to restore the River Heacham at Norfolk Lavender Mill. • 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. • The overall intention for this area in the Wash Shoreline Management Plan 2 is to develop a sustainable long-term solution by establishing a process of cooperation between the partner organisations, local people and businesses. This should reduce the risk to life and support adaptation of the local community to coastal change. • This has been supported by the designation of the coastal floodplain in this area as a Coastal Change Management Area in the 2019 consultation Local Plan. This area is also located within the DM18 Coastal Flood Risk Hazard Zone, in the Adopted Local Plan. The Hazard Zone stretches from along the coastline to Hunstanton and seeks to prevent any new caravan parks in rapid inundation zones and new ground-floor residential development. • 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 community is partially covered by Environment Agency Flood Alert areas: 'West Norfolk Coast at Heacham' and 'Precautionary Evacuation Notice area at Heacham seafront' • Covered by the 'North West Norfolk rivers' and 'Coast from Hunstanton to north of King's Lynn' Flood Alert Areas	
	Access and egress	• Small area of inundation associated with the Heacham River in the 5% AEP fluvial event which will have localised access and egress issues. This impact increases slightly in higher AEP events. • Several areas in the west of the community are inundated from the 1% AEP tidal event which would prevent safe access and egress. This impact is slightly greater in the 0.1% AEP event. • Localised obstructions to access and egress in the 3.3% AEP surface water event. This impact becomes more significant across the community in the 1% and 0.1% surface water events.	

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**	Heacham	
	Flood Risk Summary	Highest risk flooding mechanism	Tidal / Coastal
		Most likely source of flooding	Surface Water
Climate Change	**Implications for the community**	• Small additional impact from the Heacham River due to the impact of climate change. • There is a small increase in the impact of surface water when taking into account the future effects of climate change. • There is no additional impact from climate change in the tidal scenarios as climate change extents represent defended scenarios.	
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	**Bedrock Geology**	Central – mudstone, clay, silt and sand Eastern – sandstone and chalk
		Superficial Geology	Sand, silt, clay, gravel, diamicton
		Soil Type	Freely draining
		Groundwater Source Protection Zone	No
		Historic Landfill Site	No
		• Further investigation SuDS on a site-specific basis due to the variety or levels of risk from groundwater identified for this community in the Areas Susceptible to Groundwater Flooding dataset. • 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.	

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**	Heacham	
	Flood Risk Summary	Highest risk flooding mechanism	Tidal / Coastal
		Most likely source of flooding	Surface Water
NPPF and planning implications	**Existing Local Considerations**	• Heacham is identified as a Key Rural Service Centre in the Borough Council's Local Plan. The Council has proposed the residential development of 66 new houses, divided between two sites. The Plan highlights that the Surface Water Network at both sites has already reached capacity and SUDS will be a priority. • The SWMP for King's Lynn and West Norfolk included an assessment of surface water flooding in Heacham and the results indicated that there is a moderate risk of surface water flooding within the community. It also highlights a high risk of groundwater emergence in the centre of Heacham. • Areas of Heacham are located within the DM18 Coastal Flood Risk Hazard Zone, in the Adopted Local Plan and the proposed Coastal Change Management Area. The Hazard Zone stretches from along the coastline to Hunstanton and seeks to prevent any new caravan parks in rapid inundation zones and new ground-floor residential development. • It is recorded by the Environment Agency that: 'the shingle banks at Heacham have to rebuilt every year to repair the erosion that has taken place over autumn and winter. This beach recycling is the most sustainable way to protect the coast at this location'. Consideration of a contribution to the cost of this maintenance requirement should be considered as part of new development.	

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**	Heacham	
	Flood Risk Summary	Highest risk flooding mechanism	Tidal / Coastal
		Most likely source of flooding	Surface Water
	Requirements and guidance for site - specific Flood Risk Assessment	• Early consultation with WMA is strongly recommended depending on site location and impact from IDB drains. • Ensure safe access and egress in all flood events, especially in the western area of the community. • 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. • The Flood Risk Assessment (FRA) should address all forms of flood risk impacting this community (tidal, fluvial, surface water and groundwater risk). • Consider the impacts of climate change, especially on the extent of surface water flooding in the community. An FRA should also suggest appropriate mitigation (flood resilience measures). • Consideration of the impacts of tidal breach on a site by investigating changes in depths and velocities of flood waters at the site. • Should explain how surface water drainage will be managed. • 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. • Further investigation SuDS on a site specific basis due to the variety or levels of risk from groundwater identified for this community in the AStGWf dataset.	
Conclusions and recommendations		Tidal and Coastal	Fluvial	Surface Water
		1% AEP and Breach	5% AEP	5% AEP
		• There are several potential mechanisms of flooding within this community (fluvial, coastal, surface water and groundwater). • Ensure safe access and egress from the community in fluvial, tidal and surface water events. • Heacham has large areas benefiting from coastal flood defences. Consideration should be given to providing a contribution to these defences protecting the community. • Areas of the village are in the proposed Coastal Change Management Area, with restrictions on the types of development that would be suitable • Recent and frequent historical records of surface water flooding. • Consider the impacts of coastal breach. • Early consultation with WMA is strongly recommended in this area.		

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**	Heacham	
	Flood Risk Summary	Highest risk flooding mechanism	Tidal / Coastal
		Most likely source of flooding	Surface Water
Mapping Information			
Flood Zones		Flood Zones are compiled from the outputs of The Wash, 2018 tidal model and mapped outlines from 2D Jflow modelling of the fluvial Heacham River and tributaries carried out as part of this study.	