Kings Lynn SFRA update

Agents meeting 27 November 2018

Hannah Coogan, Technical Director

Agenda

- National planning policy for flood risk
- Flood risk in the Borough
- What the SFRA covers
- How to apply the SFRA information at site level
- Further site level design guidance

What is a SFRA?

"Strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.

All plans should apply a sequential, risk-based approach to the location of development – taking into account the current and future impacts of climate change"

Revised NPPF, 2018

Sequential Test

All sources

Climate Change

Exception Test

Passes Sequential Test

National Planning Policy Guidance: is the Exception Test needed?

Yes

SFRA

Allocation stage

- Wider sustainability benefits
- Development is safe, does not increase flood risk elsewhere and where possible reduces risk

Development proceeds

Site level FRA

Planning Application stage

- Wider sustainability benefits
- Development is safe, does not increase flood risk elsewhere and where possible reduces risk

Vulnerability of development

- Essential infrastructure
- Highly vulnerable
  - Basements
  - Caravans for residential use
  - Police ambulance and fire stations
- More vulnerable
  - Homes and hotels
  - Hospitals and health facilities
  - Caravans for holiday use
- Less vulnerable
  - Shops and offices
- Water compatible

Is the Exception Test needed?

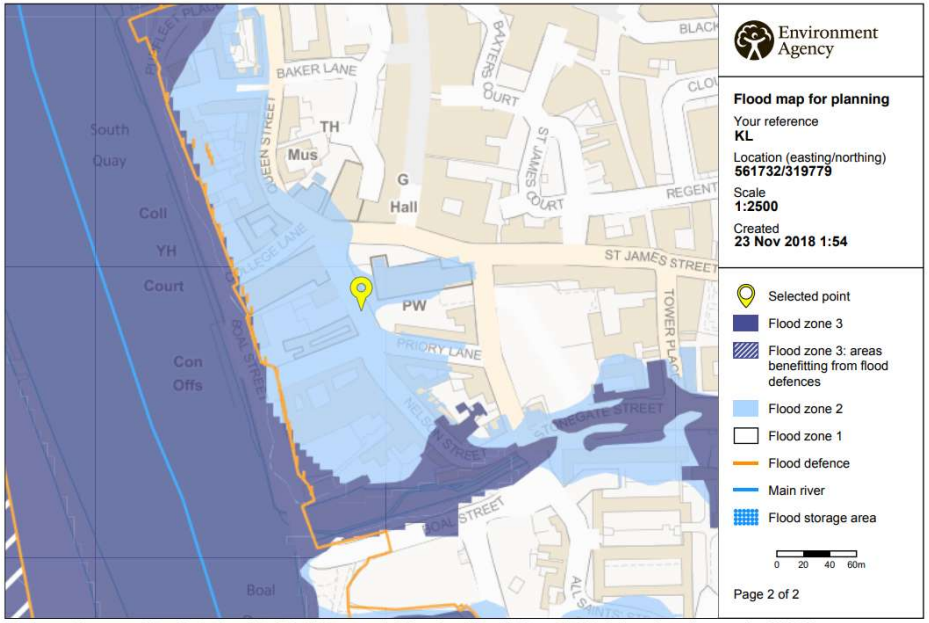
<u>The Sequential Test should be applied first</u>, following this, compare the vulnerability of site to the Flood Map for Planning to see if the Exception Test is also required

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.



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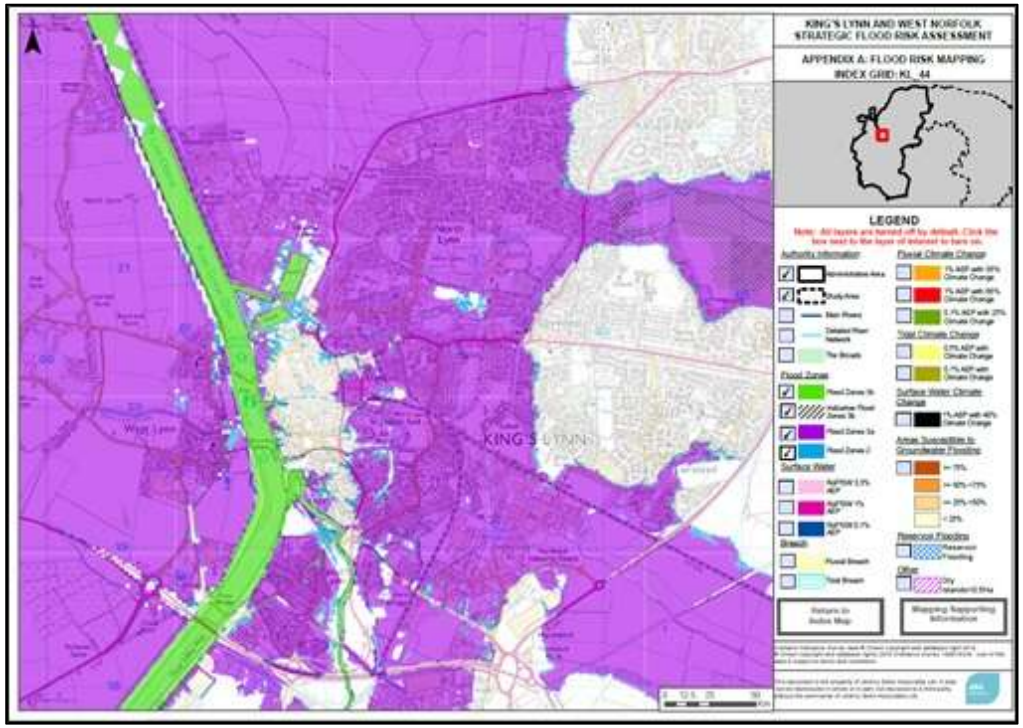
Flooding from rivers and the sea



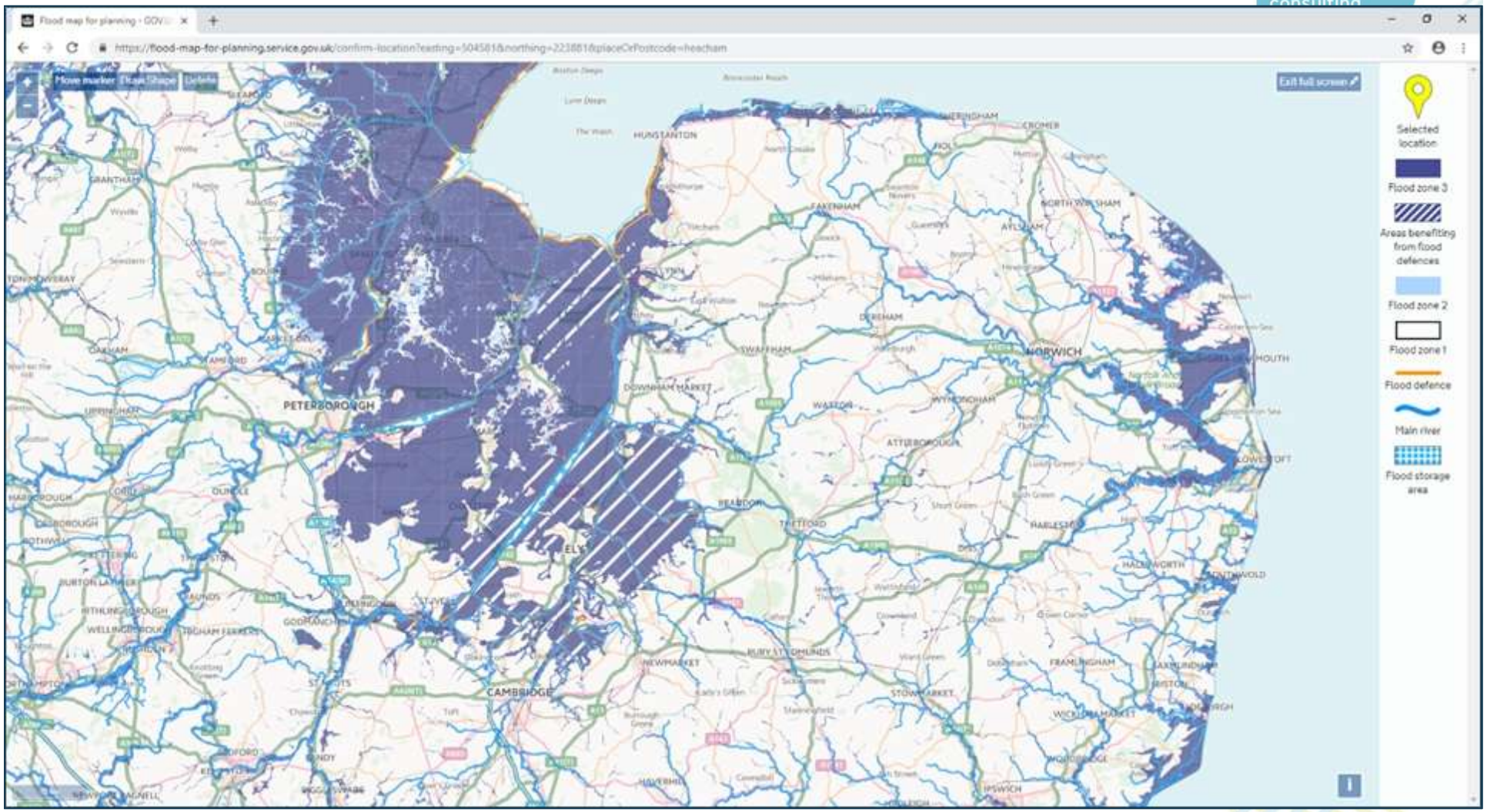
Flood Map for Planning
Flood Zone 2: undefended extreme flood (1:1000
Flood Zone 3: tidal 1:200 and river 1:100
Flood Zone 3b: functional floodplain
Flood Zone 3a: remaining Flood Zone 3
Flood Zone 1: everywhere else

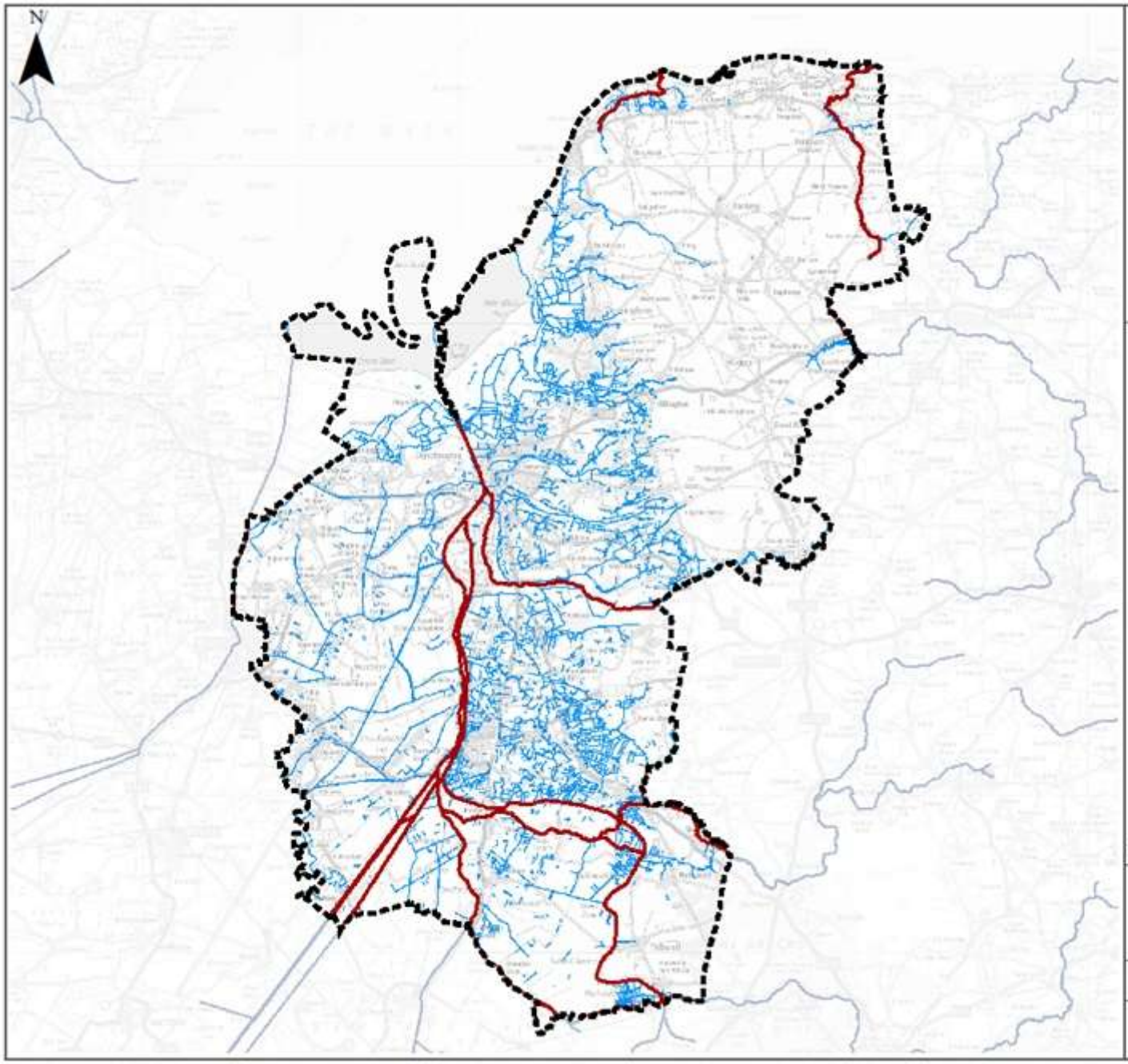
SFRA mapping may temporarily be more up to date than gov.uk

3b only available via SFRA

Flood risk in the Borough

- Extensive flood risk: rivers, sea, tidal – largely residual risk
- Localised surface water flood risk e.g. 2012, 2014
- Low lying and pumped IDB areas
- What will the future bring?
  - Rising sea levels
  - Increasing rainfall intensity
  - Increased river flows
  - Asset deterioration
  - Coastal erosion
- How should redevelopment and regeneration be considered in this context?


Flood map for planning - GOV
https://flood-map-for-planning.service.gov.uk/confirm-location?easting=504581&northing=223881&placeOrPostcode=heacham
Move marker
Clear Shape
Delete
Exit full screen
Selected location
Flood zone 3
Areas benefitting from flood defences
Flood zone 2
Flood zone 1
Flood defence
Main river
Flood storage area
HUNSTANTON
CROMER
FAKENHAM
NORTH WALSHAM
AYLSHAM
DEREHAM
SWAFFHAM
NORWICH
DOWNHAM MARKET
WATTON
WYMONDHAM
ATTLEBOROUGH
PETERBOROUGH
ELY
BEARDON
THETFORD
RAMSEY
HADLEIGH
NEWMARKET
BURY ST EDMUNDS
FRAMLINGHAM
CAMBRIDGE
STOWMARKET
WICKHAM MARKET
IPSWICH



Notes

Watercourse information displayed in this map is taken from Norfolk County Council's version of the Environment Agency's Detailed River Network dataset.

Key Plan

Legend

- Administrative area
- Main Rivers within Kings Lynn and West Norfolk
- Main Rivers outside Kings Lynn and West Norfolk
- Ordinary watercourses

0 5 10 20 30 40 50 km

STRATEGIC FLOOD RISK ASSESSMENT LEVEL 1

APPENDIX B - ORDINARY WATERCOURSES
KING'S LYNN AND WEST NORFOLK

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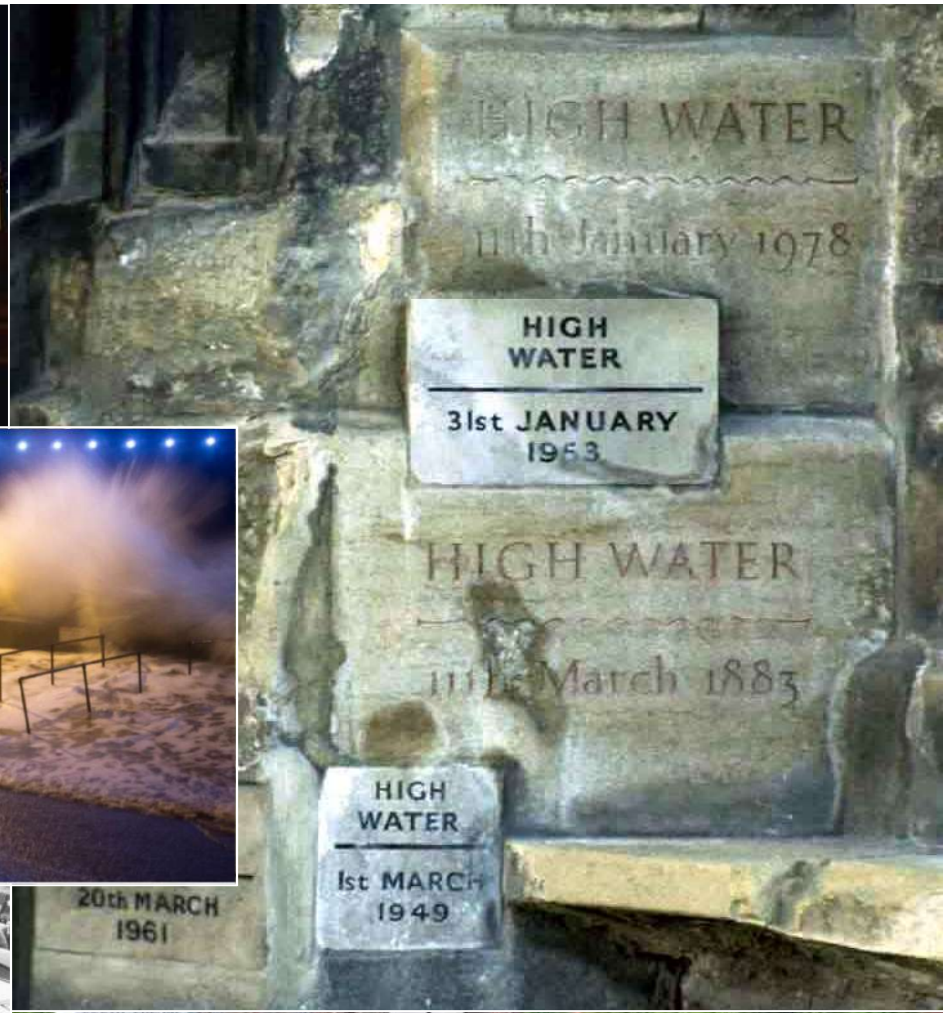

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Roles and responsibilities

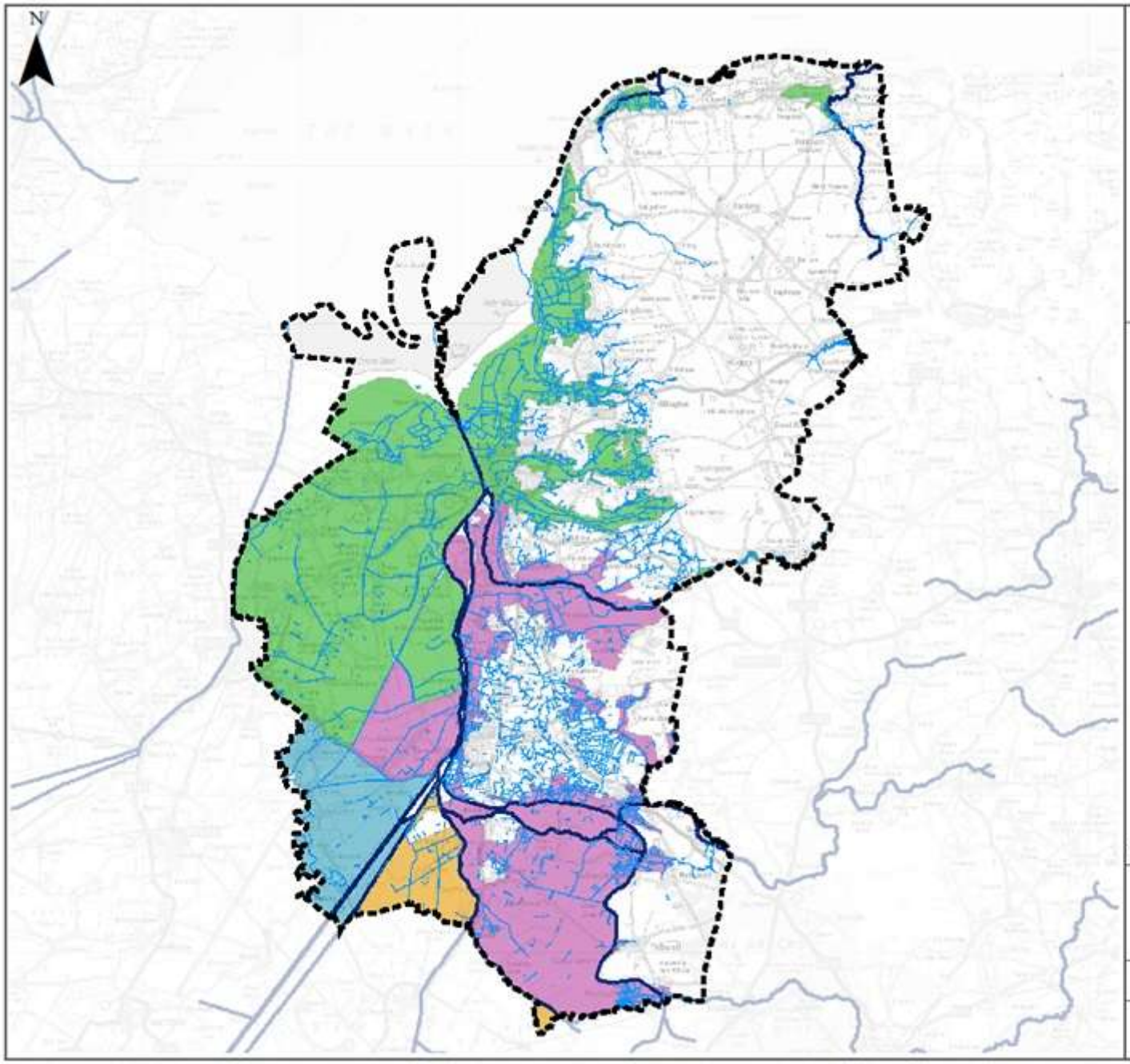
District Council

Environment Agency

Lead Local Flood Authority

Anglian Water

Internal Drainage Boards



Notes

Watercourse information displayed in this map is taken from Norfolk County Council's version of the Environment Agency's Detailed River Network dataset.

Key Plan

Legend

- Administrative area
- Ordinary watercourses
- Main Rivers outside Kings Lynn and West Norfolk

IDB Administrative

- Downham Market Group of Internal Drainage Boards
- Ely Group of Internal Drainage Boards
- Middle Level Commisioners
- Water Management Alliance

0 5 10 20 30 40 50 km

STRATEGIC FLOOD RISK ASSESSMENT LEVEL 1

APPENDIX B - IDB DISTRICTS, KING'S LYNN AND WEST NORFOLK

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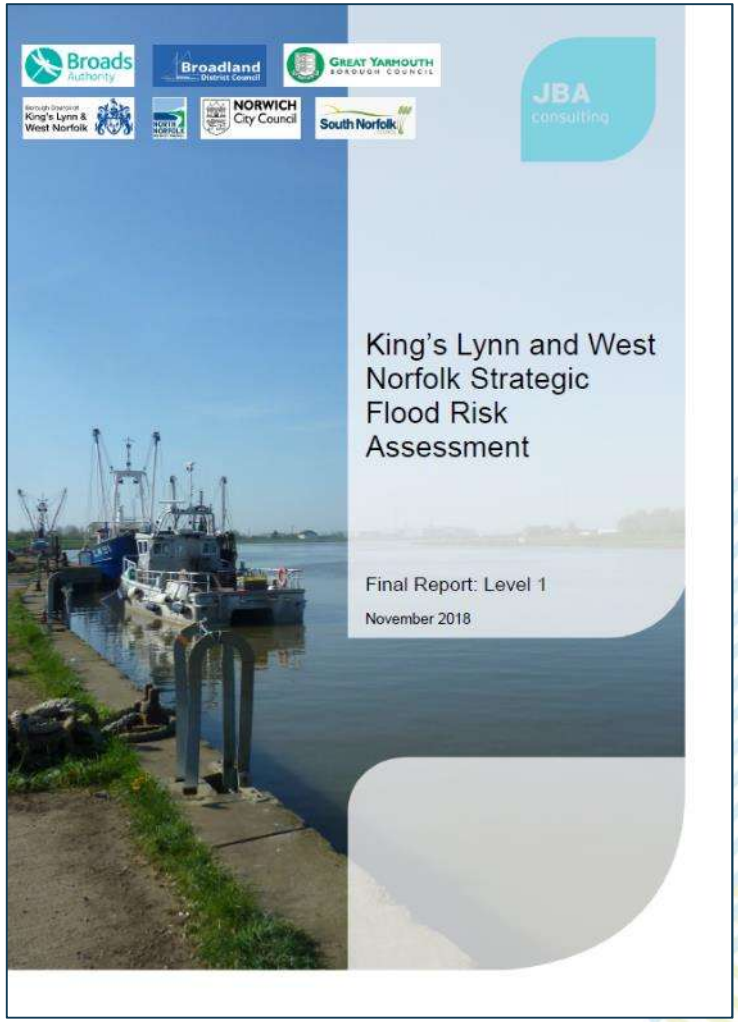
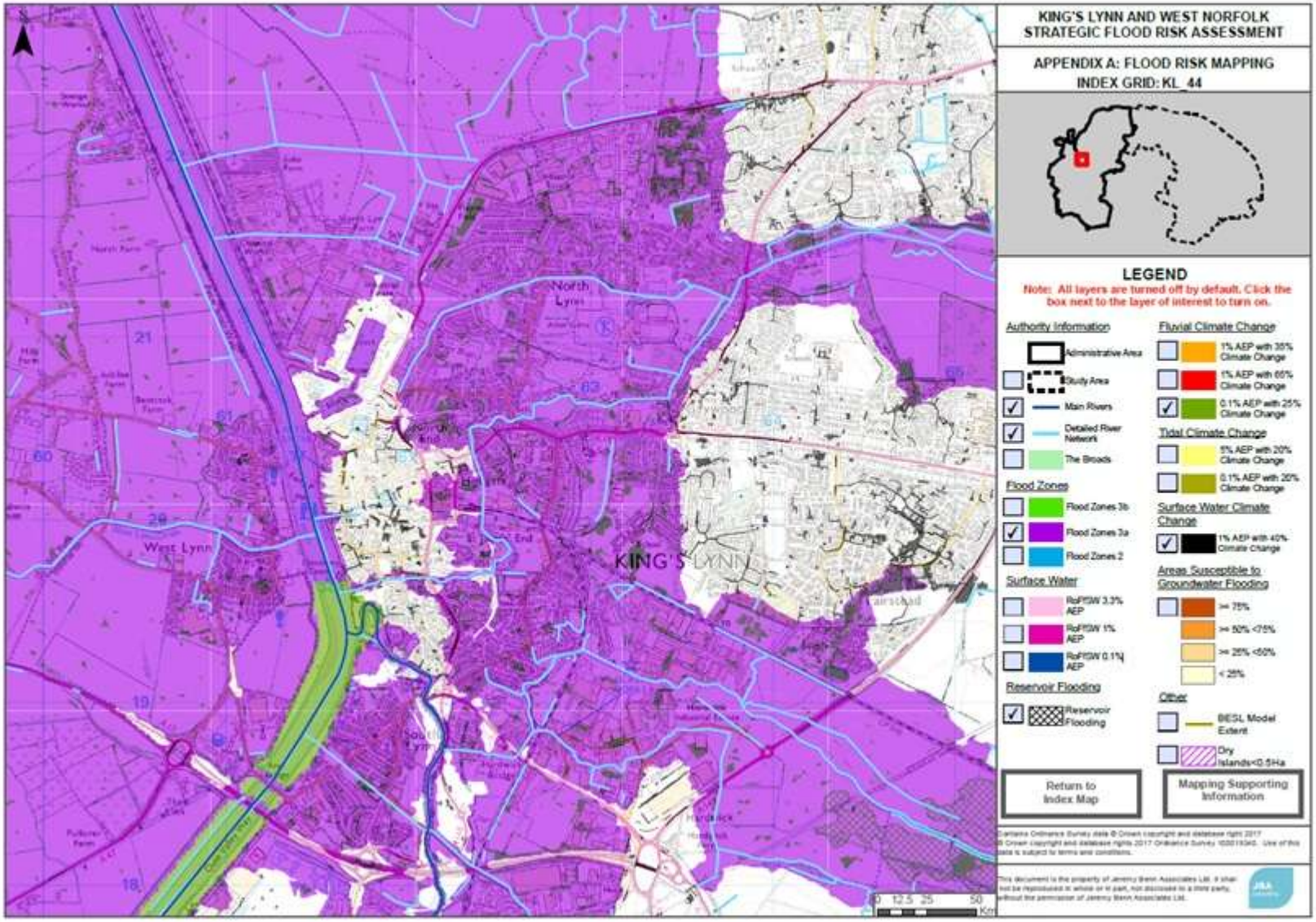
Level 1 SFRA

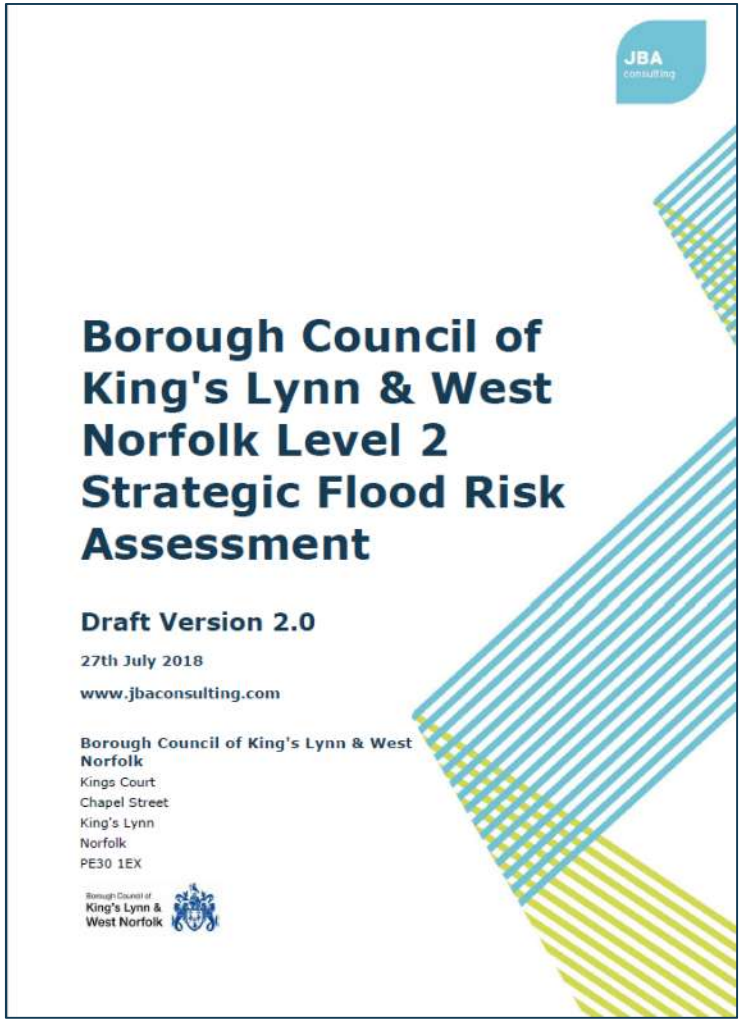
- Considers flood risk from all sources across the Council's area
- Updated climate change assessment
- Policy context
- FRAs guidance
- Surface water and SuDS
- Informs the Sequential Test



Example mapping



Level 2 SFRA



Borough Council of King's Lynn & West Norfolk Level 2 Strategic Flood Risk Assessment

Draft Version 2.0

27th July 2018

www.jbaconsulting.com

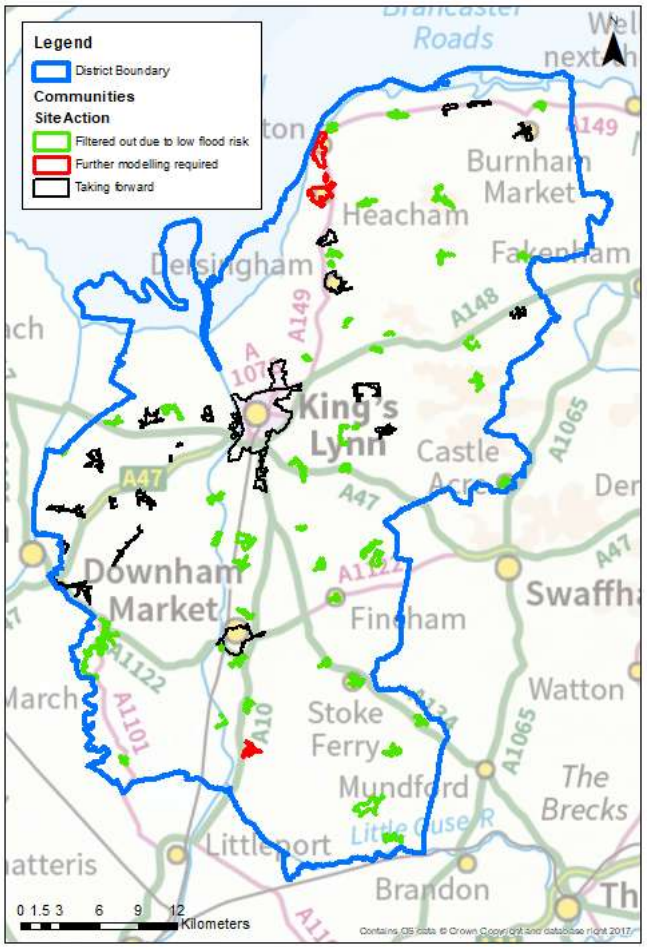
Borough Council of King's Lynn & West Norfolk
Kings Court
Chapel Street
King's Lynn
Norfolk
PE30 1EX

- Further ST guidance
- Further information at a Community level to inform LPA ET
- Identifies opportunities for wider FRM betterment
- Windfall sites ST and ET guidance

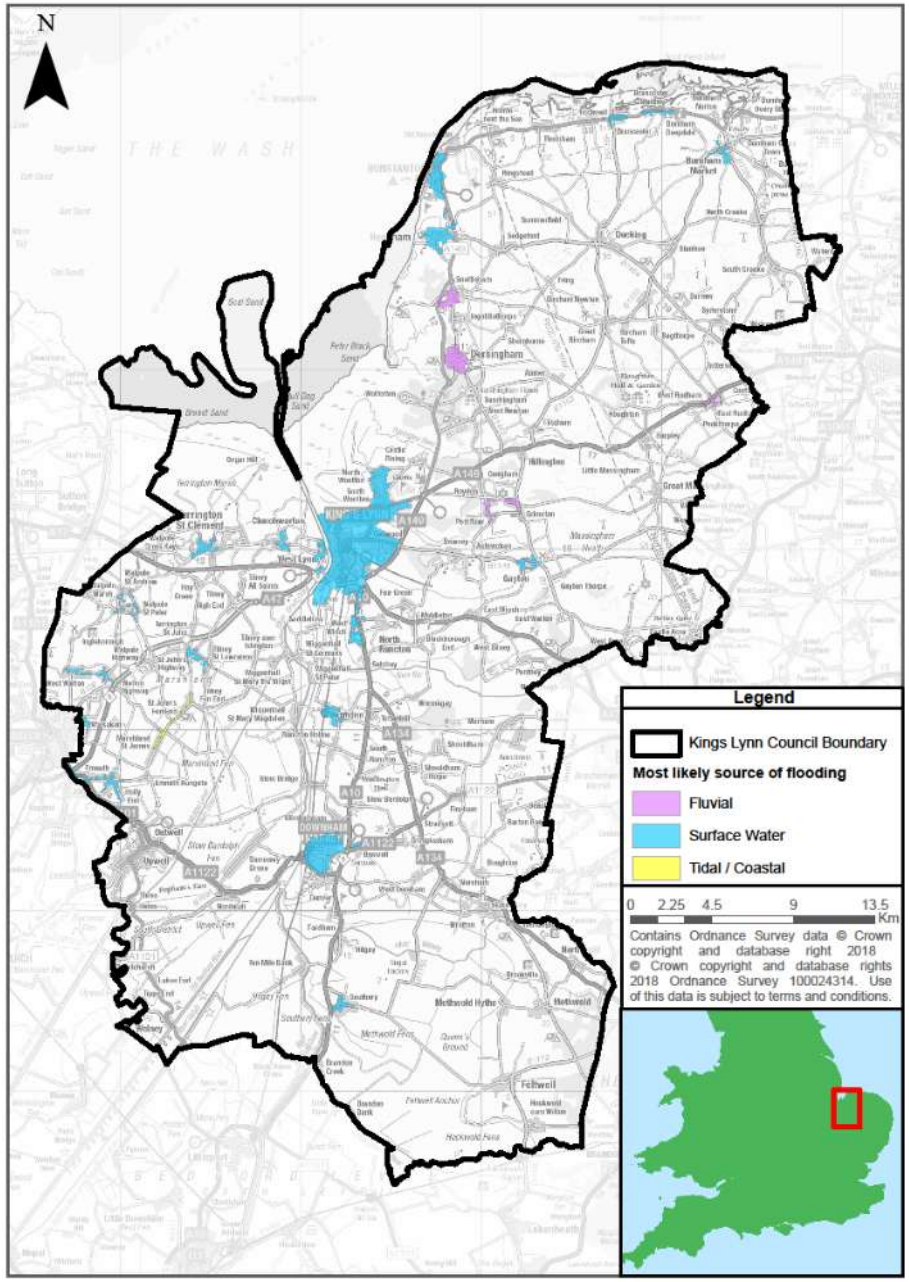
Community Level Assessment

- Highest and most likely source of flooding
- Bring together flood risk information
- Depth and hazard mapping
- Identify Investment policy and needs
- Consider Emergency Planning arrangements
- Principles and guidance on the Exception Test

Community Area Assessments



- Brancaster with Brancaster Staithe / Burnham Deepdale
- Burnham Market
- Clenchwarton
- Dersingham
- Downham Market
- East Rudham
- Emneth
- Grimston, Pott Row with Gayton
- Heacham
- Hunstanton
- Kings Lynn including West Lynn
- Marshland St James & St John's Fen End with Tilney Fen End
- North Wootton & South Wootton
- Snettisham
- Southery
- St John's Highway/Tilney St Lawrence
- Terrington St Clement
- Walpole St Peter, St Andrew & Marsh
- Walsoken
- Watlington
- West Walton
- West Winch


N
Legend
Kings Lynn Council Boundary
Most likely source of flooding
Fluvial
Surface Water
Tidal / Coastal
0 2.25 4.5 9 13.5 Km
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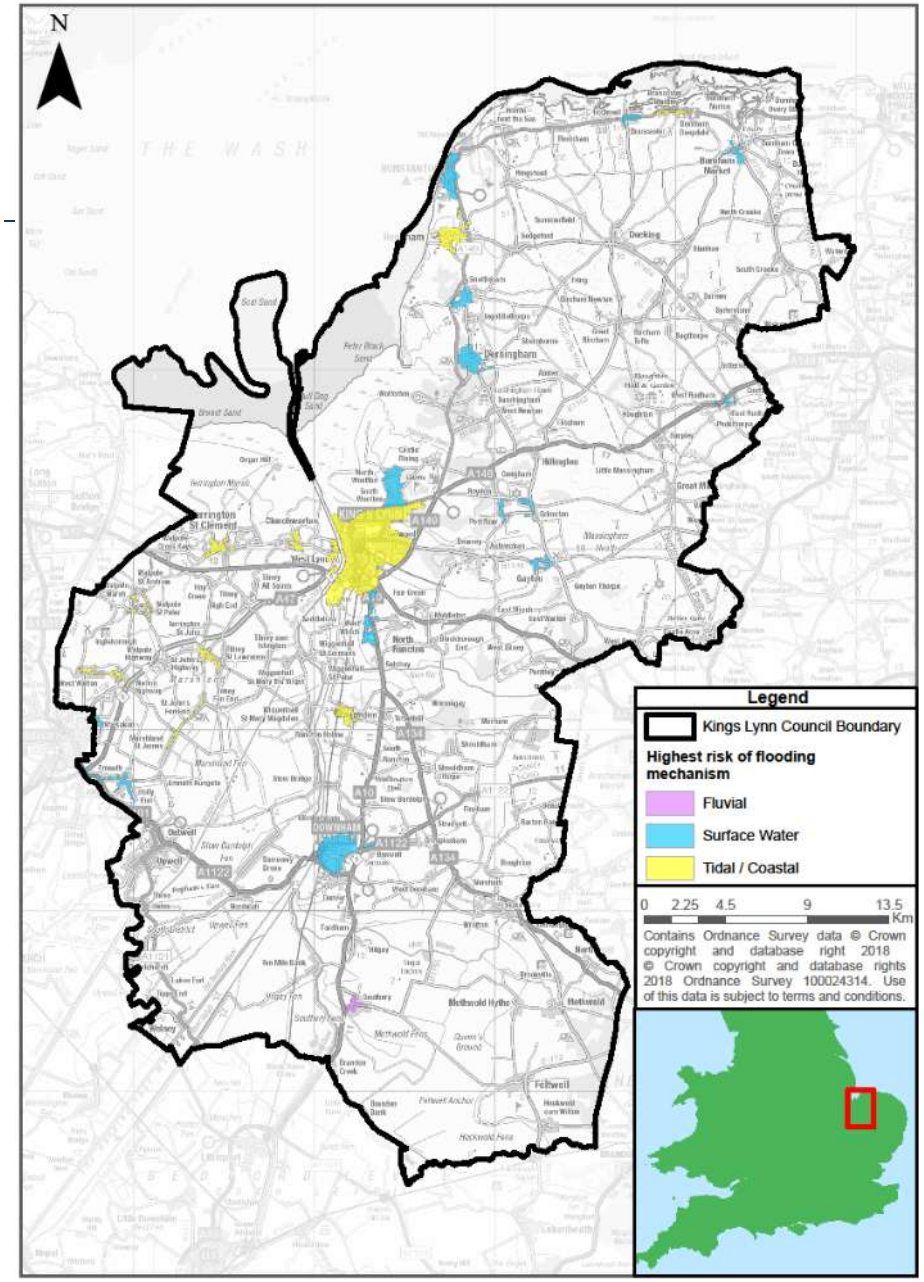
N
Legend
Kings Lynn Council Boundary
Highest risk of flooding mechanism
Fluvial
Surface Water
Tidal / Coastal
0 2.25 4.5 9 13.5 Km
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Example of CCA table

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

Community details	**Community**	Clenchwarton			
	Flood Risk Summary	Highest risk flooding mechanism	Tidal / Coastal		
		Most likely source of flooding	Surface Water		
Sources of flood risk	**Existing drainage features**	• The West Lynn Drain flows in close proximity to the southern boundary of the settlement. • Other small drains surround the settlement to the west and east. • There are small areas of open drain identified within the northern settlement boundary.			
	Fluvial	No fluvial flood zone present			
	Tidal	All of community contained within tidal Flood Zone 3a.			
	Surface Water	Small impact from 30-year return period event. More significant impact in 100 and 1000-year return period events.			
	Residual Risk	Community would be inundated in a tidal breach scenario.			
	IDB watercourse present?	This community is completely covered by the King's Lynn IDB, in the admin area of the WLMA. The drains influencing the community are: • Linford Close Drain • Margaretta Drain • Willow Farm Drain • Lynnford Estate Drain			
	Flood history	• There are no records of historical flooding in the Environment Agency recorded flood outlines, provided Section 19 reports and internet searches. • There is one recorded instance of sewer flooding from March 2017.			
Flood risk management infrastructure	**Defences**	**Defence Type**	**Flooding Type**	**Standard of Protection**	**Condition**
		Embankment	Tidal	200	2 - Good
		Embankment	Tidal	200	3 - Fair
		Clenchwarton is entirely within an area benefiting from flood defences as identified in the Environment Agency's 'Areas Benefitting from Defences dataset'.			
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.			
	Higher level policy	• The PFRA, 2011 identifies Clenchwarton as having approximately 200 or more people at risk of flooding. • The Great Ouse Flood Risk Management Plan, 2011 policy for this area is: 'Areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change'. • The Water Cycle Study, 2009 highlights that although the area is at high risk of tidal flooding, it is important to account for the presence of defences when assessing this area.			

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

Community details	**Community**	Clenchwarton	
	Flood Risk Summary	Highest risk flooding mechanism	Tidal / Coastal
		Most likely source of flooding	Surface Water
Emergency planning	**Flood warning**	• Covered by the 'Wash frontage at Admirality Point including the Tidal River Great Ouse west bank breach to Eau Brink' Flood Warning Area. • Covered by the 'King's Lynn, West Lynn and the wash frontage' Flood Alert Area.	
	Access and egress	• Possible in the 20-year fluvial and tidal events but not possible in any part of the settlement in higher return periods. • Likely to be possible with difficulty in the 30 and 100-year surface water event. Likely not to be possible in the 1000-year surface water event.	
Climate Change	**Implications for the community**	• Additional impact in the influence of surface water flooding due to climate change. • There is no additional impact from climate change in the tidal scenarios as climate change extents represent defended scenarios.	

Example of CCA table (cont.)

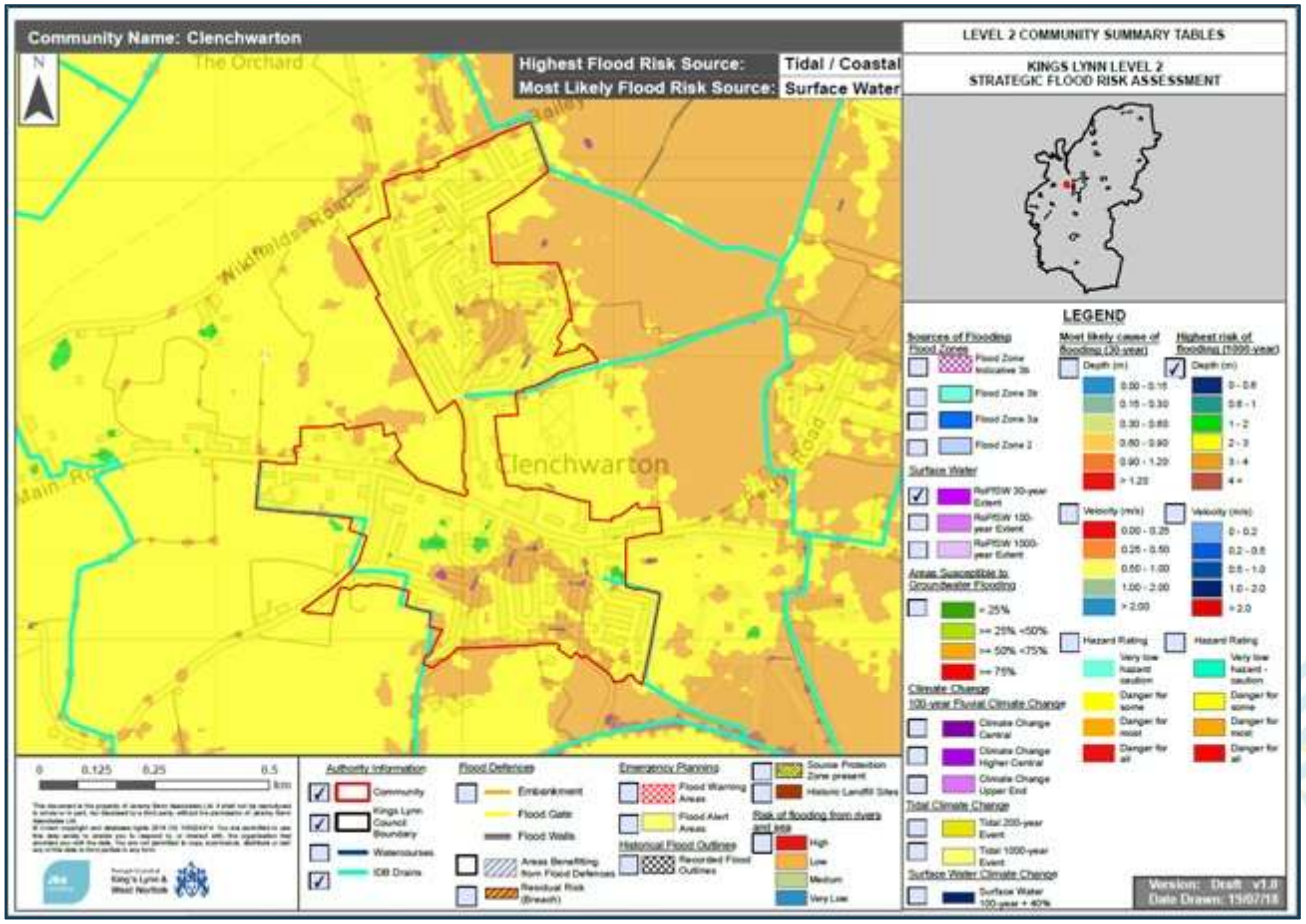
King's Lynn and West Norfolk Borough Strategic Flood Risk Assessment Level 2 Community Level Guidance Tables

Community details	**Community**	Clenchwarton	
	Flood Risk Summary	Highest risk flooding mechanism	Tidal / Coastal
		Most likely source of flooding	Surface Water
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	**Bedrock Geology**	Tidal Flat Deposits - Clay and Silt
		Superficial Geology	Kimmeridge Clay Formation - Mudstone
		Soil Type	Naturally wet
		Groundwater Source Protection Zone	No
		Historic Landfill Site	No
		• AStGWF data is not available for this site, 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 site. • 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**	• Clenchwarton is entirely within an area benefiting from tidal flood defences along the River Great Ouse. It should be considered, to mitigate the impacts of flooding in this community, that a contribution to the maintenance and or replacement of this defence infrastructure may be considered to assist with safeguarding of residual risk from defence breach within the community. This is especially relevant as the large defence embankment protecting Clenchwarton is identified as asset condition 3 meaning it contains defects that could reduce the performance of the asset. • The Sustainability Appraisal, 2015 identifies Clenchwarton as a Key rural service centre with the potential to accommodate growth to sustain the wider rural community with a greater amount of development due to the range of services available. • The Site Allocations and Development Management Policies Plan, 2016 highlights that appropriate site mitigation measures will be required as the entire settlement falls within the highest flood risk area. • The Site Allocations and Development Management Policies Plan, 2016 Policy G25.1 Clenchwarton – Land between Wildfields Road and Hall Road allocates an area of 0.7ha to the south of Wildfields Road for at least 10 residential dwellings. Submission of a Flood Risk Assessment (FRA) that should address all forms of flood risk (coastal inundation, fluvial, pluvial and groundwater). The FRA 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. The FRA should also suggest appropriate mitigation (flood resilience measures)	

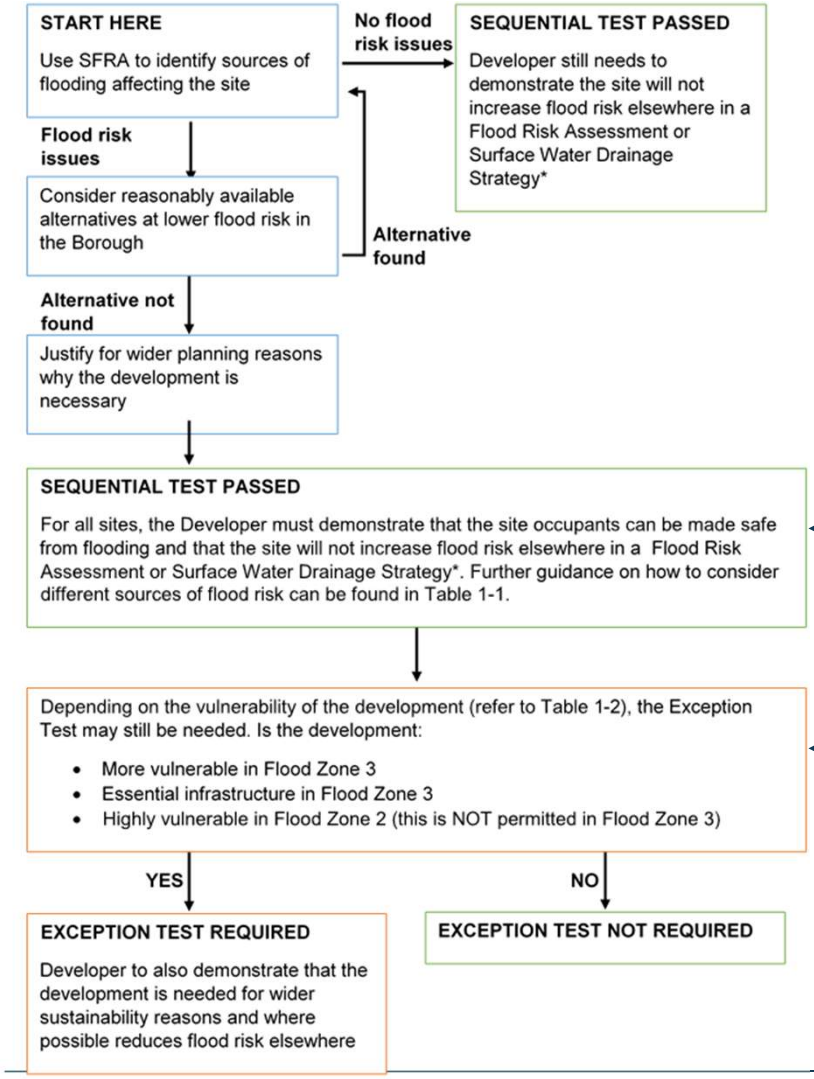
King's Lynn and West Norfolk Borough Strategic Flood Risk Assessment Level 2 Community Level Guidance Tables

Community details	**Community**	Clenchwarton		
	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 WLMA is strongly recommended in this area. • Safe access and egress will need to be demonstrated taking into account the impacts of surface water flooding and the additional impact of climate change. An FRA should also suggest appropriate mitigation (flood resilience measures). • AStGWF data availability was limited for this site, as such the potential of broadscale assessment is limited and the suitability of SuDS will need to be determined by on-site investigations. Any SuDS measures should be applied using the guidance provided by the LLFA. • Consideration of the impacts of tidal breach on the site by investigating changes in depths and velocities of flood waters at the site. • Detailed hydraulic modelling will need to consider any drains within and surrounding the settlement 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. • The FRA should address all forms of flood risk (coastal inundation, fluvial, pluvial and groundwater). • 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.		
Conclusions and recommendations		Tidal and Coastal	Fluvial	Surface Water
		200-year and Breach	None	30-year
		• Clenchwarton is entirely within an area benefiting from tidal flood defences along the River Great Ouse. • Consider contributions to the River Great Ouse tidal defences protecting the settlement. • Completely contained in Flood Zone 3a. • The Sustainability Appraisal, 2015 highlights that appropriate site mitigation measures will be required as the entire settlement falls within the highest flood risk area. • No records of historical flooding. • No additional impacts of fluvial and tidal climate change however the impact of climate change is highlighted for this area in higher level policy considerations. • Consider the impacts of tidal breach. • Consideration of safe access and egress. • Early consultation with WLMA is strongly recommended in this area.		
Mapping Information				
Flood Zones		All Flood Zone information has been compiled from the outputs of The Wash, 2018 tidal model.		

Example of CAA mapping



Sequential Test at site level (draft)



Note that any sites meeting the following criteria are unlikely to be permitted due to the level of flood risk:

- Flood depths greater than 0.6m in most likely flooding or residual risk scenario
- Access and egress to site is limited (no dry access) in highest risk flooding.

Link to detail on how to consider different sources of flood risk

Link to detailed definitions of vulnerability

* Flood Risk Assessments are required for sites over 1 hectare and all sites in Flood Zones 2 and 3. Surface Water Drainage Strategies are required for all major developments.

Sites proforma (draft)

APPENDIX A: Proforma for Sequential and Exception Tests (required for all sites, regardless of level of flood risk)				
1	Site name and reference			
	Date of completion			
	Completed by			
2	The site is affected by (Please tick all that apply)			
	Flood Zone 3a		Residual risk (Max Depth)	
	Flood Zone 3b		The Coastline	
	Flood Zone 2		Climate Change (Fluvial)	
	Fluvial/ tidal/ sea flooding other		Climate Change (Tidal)	
	Surface Water Flooding		Climate Change (Surface Water)	
	A watercourse passing through/ next to site			
3	Development type			
4	Vulnerability to flooding (see Table 1-2)			
5	Sequential Test Declaration: • If the site is at flood risk **you must** demonstrate how you have considered suitable and reasonable available alternative locations at lower flood risk. • You must also demonstrate why these alternatives are not suitable given wider planning considerations. • Ownership or land owner agreement in itself is **not** acceptable as a reason not to consider alternatives. (Continue on a separate sheet if required)			
6	Flood risk assessment/surface water drainage strategy: Please attach this to this proforma* Please confirm that the design of site will meet the Kings Lynn flood risk design standard guidance and that the surface water drainage strategy conforms to the requirements of Norfolk County Council as LLFA YES/NO If not, please provide a further explanation			

7	Where the Exception Test Applies Please provide evidence that the development is needed for wider sustainability reasons and where possible helps to reduce risk to the wider community. (Continue on a separate sheet if required)

* Flood Risk Assessments are required for sites over 1 hectare and all sites in Flood Zones 2 and 3. Surface Water Drainage Strategies are required for all major developments.

Exception Test Guidance

1. Is the development safe, does not increase flood risk elsewhere and where possible reduces risk?
   - Potential for mitigation and sustainable development.
   - Link to existing schemes and development areas.
   - Signpost developers to both local policy and District, County and National Level Policies.
   - Recognise local policy considerations and what these mean for developers e.g. Policy DM18
2. Are there wider sustainability reasons?

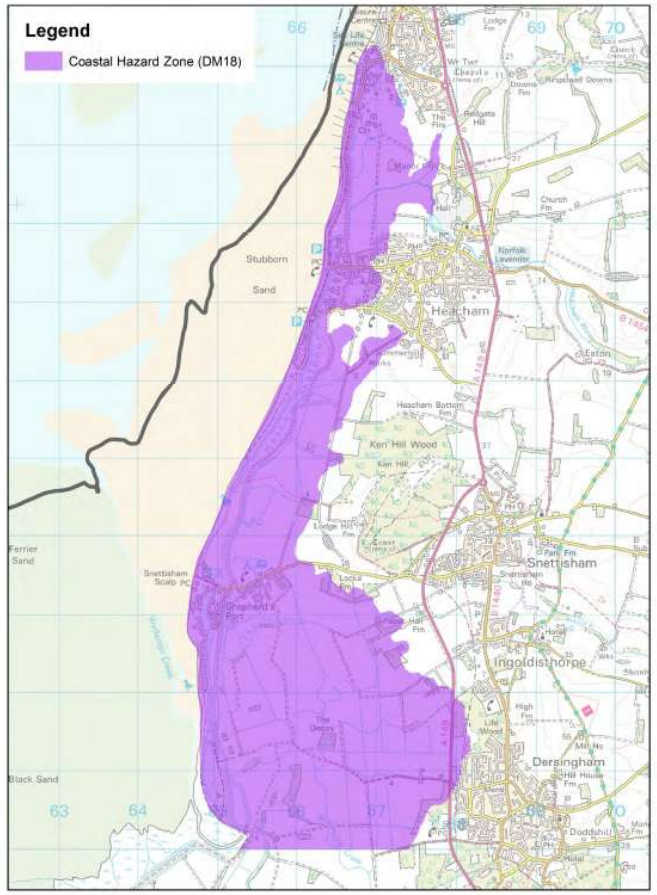
Flood risk design guidance

- For new dwellings proposed within the area covered by the Environment Agency's Tidal River Hazard and Fluvial Breach Mapping (available in SFRA as residual risk layer)
- Design guidance based on potential depth of water
  - Provision of habitable accommodation
  - No ground floor sleeping accommodation
  - Safe refuge
  - Resistance
  - Resilience

https://www.west-norfolk.gov.uk/info/20173/information_for_planning_agents/390/flood_risk_design

DM Policy 18: Coastal Flood Risk Hazard Zone: Hunstanton-Dersingham

- Coastal flood risk is increasing
- Area of very high risk with only a one in 50 year (2% annual probability) standard of protection
- No new dwelling or caravans
- Replacement dwelling or caravans to have FRA, seasonal occupation (Apr-Sept) and flood design measures



DM18 - Coastal Flood Risk Hazard Zone

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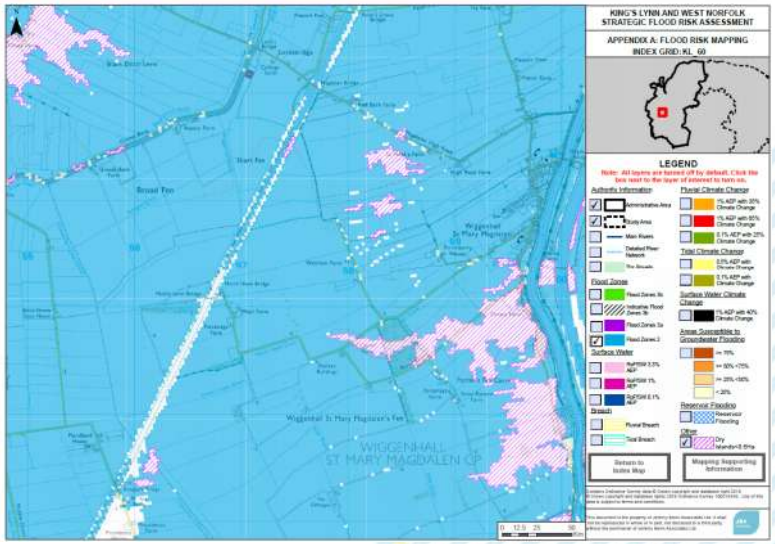
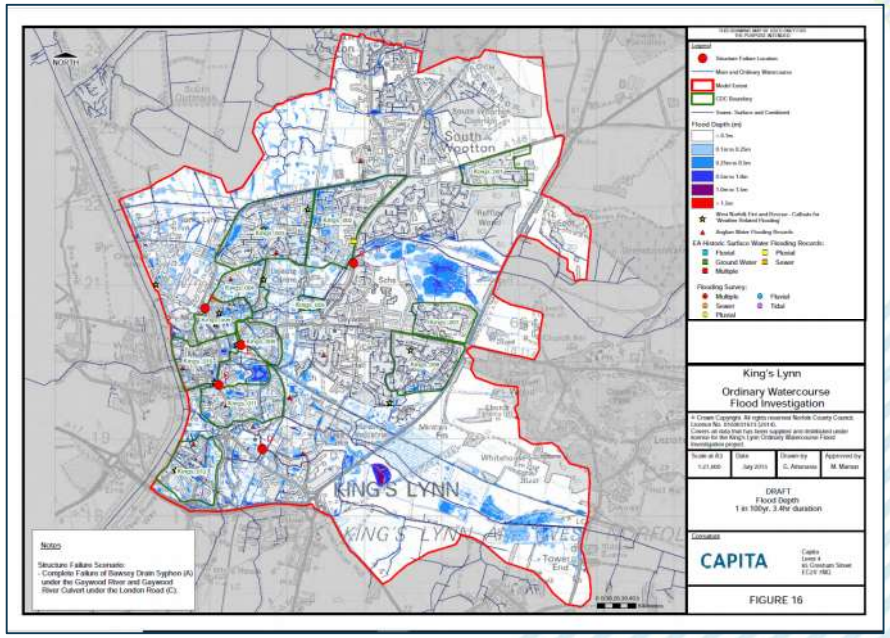
Dry islands

- Area >0.5 hectares in Flood Zone 1 surrounded by Flood Zone 2
- Access and egress considerations
- Emergency arrangements need to be considered
- May need to consider IDB drains, small catchments and impact of coastline
- Developers should liaise with the Council



Surface Water Management Plan

- Kings Lynn, Downham Market, Wimbotsham, Snettisham and Heacham
- Critical Drainage Catchments and modelling outputs
- Take into account in FRAs and identify whether the development can contribute to SWMP actions



https://www.west-norfolk.gov.uk/info/20098/water_management_and_flooding/173/surface_water

EA requirements

- Standing advice for minor developments

https://www.gov.uk/guidance/flood-risk-assessment-standing-advice

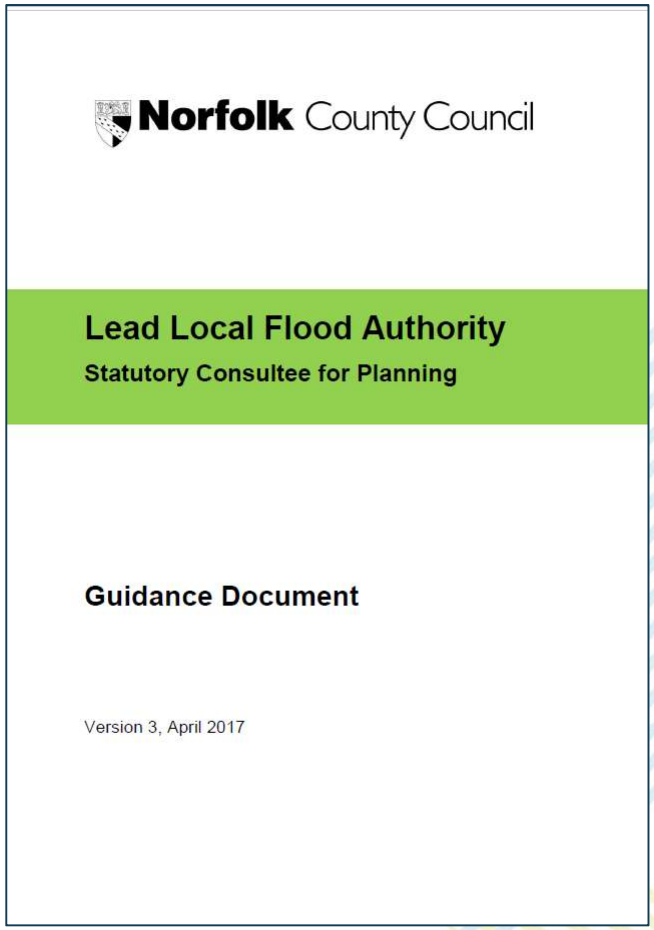
  - a minor extension (household extensions or non-domestic extensions less than 250 square metres) in flood zone 2 or 3
  - 'more vulnerable' in flood zone 2 (except for landfill or waste facility sites, caravan or camping sites)
  - 'less vulnerable' in flood zone 2 (except for agriculture and forestry, waste treatment, and water and sewage treatment)
  - 'water compatible' in flood zone 2

- Bespoke comments for higher risk sites

https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications

LLFA requirements

- https://www.norfolk.gov.uk/rubbish-recycling-and-planning/flood-and-water-management/information-for-developers
- LLFA policies and guidance on surface water drainage systems
- Bespoke review for 100 homes or 2 hectares commercial, unless local flood risk issues


Norfolk County Council

Lead Local Flood Authority

Statutory Consultee for Planning

Guidance Document

Version 3, April 2017

Key messages

- Strategic assessments of risk: site specific assessments will still be required
- Sequential test needed at site level, unless strategic allocation
- Exception Test needed depending on flood risk and vulnerability
- Use SFRA as a starting place, but remember it is snapshot in time
- Consider development in the wider context of FRM and drainage and refer to specific guidance
- EA and Norfolk CC as LLFA remain as statutory consultees

Questions?