

Lincolnshire Flood Risk and Drainage Management Partnership Framework



Flooding in Boston

Section 19 Investigation Report

Overview of coastal surge flood event during 5th, 6th & 7th December 2013

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1 Introduction

The Lincolnshire East Coast tidal inundation on the evening of 5 December 2013 was the worst experienced for over 60 years. A number of coastal communities, residential and commercial properties, and high grade agricultural land suffered from serious flooding. Thankfully no lives were lost but many people were affected and put at risk. Figure 1-1 below shows the extent of coastal flood risk areas in Lincolnshire, within which the actual communities affected by this event are located. The locations of these communities are shown in Fig 8-1 and the numbers of properties and areas of land flooded are provided in Table 9-1 and Table 9-2 later in this report.

The flood event tested the Emergency Services, flood defence and drainage infrastructure, and the Lincolnshire Risk Management Authorities affected. As indicated below, Lincolnshire County Council, as Lead Local Flood Authority, has a statutory duty to undertake investigations into flooding and this report, together with reports from the Lincolnshire Resilience Forum and the Environment Agency (See section 15 Appendices), fulfils this duty.

Flood and Water Management Act 2010 – states: **Section 19 - Local authorities: investigations**

- (1) *On becoming aware of a flood in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate—*
 - (a) *which risk management authorities have relevant flood risk management functions, and*
 - (b) *whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.*

- (2) *Where an authority carries out an investigation under subsection (1) it must—*
 - (a) *publish the results of its investigation, and*
 - (b) *notify any relevant risk management authorities.*

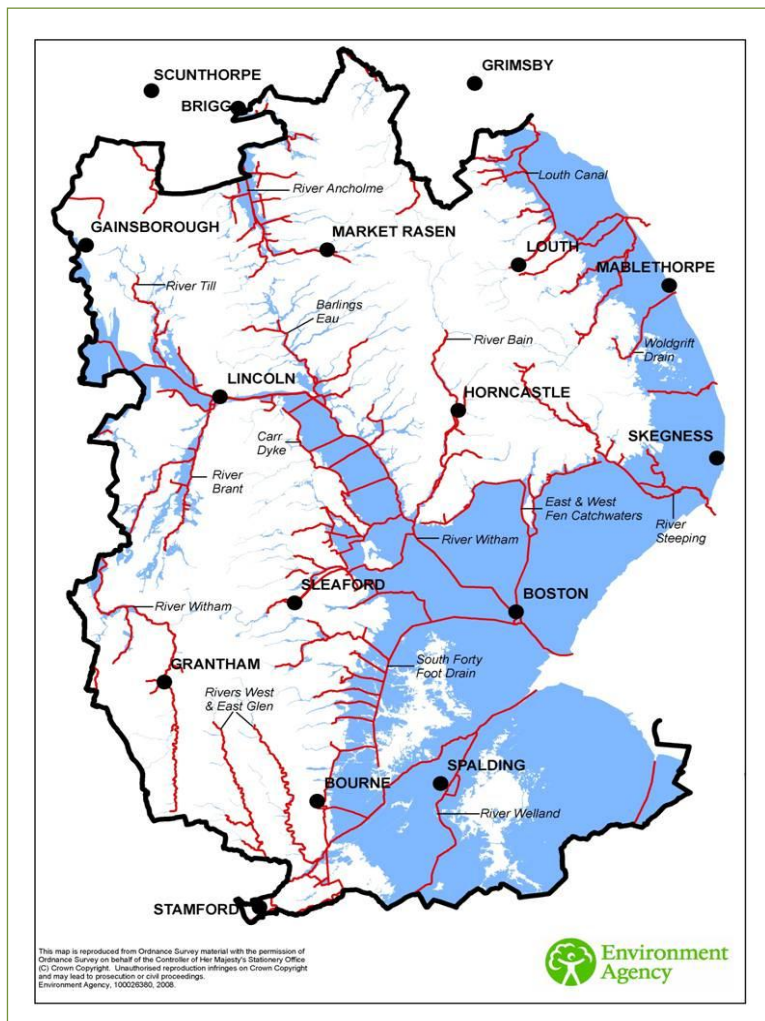


Figure 1-1 – Map showing coastal and main river flood risk areas

2 Objective, Outcome & Method

Objective:

Produce a Sec 19 Investigation Report providing a Lincolnshire partnership overview of the timeline, causes and impacts of the coastal flood event; including observations on need for further investigation and analysis where appropriate

Outcome required:

Consistent flood event information communicated and used across the Lincolnshire partnership and beyond

Method:

The partnership approach indicated below was used to deliver this Section 19 Investigation Report:

- Provide an overview as shown in Fig 2-1.0 below and not get into detail or duplicate objectives of other reports or analysis, either ongoing or proposed in the future;
- Provide information on What happened, Where it happened, When it happened and Why (if this is obvious), by maximising the use of Partner investigations and reports;
- Collate appropriate evidence and facts relating to all areas impacted by flooding as provided in the Section 19 Risk Category & Indicator Thresholds (Duty to Investigate Guiding Principles Version 4.1) - see **Section 15 Appendices**;
- Partners to provide relevant reports and input relative to their roles and responsibilities, and consult internally as necessary;
- The delivery of the Section 19 Report is led by the Lead Local Flood Authority;
- However; the majority of partner input is from the Environment Agency with its responsibility for managing coastal flood risk, and the Local Resilience Forum with its statutory responsibility for emergency planning and response in Lincolnshire; and
- This Section 19 Report should be read in conjunction with the other published Partner Reports in **Section 15 Appendices**, and this report is NOT intended for sole use to determine or justify future work or activity.

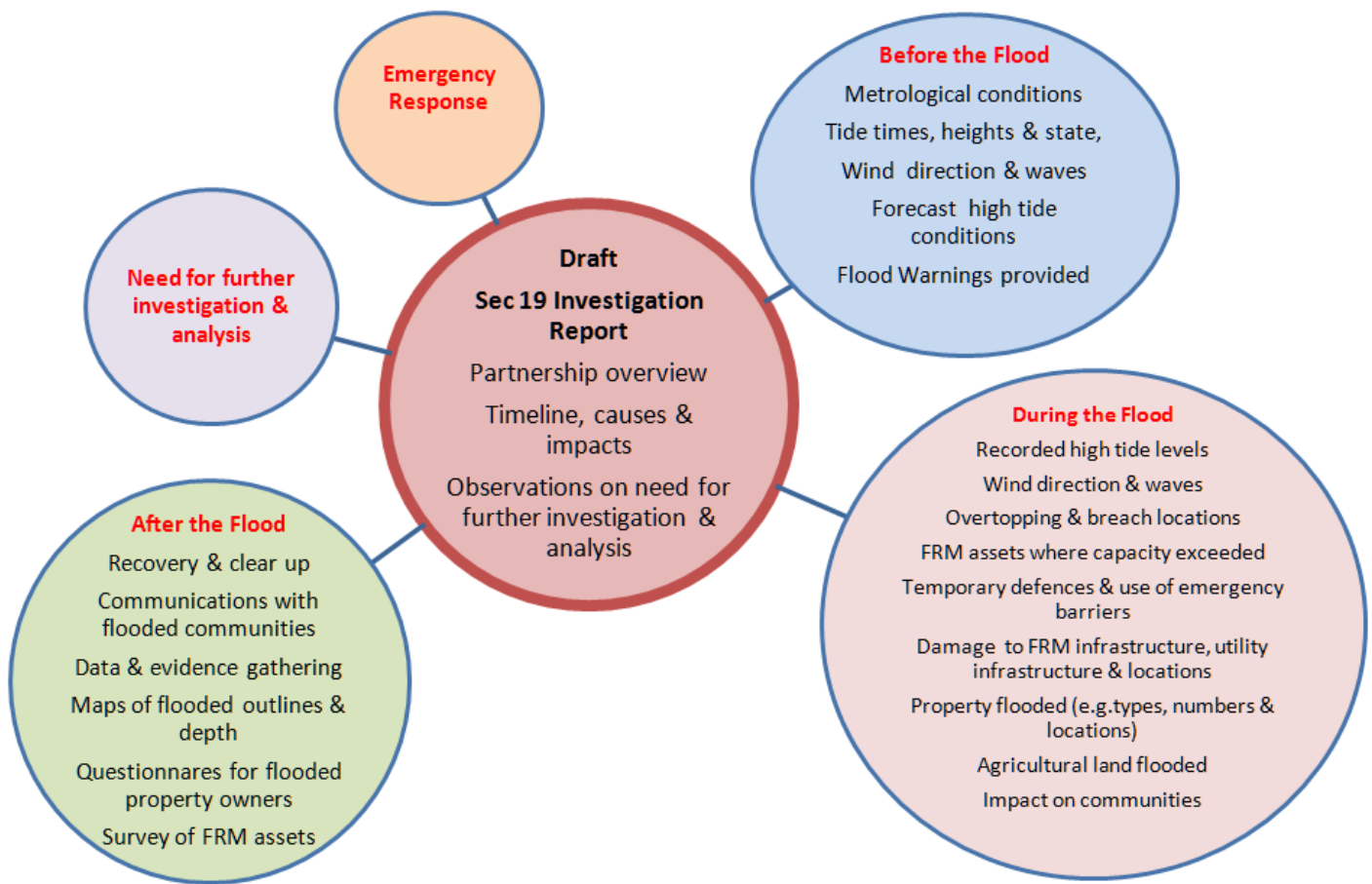


Figure 2-1 - Outline scope of Section 19 Report (compendium of partner documents)

3 Structure of the Report

A conscious effort has been made to take an efficient partnership approach (shown in Section 6 below), to meeting the LLFA statutory obligation to carry out the Section 19 Investigation and so avoid duplication of effort and the risk of potential anomalies. This Section 19 Investigation Report draws mainly on evidence and information gathered by partners as part of their own initial investigations into the flood event and provided in specific notes and reports as indicated in Figure 3-1 below. The LRF Report, Environment Agency Report and Anglian Water Newsletter are provided in **Section 15 Appendices**.

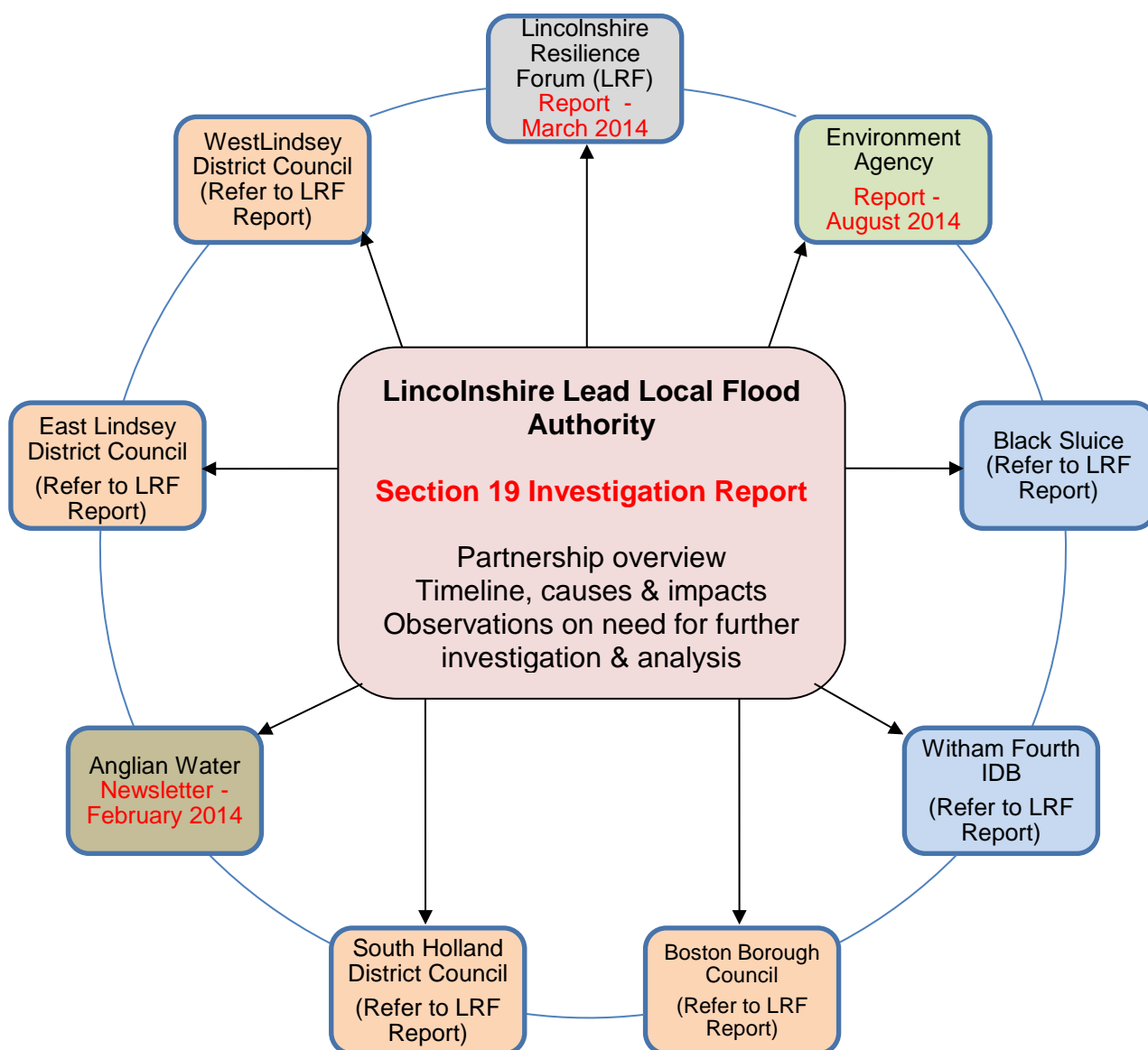


Figure 3-1 - Partner Risk Management Authorities contributing to the Section 19 Report

4 Risk Management Authority Roles and Responsibilities

Table 4-1 below summarises the key responsibilities for the relevant Risk Management Authorities operating in Lincolnshire:

Authority	Risk Management Functions
Environment Agency	<ul style="list-style-type: none"> • strategic overview for all forms of flooding • development of National Strategy for Flood and Coastal Erosion Risk Management (FCERM) to cover all forms of flooding • conversion of Regional Flood Defence Committees into Regional Flood and Coastal Committees with new remit to include coastal erosion issues • powers to request information in connection with FCERM functions • power to designate structures and features that affect flooding or coastal erosion • duty to exercise FCERM consistently with the national and local strategies • duty to report to Ministers on FCERM including implementation of the strategies • statutory consultee to the sustainable drainage approving body on sustainable drainage • responsibility for coastal flooding • responsibility for fluvial flooding from main rivers • duty to contribute to sustainable development in discharging their FCERM functions • ability to issue levies to lead local flood authorities: levies can now also apply to coastal erosion issues as well as flooding • duty to have regard to lead local flood authority scrutiny processes • updated provisions for the regulation of reservoirs
County or Unitary Council (Lead Local Flood Authority)	<ul style="list-style-type: none"> • development, maintenance, application and monitoring of Local Flood Risk Management (FRM) Strategy • powers to request information in connection with FRM functions • duty to investigate and publish reports on flooding incidents in its area (where appropriate or necessary) to identify which authorities have relevant FRM functions and what they have done or intend to do • duty to maintain a register of assets which have a significant effect on flood risk, in the view of the lead local flood authority • power to undertake works to manage flood risk from surface runoff or groundwater • power to designate structures and features that affect flooding • responsibilities as a Sustainable Drainage (SuDS) Approval Body (SAB) with responsibility for approval, adoption and maintenance of new sustainable drainage systems • responsibility for consenting to third party works on ordinary watercourses that may affect water flow (where there is no Internal Drainage Board) • duty to exercise FCERM functions consistently with the

	<ul style="list-style-type: none"> national and local strategies duty to contribute to sustainable development in exercising FCERM functions
Internal Drainage Board	<ul style="list-style-type: none"> power to designate structures and features that affect flooding or coastal erosion duty to act consistently with local and national strategies duty to have regard to lead local flood authority scrutiny processes ability to work in consortia with other Internal Drainage Boards statutory consultees to the sustainable drainage system approving body on sustainable drainage power to undertake works on ordinary watercourses flooding within their boundary and, with the Environment Agency's consent, the sea
District, Borough and City Councils	<ul style="list-style-type: none"> power to designate structures and features that affect flooding or coastal erosion duty to act consistently with local and national strategies duty to have regard to lead local flood authority scrutiny processes power to undertake works on ordinary watercourses and, with the Environment Agency's consent, the sea
Water and Sewerage Company	<ul style="list-style-type: none"> duty to have regard to national strategies and to have regard to local strategies duty to have regard to lead local flood authority scrutiny processes adoption of private sewers.

Table 4-1 - Key responsibilities of Risk Management Authorities

5 The Lincolnshire Local Resilience Forum (LRF)

The [Lincolnshire Local Resilience Forum](#) is the senior management group for the co-ordination of emergency planning within Lincolnshire. The Forum is made up of senior executives and policy makers from the principal organisations with responsibilities for emergency planning, emergency response and recovery under the Civil Contingencies Act. This includes many of the organisations represented on the Flood Risk and Drainage Management Partnership, as well as the Police, the Fire and Rescue Service, the NHS and other key partners.

Although the Local Resilience Forum covers the whole spectrum of emergency events, the potential impact of an event such as coastal flooding means that the Forum has a key role in the Flood Risk and Drainage Management Partnership to ensure that planning for major flooding events is fully aligned with the 'day-to-day' work of relevant operating authorities.

The Lincolnshire Local Resilience Forum have joint responsibility with the Environment Agency for triggering Severe Flood Warnings.

6 Lincolnshire Partnership Approach

Lincolnshire County Council, the Environment Agency, Internal Drainage Boards, District Councils and Water Companies form a partnership to implement a more co-ordinated approach to the way flood risk is managed in Lincolnshire. This involves close joint working to deliver flood protection and prevention schemes on the ground, as well as strategic co-operation to make sure that all relevant authorities are following common, agreed aims and objectives.

The partnership was developed during 2009 and was formally established in April 2010. Its members are:

- Lincolnshire County Council
- The Environment Agency (Anglian Region, Northern Area)
- The 14 Internal Drainage Boards operating in Lincolnshire
- The 7 District Councils in Lincolnshire
- The 2 Water and Sewerage Companies operating in Lincolnshire
- Natural England
- The Regional Flood & Coastal Committee (Anglian Region, Northern Area)
- The Lincolnshire Resilience Forum (authorities responsible for planning for and responding to emergencies of all kinds)

The Partnership is organised as shown in Figure 6-1 below to provide strategic co-ordination at a county level, as well as collaborative solutions to flooding and drainage issues at the local level.

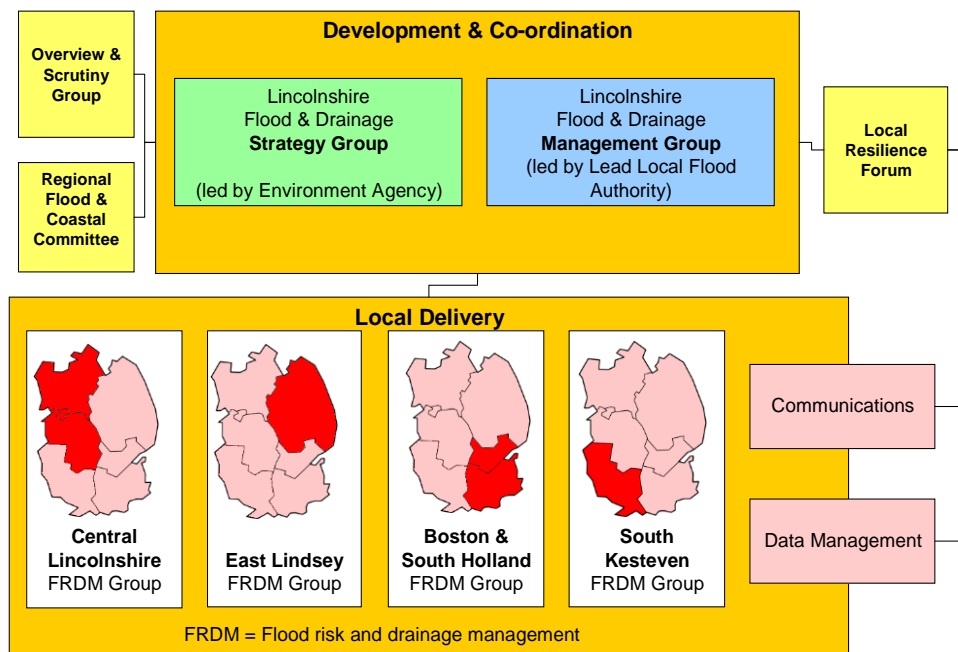
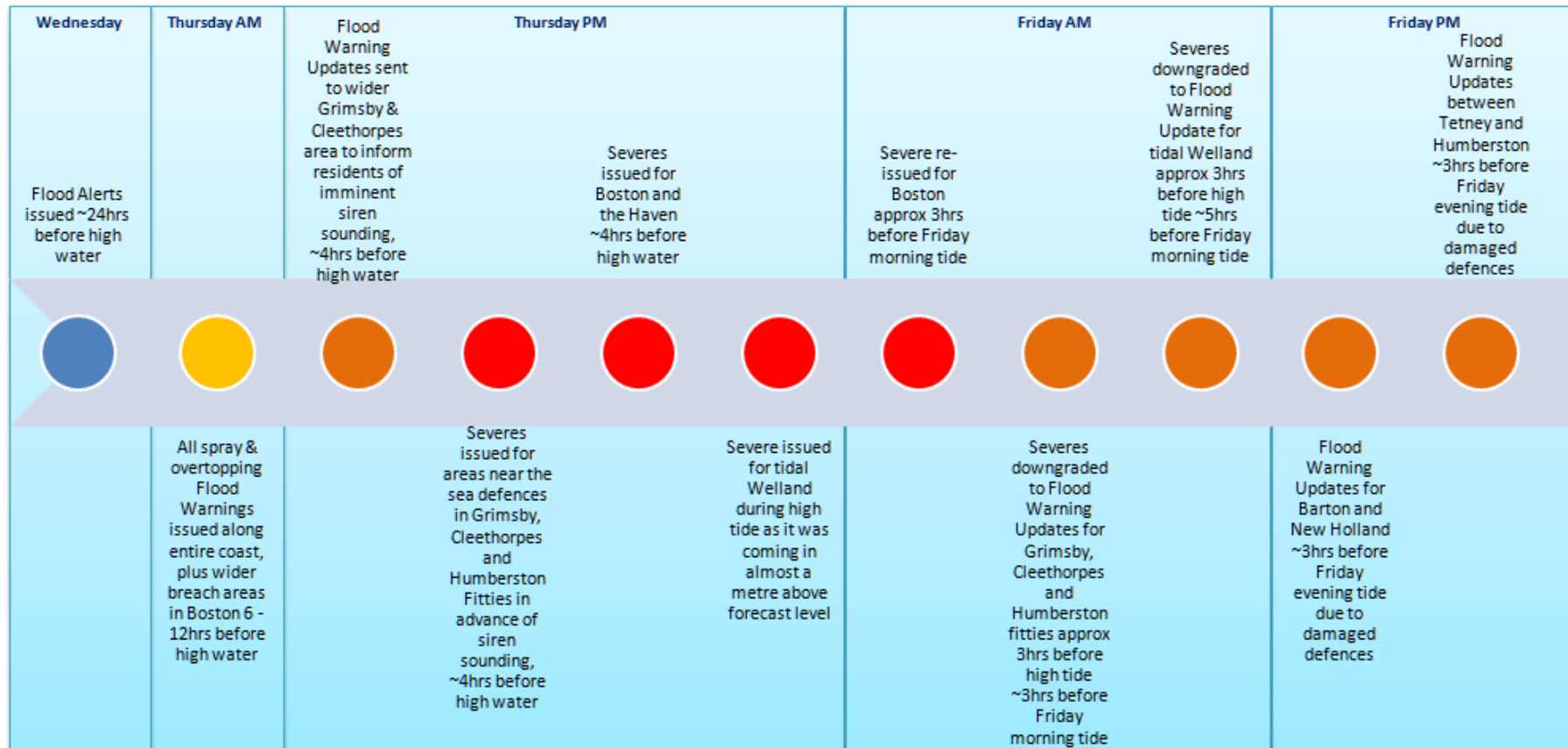


Figure 6-1 - Organisational arrangements of the Lincolnshire Flood Risk and Drainage Management Partnership

7 Figure 7-1 Flood Warnings Timeline

High tide:			
Immingham	Boston	Fosdyke	West Lighthouse
05/12/2013 18:45	05/12/2013 19:32	05/12/2013 19:30	05/12/2013 19:00
06/12/2013 07:15	06/12/2013 08:06	06/12/2013 08:15	06/12/2013 07:45
06/12/2013 20:08	06/12/2013 20:17	06/12/2013 20:45	06/12/2013 20:24



8 Locations Impacted by Flooding

Known locations impacted by flooding are shown in Figure 8-1 below:

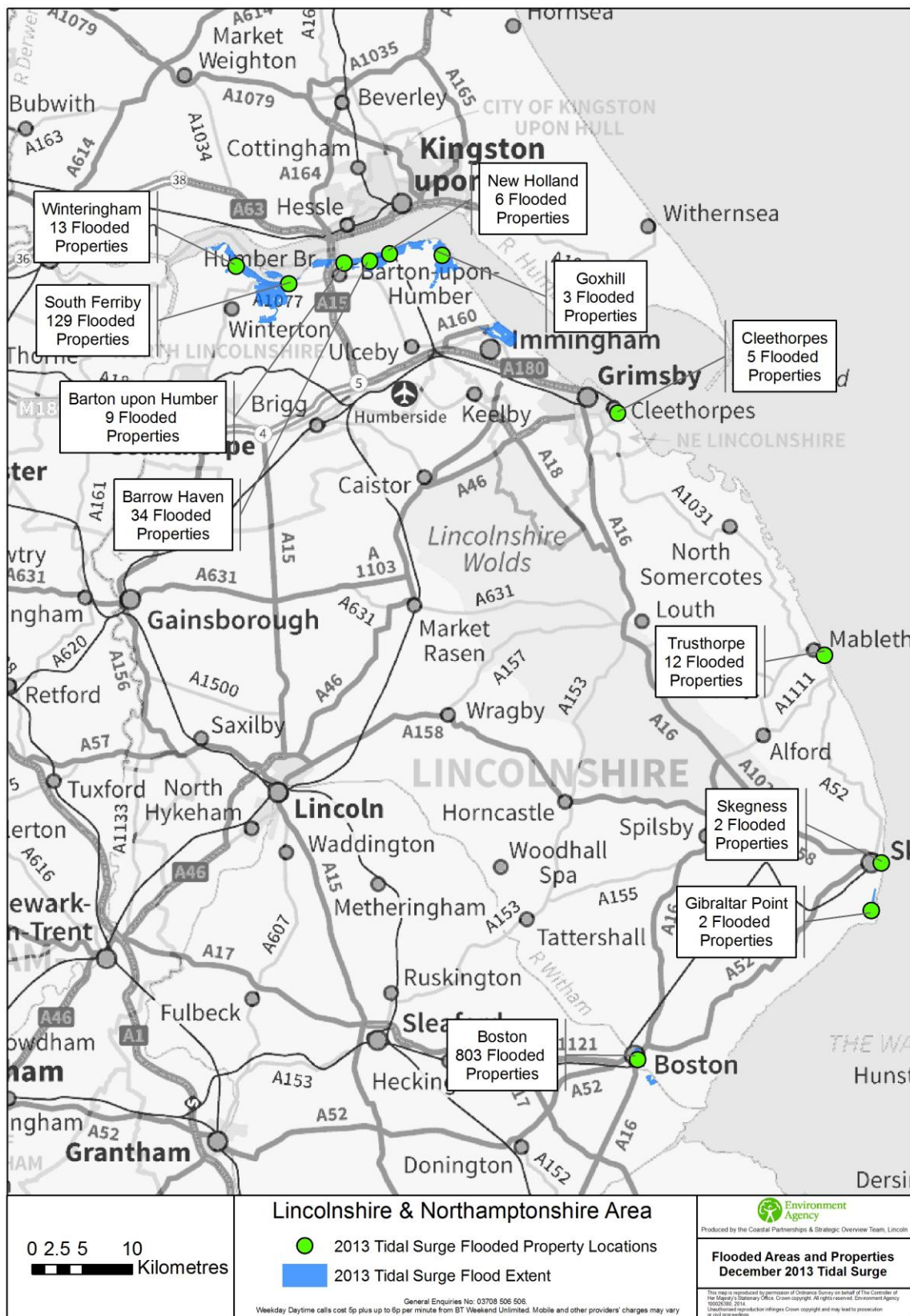


Figure 8-1 – Map showing locations impacted by flooding

9 Flood Event Headlines Drawn from Partner Reports

The impacts of the resultant surge in Greater Lincolnshire (as shown in Table 9-1 below) included the overtopping of 18-20 km of flood defences, causing a large area of scour (e.g. Mablethorpe) and 4 breach locations at Boston Haven, Gibraltar Point (Bull Dog Bank), Tetney Marsh and Friskney, inundating an estimated 1,700 hectares of agricultural land.

A further 100+ industrial and commercial sites were damaged, including 'Boston Stump' and local infrastructure such as the access road to the Boston Landfill Site, Civic Amenity Site and County Council Waste Transfer Station. Approximately 90 metres of floodwall at Skegness (between the pier and lifeboat station) failed during the surge. Three of the five main pumps at Black Sluice Gate were damaged by flooding and are now inoperable, requiring a decision on the future of the pumping station.

Significant flooding occurred in the Skirbeck/York Street, and High Street/London Road, Central Park and Wyberton areas of Boston (River Haven). More 'localised' property flooding was also experienced in Sutton Road, Trusthorpe (East Lindsey) and Butterworth Road & East Ferry Road, Susworth (West Lindsey).

Number	Impact
702	Residential properties flooded, the majority in Boston (where only 50% of households had flood insurance) and in Trusthorpe and Susworth
118	Businesses flooded in the county
44	Persons were rescued from flood waters
2	Pets were rescued from flood waters
203	Persons received assistance to evacuate
350	Tonnes of waste collected from flooded properties and safely disposed
1,700	Hectares of agricultural land inundated
£8.1million (est)	Damage to flood defences and infrastructure

Table 9-1 - Summary of flooding impacts

In addition:

Lincolnshire Wildlife Trust confirmed defence overtopping and flood damage to Gibraltar Point Visitor centre and Wash Study Centre. Preventive action at Donna Nook allowed seals to seek refuge on higher ground in dunes. Thankfully, seal mortalities appear to have been low. Also, some damage to fencing & sand dunes occurred between Saltfleetby and Theddlethorpe.

(Some information above has been extracted from Lincolnshire's Tidal Surge Response & Recovery 'After Action' Report Lincolnshire Local Resilience Forum - March 2014)

With regard to specific locations as shown above in Figure 8-1 the known flooding impacts on property is shown in Table 9-2 below:

Location	Residential property flooded	Commercial property flooded	Agricultural land inundated
Boston	688	115 (Wyberton/Slippery Gowt included)	
Friskney (Jubilee Bank)			200 ha
Trusthorpe	12		
Skegness		2	
Gibraltar Point	1	1	
Susworth	1		
Tetney Marsh			20 ha
Wrangle			250 - 450 ha
TOTAL	702	118	470 – 670ha

Table 9-2 –Known flooding impacts on property in specific locations

10 Observations, Need for Further Investigation and/or Analysis

Actions and Recommendations contained within the LRF Report should be progressed as appropriate and at the earliest opportunity.

The Environment Agency are continuing to investigate the following 3 locations for further work / improvements as a result of the surge incident in December 2013.

1. Skegness

During the surge incident the existing stone wall at the rear of Skegness promenade between the Clock tower and Pier was effectively destroyed in a number of places by wave action upon the wall.

Discussions are currently under way with East Lindsey District Council to agree Partnership Funding for a permanent solution based on a structural and cosmetic split.

This work to construct a permanent flood wall will be undertaken as part of a local regeneration scheme in October following the end of summer holiday period to minimise disruption to tourists and local businesses.



Damage to the Flood wall

2. Boston

Boston Combined Strategy

We are currently preparing the Transport and Works Act Order, for submission to the Secretary of State for the Environment during autumn 2015. Subject to their approval, the programme for delivering a multi-functional tidal barrier (phase 3) is to commence construction on site during summer 2017, with a 2.5 year completion date.

The aim of 'The Boston Combined Strategy' (BCS) is to reduce tidal flood risk on The Haven for the town and wider communities, and provide waterways regeneration. The Strategy comprises five phases of work, as follows:-

1. New lock structure which facilitates navigation between the tidal Haven and South Forty Foot Drain (Black Sluice Lock). This work was completed March 2009

2. To improve the condition of Environment Agency assets within the Haven, through Boston town centre. This work was completed summer 2014.
3. Design and construct a multi-functional barrier –within the Tidal River Haven with associated works: dual function for tidal surge and waterways regeneration.
4. Provision of new enhanced Waterways facilities like moorings along the waterfront
5. Raising of embankment levels downstream of barrier at an appropriate future time.

The Boston Barrier project seeks to reduce tidal flood risk on the Haven for the town and wider community from a 2% (1 in 50) chance in any one year today to 0.33% (1 in 300) chance in any one year over the 100 year lifetime of the strategy; providing an improved standard of tidal flood protection to over 15,000 residential properties and 900 commercial properties.

Boston Community Engagement

In the immediate aftermath of the flooding, the focus was on Boston with agencies in the town centre on the Friday and Saturday, visiting affected businesses and reassuring residents, particularly along Wormgate and Red Lion Street. Four events were quickly arranged for the following week through excellent partnership working with Boston Borough Council (BBC) who facilitated events at their council offices, Boston Market, Craft Market and Asda, giving people the opportunity to come and speak directly to the agencies. A further two days of leaflet dropping on 18/19 Dec informed people between White Horse Lane and St Ann's Lane, as temporary defences were put up ahead of the next spring tides.

At least 225 out of 921 new Flood Warnings Direct (FWD) registrations within the BBC area for December can be directly attributed to this initial engagement activity (this compares to 21 FWD registrations for the previous three months). Virtually all businesses on Wormgate, plus St Botolph's church, are now signed up, along with many in the main market place. Most are helping to promote FWD via leaflets left. Four people came forward as potential new flood wardens (none existed in the town itself previously). Links were made with local councillors, who expressed interest in disseminating flood plans and promoting FWD. There was good joint working with other partners too e.g. Asda and Lincolnshire Police, plus initial links made with local community groups e.g. U3A and Alzheimer's Society.

Key observations from engagement:

- Half (27) of people spoken to who flooded did not have a landline – implications here re Early Direct Warnings (EDW)
- Around 20% of people spoken to were Polish, but currently there are no plans to offer service in alternative languages

Analysis of the FWD registrations reveals that 63 out of the 921 registrations had foreign surnames – 21 Polish, 9 Lithuanian. A better understanding is needed of the different nationalities in Boston and, if known, whether they live in high flood risk areas and how many don't speak English at all. Work continues to establish existing channels used by LRF partners to communicate with these residents. It is believed this is a recognised challenge for the local authority.

Contact has been made with those councillors in wards directly affected by flooding – Central, Witham, Skirbeck, Pilgrim and North - to explore how they can be supported further and make their communities more resilient. This has led to opportunities to attend the Boston Community Forum, which in turn has led to additional contacts being made with existing community groups e.g. the Latvian community group 'Stronger Together' and Boston Christian Fellowship. These are being followed up.

A good example of this is Boston Mayflower Housing Association, who own 4,800 homes in BBC. They are helpfully carrying out a number of activities on our behalf to help promote flood resilience e.g.

- as most people pay their rent online, they are inserting an LRF coastal campaign link on this page, so that people can click to register for free flood warnings and to complete an interactive flood plan. This activity can be directly monitored
- lettings officers will encourage new tenants to register for flood warnings when they are shown around properties
- letting us know about community 'pop up' events that take place when they need to consult with residents, with a view to us attending

A meeting took place in January to discuss a localised community emergency and flood plan (CEFP) following an approach from the South Ward councillor to the Joint Emergency Management Service (JEMS). This plan could include flood wardens and the creation of localised networks to share information. It is envisaged that this could be used to provide a template/guidance to roll out to the remaining nine ward councillors within the town to help build resilience for the future. Further options will emerge through partnership working e.g. the Get Boston Back on its Feet group that was formed by the local community, with its own proactive website to share information, could have a wider role to play. They are currently already involved with carrying out recovery work in Boston, under the guidance of Boston Borough Council.

It is understood that through this recovery work, a number of individuals came forward who speak different languages. It is envisaged that these people (and others to be identified) could form a local network of 'community flood champions' that can cascade messages from FWD during expected flooding in the future e.g. by phone, or door-knocking. How this could work needs to be more comprehensively explored. It could be possible to identify people for each ward that can lead on raising awareness of flood risk that could 'buddy up' with those who speak different languages. This could then form part of the CEFP. Once the nature of support network emerges more clearly, appropriate training

e.g. workshops can then take place, as has been the case previously regarding flood wardens. This will help ensure that consistent messages are delivered and resilience can continue to be built in communities.

The first week of March saw the start of the council tax leaflet distribution in Boston. This included a flyer with photos of easy DIY steps people can take to reduce the impact of flooding on homes and it is in English, Polish, Russian and Portuguese. It has been produced by BBC with the support of partners.

Work continues to share information about repairs and the Boston Barrier with interested community groups and councillors in wards affected. The latest briefing note regarding reinstalling the temporary defences, ahead of the latest spring tides, did not cause any concern. Opportunities continue to be sought to share information with communities/groups e.g. Boston Food Bank and Central Ward Neighbourhood Meeting.

As part of our continued regular communications with the Borough of Boston communities we used the 'Boston Bulletin' to keep residents informed at every stage of the recovery process. We also, used an e-mail account where the public could find out more information and ask questions.



3. Gibraltar Point – Bulldog Bank

There were no emergency works undertaken to fix the breach in the Bulldog bank however the Environment Agency is currently looking into the future of the Bulldog Bank sea defence and are currently reviewing the economic justification to fund its repair.

The published Shoreline Management Plan (SMP) for this frontage shows the

policy for this frontage, in the short to medium term, to be 'Hold the line' though this is subject to necessary funding and approvals.

If securing the funding for a repair is not achievable we will need to consider alternative options, which may include seeking contributions towards the repair of the bank or possibly re-alignment of the bank to an alternative location. We are aware Natural England have expressed a desire to setback the bank, allowing a more natural tidal creek system to form, and will continue to engage with them to agree the most appropriate way forward.

The Environment Agency will consult all interested parties, including Natural England, Local Authorities, the Lincolnshire Wildlife Trust and the local residents and businesses if there is a change from the agreed SMP policy.



Breach point in Bulldog Bank Sluce

Secondary Bank with Sluce

11 Summary of Discharge of Statutory Responsibilities Template

Name of Investigation	Coastal surge flood event
Date of Incident	5th, 6th & 7th December 2013
Date Investigation Completed	18th August 2014

Section 19 Paragraph 1 (a) which risk management authorities have relevant flood risk management functions:

Risk Management Authorities involved:

<i>Boston Borough Council</i>	<i>Environment Agency</i>
<i>Anglian Water</i>	<i>Black Sluice Internal Drainage Board</i>
<i>Witham Fourth Internal Drainage Board</i>	<i>East Lindsey District Council</i>
<i>South Holland District Council</i>	<i>West Lindsey District Council</i>

Section 19 Paragraph 1 (b) whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood

<i>Boston Borough Council - functions exercised?</i>	Yes
<i>Environment Agency - functions exercised?</i>	Yes
<i>Anglian Water - functions exercised?</i>	Yes
<i>Black Sluice Internal Drainage Board - functions exercised?</i>	Yes
<i>Witham Fourth Internal Drainage Board - functions exercised?</i>	Yes
<i>East Lindsey District Council - functions exercised?</i>	Yes
<i>South Holland District Council - functions exercised?</i>	Yes
<i>West Lindsey District Council - functions exercised?</i>	Yes

Section 19 Paragraph (2) Where an authority carries out an investigation under subsection (1) it must—

- (a) publish the results of its investigation, and
- (b) notify any relevant risk management authorities

(a) Date results of investigation published	5th September 2014
(b) Date of F&DG Management Group Meeting when relevant RMA notified of results of investigation	September 2014

12 Find out more

Lincolnshire County Council

This Report is available online at:

<http://www.lincolnshire.gov.uk/residents/environment-and-planning/flood-risk-management/implementing-a-strategy-to-manage-flood-risk-countywide-and-locally/103045.article?tab=downloads>

Hard copies are available on request. Postal enquiries should be sent to:

Joint Lincolnshire Flood Risk and Drainage Management Strategy
Lincolnshire County Council
Environmental Services
Witham Park House
Waterside South
Lincoln LN5 7JN

Email enquiries should be sent to sustainability@lincolnshire.gov.uk

For telephone enquiries please contact (01522) 552222

Lincolnshire Local Resilience Forum

Information is available at [Lincolnshire Resilience Forum](#)

Postal enquiries should be sent to:

Joint Emergency Management Service
Lincolnshire Fire & Rescue HQ
South Park Avenue
Lincoln
LN5 8EL

Email enquiries should be sent to lrf@lincoln.fire-uk.org

For telephone enquiries please contact (01522) 582220

Environment Agency

Information is available at [Environment Agency](#)

Postal enquiries should be sent to:

Environment Agency
Lincolnshire & Northamptonshire Area
Waterside House
Waterside North
Lincoln
LN2 5HA

Email enquiries should be sent to enquiries@environment-agency.gov.uk

For telephone enquiries please contact 03708 506 506

Black Sluice Internal Drainage Board

Information is available at [Black Sluice Internal Drainage Board](#)

Postal enquiries should be sent to:

Black Sluice Internal Drainage Board
Station Road
Swineshead
Boston
Lincolnshire
PE20 3PW

Email enquiries should be sent to mailbox@blacksluiceidb.gov.uk

For telephone enquiries please contact 01205 821440

Witham Fourth Internal Drainage Board

Information is available at [Witham Fourth Internal Drainage Board](#)

Postal enquiries should be sent to:

Witham Fourth Internal Drainage Board
47 Norfolk Street
Boston
Lincs
PE21 6PP

Email enquiries should be sent to drainage@w4idb.co.uk

For telephone enquiries please contact 01205 310088

Boston Borough Council

Information is available at [Boston Borough Council](#)

Postal enquiries should be sent to:

Boston Borough Council
Municipal Buildings
West Street
Boston
Lincolnshire
PE21 8QR

Email enquiries should be sent via the Boston Borough Council web site

For telephone enquiries please contact 01205 314315

South Holland District Council

Information is available at www.sholland.gov.uk

Postal enquiries should be sent to:

South Holland District Council
Council Offices
Priory Road
Spalding
PE11 2XE

Email enquiries should be sent to: info@sholland.gov.uk

For telephone enquiries please contact 01775 761161

Anglian Water

Information is available at Anglian Water

Postal enquiries should be sent to:

Anglian Water
Customer Services
PO Box 10642
Harlow
CM20 9HA

Email enquiries should be sent via the Anglian Water web site

For telephone enquiries please contact **08457 91 91 55**

East Lindsey District Council

Information is available at www.e-lindsey.gov.uk

Postal enquiries should be sent to:

East Lindsey District Council
Tedder Hall
Manby Park
Louth
Lincolnshire
LN11 8UP

Email enquiries should be sent to : customerservices@e-lindsey.gov.uk

For telephone enquiries please contact 01507 613940

West Lindsey District Council

Information is available at [West Lindsey](#)

Postal enquiries should be sent to:

West Lindsey District Council
Guildhall
Marshall's Yard
Gainsborough
Lincs
DN21 2NA

Email enquiries should be sent to : customer.services@west-lindsey.gov.uk

For telephone enquiries please contact 01427 676676

13 Glossary

Assets	Structures, or a system of structures used to manage flood risk.
Catchments	An area that serves a river with rainwater. Every part of land where the rainfall drains to a single watercourse is in the same catchment.
Defences	A structure that is used to reduce the probability of floodwater or coastal erosion affecting a particular area (for example a raised embankment or sea wall)
Flood	The temporary covering by water of land not normally covered with water
Flood Risk Area	An area determined as having a significant risk of flooding in accordance with guidance published by Defra and Welsh Assembly Government.
Groundwater	Water which is below the surface of the ground and in direct contact with the ground or subsoil.
Local flood risk	Flood risk from sources other than main rivers, the sea and reservoirs, principally meaning surface runoff, groundwater and ordinary watercourses.
Main River	A watercourse shown as such on the Main River Map, and for which the Environment Agency has responsibilities and powers
Regulations	The Flood Risk Regulations 2009
Resilience	The ability of the community, services, area or infrastructure to withstand the consequences of an incident.
Risk	Measures the significance of a potential event in terms of likelihood and impact.
Risk assessment	A structured and auditable process of identifying potentially significant events, assessing their likelihood and impacts, and then combining these to provide an overall

	assessment of risk, as a basis for further decisions and action.
Source	The origin of a hazard (e.g. heavy rainfall, strong winds, surge etc).
Surface runoff	Rainwater (including snow and other precipitation) which is on the surface of the ground (whether or not it is moving), and has not entered a watercourse, drainage system or public sewer.

14 Abbreviations

F&WM Act	Flood & Water Management Act 2010
FMfSW	Flood Map for Surface Water
FR&DMG	Flood Risk & Drainage Management Group
IDB	Internal Drainage Board
LCC	Lincolnshire County Council
LFRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority
LRF	Local Resilience Forum
FWD	Flood Warnings Direct
EDW	Early Direct Warnings
CEFP	Community Emergency & Flood Plan
JEMS	Joint Emergency Management Service
BBC	Boston Borough Council

15 Appendices

- (a) Lincolnshire's Tidal Surge Response & Recovery 'After Action' Report
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Agency - August 2014
- (c) East Coast Newsletter - Anglian Water
- (d) Duty to Investigate Guiding Principles (Version 4.1)

Photographs

Boston - Breach in sea defence at Slippy Gowt



Boston - Breach in sea defence at Slippy Gowt



Boston - Breach in sea defence at Slippery Gowt



Boston - Breach in sea defence at Slippery Gowt



Boston - Damage caused due to breach in sea defence at Slippery Gowt



Boston - Municipal Buildings



Boston Stump



Boston - overtopping of Witham Haven floodwall near Boston Stump



Boston - Church Lane



Boston - near Boston Stump

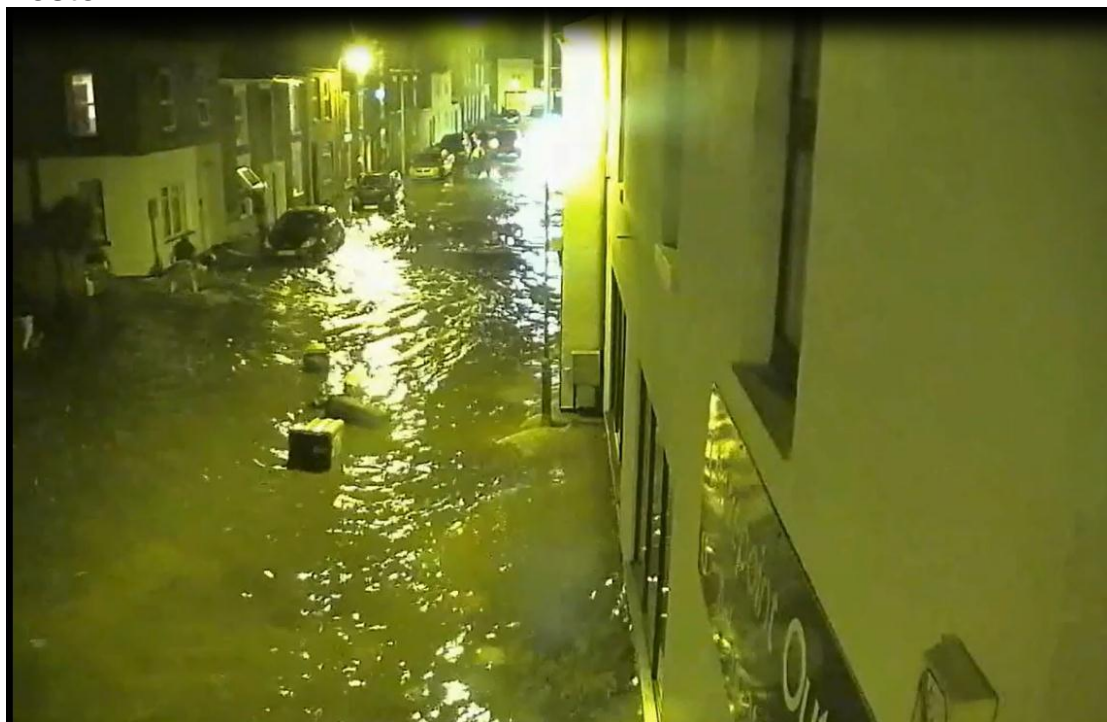


Boston



Boston Borough Council CCTV
Flooding 05-12-13

Boston



Boston Borough Council CCTV
Flooding 05-12-13

Boston



Boston



Friskney - Breach in private Sea Defence



Friskney - Breach in private Sea Defence



Trusthorpe - Sea pouring over top of sluice gate housing structure (also out of top of sea drain access shafts not shown)



Trusthorpe - Sluice gate housing structure



Trusthorpe - Sluice gate housing structure and access shaft structure



Skegness



Skegness



Skegness - seafront promenade



Gibraltar Point - flooding due to overtopping of sea defence



Gibraltar Point - flooding due to overtopping of sea defence



Susworth - Overtopping of steps on flood bank



Susworth - Overtopping of steps on flood bank



Susworth - Overtopping of steps on flood bank

