

Lancaster City Council

PUBLIC Version

Multi-Agency Flooding Plan



Date	1st December 2015
Current Version	Version 2.4
Review Date	November 2016
Plan Prepared by	Mark Bartlett/Adrian Morphet

Telephone numbers and other personal contact details in this plan should be treated as confidential and not released to the public. A public version of this plan is on the City Council website and enquirers should be directed towards that document.

CONTENTS

Information	2
Intention	3
Intention of the plan	3
Ownership and Circulation	4
Version control and record of revisions	5
Exercises and Plan activations	6
Method	7
Environment Agency Flood Warning System	7
Summary of local flood warning service	8
Command structure and emergency control rooms	9
Role of agencies	10
Other Operational response issues	11
Surface and Groundwater flooding	13
Rapid Response Catchments	13
Key installations, high risk premises and operational sites	14
Evacuation procedures (See also Appendix 'F')	15
Vulnerable people	15
Administration	16
Finance, Debrief and Recovery procedures	
Communications	16
Lancaster City Council	16
Press and Media	17
Organisation structure and communication links	17
Appendix 'A' Cat 1 Responder and other Contact numbers	18
Appendix 'B' Pumping station and screen locations	20
Appendix 'C' Sands bags policy, suppliers and advice	23
Appendix 'D' Council Emergency Response Team	25
Appendix 'E' Flooding procedures - Checklists	26
Appendix 'F' Flood Warning areas	31
Lancaster District – detailed checklists	
SC2 Lancaster Quay	31
SC3 Skerton Pool	35
L4 Hornby and Lower Lune Valley	39
L35 Galgate	41
FL42 Burrow Beck	44
L50 Halton	45
TL01 Morecambe (inc Floodboard locations)	48
TL27 Carnforth	51
TL24 Bolton le Sands and TL23 Hest Bank	52/53
TL05 Sunderland Point	54
TL04 Heysham and TL22 Thurnham	56/57
Appendix 'G' EA Maps of FWAs - Lancaster District	58-70
Appendix 'H' Policy and operational logs	71

INFORMATION

Under the Civil Contingencies Act, 2004, Lancaster City Council is a Category 1 Responder¹ organisation and as such intends to fulfil all its responsibilities under the Act² in terms of preparedness for and responding to emergencies³. The responsibilities include the need to assess the risk of an emergency and to maintain plans to deal with an emergency if one occurs or is likely to occur.

Coastal, fluvial,⁴ and flash flooding have all been identified as significant risks in the Lancaster City Council area and this plan shows how the Council will respond to any warning of potential flooding in the Council area. The plan details the command arrangements for such events and the responsibilities of various Council services. It complements the Lancashire Resilience Forum's Multi Agency Flooding Plan for Lancashire (MAFP).

It must be emphasised that the City Council, like other local authorities, is not an 'emergency service' and the response to incidents will depend on the time of the incident, availability of staff and equipment, the nature of the incident and the dangers it poses. The City Council response will complement that of other agencies such as the County Council and Environment Agency who will also implement their own response plans to flooding incidents.

It must also be recognised that this plan covers the response to flooding that has been anticipated through the Environment Agency "Flood Alert" and "Flood Warning" scheme. Whilst every effort will be made to respond appropriately to sudden, unexpected flooding incidents (flash flooding) they are notoriously difficult to predict or to deal with and the conditions will often have subsided by the time a response can be made. General checklists of actions in the event of warnings being received are shown at Appendix 'E' and those specific to Flood Warning areas are at Appendix 'F'. Maps of the Flood Warning areas are shown at Appendix 'G'.

The Council's general response to emergencies can be found in the District Emergency Plan and this plan should be read in conjunction with that document. A Severe Weather contingency plan has also been produced to complement the arrangements in the Flooding Plan.

As part of its commitment to communities the Council plays a full part as a member of the Lancashire Resilience Forum (LRF)⁵ and supports the other member organisations.

¹ Cat 1 responder organisations comprise the emergency services, health services, environment agency and local authorities.

² Responsibility to conduct risk assessments, business continuity, prepare emergency plans and arrangements to warn, inform and advise the public so that the Council can perform its functions effectively in an emergency

³ An event or situation which threatens serious damage to human welfare, the environment or the security of a place in the UK

⁴ Fluvial flooding is flooding from rivers and watercourses

⁵ The Lancashire Resilience Forum comprises all Category 1 responder organisations in Lancashire together with Category 2 responders – utility and transport companies

Intention

This plan has been produced to address the emergency response to flooding. The aim of the plan, and the measures it contains, are:

- To identify local critical infrastructure assets, highlight risk and establish emergency contacts
- Liaise and engage with local communities and vulnerable people
- Outline the Council's response to the threat of flooding from the sea, rivers and other watercourses.
- To reduce the risk to people and property to the best of the Council's abilities.

This plan details the Flood Warning Areas within the Lancaster District and the arrangements within Lancaster City Council. It must be read in conjunction with the Lancashire Resilience Forum Multi-Agency Flooding Plan which it complements.

Although flood defence systems provide a significant protection from flooding, they cannot prevent it in all circumstances. When flood defences fail, or are likely to be 'over topped', and could impact on public safety the Council, working with other agencies, will seek to provide an emergency response to assist residents whose properties are at risk or flooded.

Depending upon the severity of the event however, this may be an unachievable task in the time available to respond. The plan complements the Council's own District Emergency Plan and also the Lancashire Flooding Multi Agency Response Plan, administered by the Environment Agency on behalf of the Lancashire Resilience Forum. The aim of this plan is to enable the City Council's resources to be speedily mobilised to deal with any predicted or actual flooding emergency, or to render mutual aid to other Lancashire Resilience Forum member agencies in dealing with severe flooding incidents in their own area.

The Lancashire Community Risk Register is a public document and can be viewed at the Forum website www.lancsresilience.org It details the various risks to Lancashire communities from many sources and also the generic and specific emergency plans that have been created to address them. Flooding and severe weather risks are identified in the register.

It is essential that all officers involved in the co-ordination of a flooding emergency maintain an accurate log of decisions made and action undertaken. The log should also include details of any expenditure authorised. Proforma decision-making and action log sheets may be found at the back of this plan (Appendix 'H' refers).

Ownership and circulation

This plan is owned by the Civil Contingencies Officer (CCO) and it is that officer's responsibility to update this plan and to maintain Version Control. Any suggested amendments must be notified to the CCO at Environmental Health, Morecambe Town Hall. The plan will be formally reviewed on at least an annual basis, or after activation, whichever is the sooner.

Hard copies of this plan will be retained by:

Corporate

- Duty Emergency Incident Officer
- Emergency Call Centre
- District Emergency Control Centre
- Civil Contingencies Officer

Operational roles

- Engineering Team
- Environmental Services

Electronic Copy Circulation

- Senior Emergency Officers (including reserves and Chief Executive)
- Environment Agency (Flooding Incident manager)
- Reserve DECC emergency box
- Environmental Health service
- Community Engagement (Communications)
- Community Engagement (Customer Services)

The Environment Agency will in turn circulate this and other district flooding plans to the following agencies:

- Lancashire County Council Emergency Planning Service
- Lancashire Constabulary Emergency Planning Manager
- Lancashire Fire & Rescue Emergency Planning Officer
- HM Coastguard (Lytham and Morecambe offices)
- Environment Agency (Flooding Incident manager)
- Duty Emergency Incident Officer tablet computer.

Public Version

- City Council website ('sanitised' version)

Version Control and Record of Revisions

Revision date and Version	Status	Outline of revisions	Made by	Approved by
November 2007 Version 1.0	Obsolete	Base document Version 1.0	A Morphett & M Bartlett	Peter Loker
2 nd June 2008 Version 1.1	Obsolete	Post Ex Argent and winter activation modifications and incorporating minor changes following quality assurance by EA and Met Office advisor. V1.1	Mark Bartlett and Adrian Morphet	Peter Loker
January 2009 Version 1.2	Obsolete	Revisions to layout, sand bag policy, revised "Flood Alert" procedures and other minor information changes following October flooding incidents debrief.	Mark Bartlett and Ged McAllister	Peter Loker
April 2010 Version 2.0	Obsolete	Revised style of plan to bring in line with new LRF MAFP plan template. Also incorporates learning from recent activations. Severe Weather plan created as separate document.	Mark Bartlett Ged McAllister	Peter Loker
December 2010 Version 2.1	Obsolete	Minor amendments with new EA Flood Warning Codes and revisions to Council structure	Mark Bartlett	Mark Bartlett
May 2011 Version 2.2	Obsolete	Update amendments including new FWA at Burrow Beck	Mark Bartlett	Mark Bartlett & Env Agency
Version 2.3	Obsolete	Revisions following debrief of June and December 2012 flooding incidents and new sandbag policy	M Bartlett, G McAllister & M Davies	Management Team
Version 2.4	In preparation	Revisions following testing of plan during Exercise Wenning 2013, multi-agency training day 2014 and new (Halton) and revised (Skerton and Quayside) FWAs from EA	M Bartlett A Morphet	Andrew Dobson

The records below demonstrate when this Contingency Plan has been tested or activated.

Test Number	Test/ Activation Date	Type of Test (E.g. Live, Table-top) or nature of activation	Location	Test Facilitated By
Flooding scenarios have been used on several occasions since 2007 when training District Emergency Control Centre staff or testing DECC arrangements.				
1	280208	Table Top Exercise Argent	Washington Hall, Chorley	Russell Burton on behalf of EA
2	190308	Storm board deployment	Morecambe	Adrian Morphet (Engineers) & Kevin Kilifin (Env Services)
3	25 & 261008	Flood Alert notices	Flooding at Truckhaven (River Keer) Carnforth	Activation of plan.
4	181109	Flood Warning activation	Skerton Pool, River Lune FWA	Activation of plan
5	010210	Storm board deployment	Morecambe	Adrian Morphet (Engineers) & Kevin Kilifin (Env Services)
6	210311	Storm board deployment & new staff training	Morecambe	Ged McAllister (Engineers) and Peter Taylor (Env Services)
7	241111	Exercise Deucalion – table top test of MAFP Pts 1 and 2	Hutton Police HQ	Mark Bartlett and Bernard Kershaw
8	220612	Flood Warning activation	Burrow Beck and Galgate FWAs	Activation of plan
9	061212	Flood Warning activation	Burrow Beck FWA	Activation of plan
10	261113	Exercise Wenning Control Post exercise testing Part II Lancaster Flooding Plan	Quayside, Skerton Pool and Hornby FWAs used in scenario	Lancashire Resilience Forum Flooding sub-group. Exercise Director Neil Williams.
11	051213	Flood Warning activation – coastal areas Cockerham to Heysham and Sunderland Point.	Quayside, Sunderland Point and Promenade	Activation of Plan including deployment of Storm Boards
12	281114	Table-top exercise as part of multi-agency training event	The Platform Morecambe	Mark Bartlett and Lucy Clarke (EA)

Method

This plan details Lancaster City Council's systems and procedures for responding to flooding emergencies as defined by the Civil Contingencies Act 2004. These may arise from fluvial, tidal or other sources within the City Council area of jurisdiction. It explains the structures and responsibilities that exist in response to flood warning messages. It provides a written plan enabling any designated officer to respond effectively and efficiently to a flooding incident, providing an immediate and co-ordinated response, thus enabling any adverse effects on the public and / or environment to be minimised.

Environment Agency Flood Warning System - definitions

Flood Alert	Flooding is possible. Be prepared
Flood Warning	Flooding is expected. Immediate action required
Severe Flood Warning	Severe flooding. Danger to life.
Warnings no longer in force	No further flooding is currently expected in your area.

Warnings issued by the Environment Agency will identify: -

1. The Alert Warning type (Flood Alert/Flood Warning/Severe Flood Warning).
2. The Flood Warning Area.
3. An estimate of the time the flood level is likely to be reached (for tidal only).

Checklists of the actions to be taken by Council Officers on receipt of EA Flood Alert or Flood Warning messages are shown at **Appendix 'E'** towards the rear of this plan.

In addition to the two public warnings shown above there are the following additional notifications, which replace previous alerts as shown.

Warnings issued by the Environment Agency will identify: -

- 1 The Alert Warning type (Flood Alert/Flood Warning).
- 2 The Flood Warning Area.
- 3 An estimate of the time the flood level is likely to be reached (for tidal only).

Checklists of the generic actions to be taken by Council Officers on receipt of EA Flood Alert or Flood Warning messages are shown at **Appendix 'E'**

Summary of Local Flood Warning Service

Introduction

This section describes how the flood warning service is provided within the area covered by this plan. Flood Warnings only apply to areas previously identified to be at risk. A summary of the general arrangements is included along with an outline description of relevant arrangements for flood detection, flood forecasting, warning and response for each Flood Warning Area.

Flood Alert Service

The Flood Alert service applies to Lancaster district's coastal frontage and all river catchments within the City Council area. The major river catchment within this plan is:

- Upper River Lune
- Lower River Lune and Conder
- Morecambe Bay

Flood Warning Service

A Flood Warning service will be provided for the Flood Warning Areas listed below.

Tidal Flood Warning

Thurnham
Sunderland
Carnforth
Morecambe
Bolton-le-Sands
Hest Bank
Heysham

Fluvial Flood Warning

Lancaster Quay
Skerton Pool
Halton
Hornby
Galgate
Burrow Beck

Flood Warning Broadcasts

Environment Agency flood warnings will be broadcast by regular media bulletins on local radio and television. Where occupiers have signed up for the Environment Agency's service warnings will also be issued directly to people affected. The Agency's publication Guidance for Flood Warning Codes gives examples of the flood warning messages that the Agency issues. The methods used to communicate warnings in the Flood Warning Areas covered by this plan are:

- Floodline Warning Direct
- Loudhailers
- Media
- BBC Radio Lancashire
- Magic 999 (Preston)
- Rock FM
- The Bay

See relevant sections of Appendix 'F' for the Environment Agency Quickdial Code for the Flood Warning Area concerned.

Command Structure and Emergency Control Rooms

The Flooding and Severe Weather Plan provides an emergency procedure for dealing with flooding incidents from fluvial (river) and tidal sources. When flooding is likely, the Environment Agency will alert local authorities, including the City Council. This section of the plan identifies responsibilities and actions to be taken in such circumstances. The response once flooding is actually occurring is necessarily limited but the City Council will support the community and other agencies where possible and will be on hand to assist with the clean up once water has subsided.

The Duty Emergency Incident Officer (DEIO)

All Flood Alert and Flood Warning messages will be e-mailed to the DEIO and to the Engineering Team at the Council's Environmental Management service where they will be considered in accordance with the checklists at Appendices 'E' and 'F'

The Flooding Incident Officer (FIO) - Bronze

A Flooding Incident Officer (FIO) will always be nominated to initially respond to any Flood Warning messages and coordinate the Council's response. During office hours, or at times of high alert, the FIO will normally be a member of the Council's Engineering Team but for short notice events and those starting at the weekend the DEIO will initially take on this role.

Assistant Flooding Incident Officers

The FIO is responsible for designating Assistant Flooding Incident Officers (AFIO) as necessary to deputise in his/her absence, to act as standby officers, to monitor conditions in the event of a Flood Warning being issued, and to manage an engineering response in the event of a Flooding incident. Engineering Team officers have been trained to perform these duties. The AFIOs will normally be drawn from the Council's Engineering Team: They should usually be contacted through the team leader (Flooding matters).

During any flood warning situation one AFIO will normally be deployed to the Council's Emergency Call Centre to accept all calls from the public and coordinate an appropriate response to them. The officer will pass on messages and complaints concerning flooding directly to the Emergency Incident Officer, who will co-ordinate any necessary response.

District Emergency Controller – Silver

If the Council's District Emergency Control Centre (DECC – see below) has been opened the District Emergency Controller, (a Senior Emergency Officer or other nominated senior member of staff), will be appointed to take charge of the incident and the FIO will usually attend the DECC to hand over command of the incident and then support the Controller in coordinating the Council's response.

Chief Officer - Gold

For the most serious and widespread incidents the Lancashire Constabulary will open the Strategic Coordinating Centre at their headquarters at Hutton and a Senior Emergency Officer will attend there to represent the Council. Wherever possible, a trained EIO should accompany this officer to Hutton to act as staff officer and advisor.

Emergency Control Centres

Lancaster City Council: In the initial stages of a potential flooding incident the City Council's response will be initiated by the Emergency Call Centre, from where the Duty Emergency Incident Officer will be notified of the incident, contact maintained by Airwave radio and any actions requested by the DEIO can be carried out.

For the more serious or widespread incidents the Council's District Emergency Control Centre (DECC), will normally be opened to receive these calls and coordinate the Council's response, overseen by a senior Council officer – the District Emergency Controller. If for any reason DECC cannot be used a 'fall back' control centre, with limited facilities, is available.

Lancashire Constabulary: For widespread incidents the police may open a multi-agency Silver Control facility. Agencies will be expected to send a liaison officer to this room during the incident. For the City Council this will, if possible, be a trained Emergency Incident Officer, equipped with an Airwave radio.

Control Centre Location	Contact No.	Out of hours
Lancaster City Council Emergency Call Centre		
Lancaster City Council District Emergency Control Centre (if activated)		
Lancashire Constabulary Tactical Coordinating Centre (if activated)		
Lancashire Strategic Coordinating Centre, Hutton (if activated) Local Authority desk		
Lancashire Fire and Rescue Service NW Control		
North West Ambulance Service Broughton Control		
Environment Agency NW Region Flood Warning Centre		
Environment Agency NW Flood Resilience Team		

Role of agencies: The **Environment Agency** (EA) has sole responsibility for issuing the Flood Alert and Flood Warning messages. The EA issues warnings to alert the public, and the organisations that provide an emergency response during floods, so that they can take action. The aim of the warning system is to reduce the risk to life and damage to property by the provision of an

accurate, reliable and timely flood warning service. Additionally the EA maintains river and sea flood defence systems.

The current status of flood Alerts and warnings can be viewed at the Environment Agency website: <http://www.environment-agency.gov.uk/subjects/flood/floodwarning/> that operates on a 24 hour basis and is updated every 15 minutes.

The **Met Office** is responsible for issuing severe weather warnings to the emergency response community and the broadcast media so that they can take appropriate action and alert the public. They also supply information to the Environment Agency about likely catchment conditions to assist the EA in assessing the threat of flooding.

The **Police** are responsible for co-ordinating the responding agencies at any multi-agency land based incident major flooding event, as well as helping to save lives and protect property. The Lancashire Constabulary is responsible for the whole of the Lancaster District.

The Maritime and Coastguard Agency (MCA) are responsible for coordinating all multi-agency activities for incidents below the High Water mark and the **Coastguard Service must be consulted for any incidents involving the sea or tidal waters**. The MCA has access to various search and rescue resources that may be used for inland water operations as well as coastal and off shore incidents.

Lancashire Fire & Rescue Service are responsible for saving life in conjunction with the other emergency services and have expertise and access to rescue equipment that may assist in a variety of flooding incidents. They also have pumping equipment although in some circumstances may charge for pumping out operations.

Local Authorities are classified as Category 1 responders under the Civil Contingencies Act 2004 and are therefore have a statutory duty to “assess, plan and advise”. In major flooding situations, local authorities must provide an immediate response in order to advise and assist affected people, businesses and protect the environment. The precise nature of the response will depend on the magnitude of the incident, available resources and local arrangements. The City Council will also have a lead responsibility in any post incident recovery operations.

Other Operational Response issues

Available resources

Resources readily available to the City Council Emergency Response Team are shown at Appendix 'F'. In the event of a widespread or major flooding incident it may be necessary to request additional resources, either from partner Lancashire agencies or from other local authorities in Lancashire and further afield. For the largest incidents a Government Office Northern Resilience team may be activated and can assist in accessing further resources.

Sand Bag Policy

Local Authorities have no statutory obligation to provide materials for flood protection but Lancaster City Council's current policy is, if requested, to supply filled sandbags and deliver them to households and businesses although there is a charge for this service. However, the primary purpose of the stock of sand bags retained by the council is for temporary repairs to flood defences

within their ownership. This service will not be available at short notice or at the time of an extreme weather event. Further information on the Council **Sand Bag policy** can be found at **Appendix 'C'**

Flood and Sea Defence Repairs

Repairs to any flood or sea defence structures will usually be the responsibility of the owner. On main rivers, the E.A. has permissive powers as does the City Council for the coast. In the event of major flooding, works may be undertaken by the City Council's emergency workforce and recharged as appropriate

Breaches of flood defences

In the event of a breach of flood defences being reported the Council's Engineering Manager (or his nominee) must be contacted. The nominated Engineer may arrange for contractors to fill the breach with rock armour, and sand bags if necessary, as a temporary measure until a permanent repair can be planned and implemented.

Water Rescue operations

Local authority staff are not qualified or equipped to undertake water rescue operations and any work of this nature will be the responsibility of the Fire & Rescue Service, the Coastguards or the voluntary rescue services. Where it may assist those services the City Council will make equipment available to them through liaison at the Forward Command Point or Silver Control.

Basement properties

Particularly in coastal flooding situations at Morecambe, but a consideration in all incidents, will be the question of properties with basements, particularly any where people are accommodated. There are no current accurate records of such properties but operational discussions with other agencies must consider the need to warn and inform the occupiers of such properties.

Records and Surveys

The FIO and AFIOs will keep logs and records of all events and decisions. Surveys should be carried out to determine the extent of flooding and the rate of build up and dispersal to enable improvements to be made for future flood events. Records of previous surveys, kept in the Engineering Team office, should be examined during an incident to help assess potential effects. Sample log sheets are shown at **Appendix 'H'**. The EA has asked that copies of reports are sent to them for information and planning purposes. Engineering Services will collate and forward these.

Pumping and Drying Out

Pumping out of premises is the responsibility of the owner. The Fire & Rescue Service can be contacted for assistance in emergencies and may dispatch a flexible response officer to assess the situation and whether they can assist. Under the new Integrated Risk Management Plan they may charge for pumping out commercial premises but not domestic properties. The City Council's Health and Housing Service may be able to arrange drying out facilities for domestic properties.

Surface and Groundwater Flooding

Surface water flooding happens quickly and is hard to predict. It occurs when natural and man-made drainage systems have insufficient capacity to deal with rainfall. Critical factors for surface water flooding are the volume of rain, where it falls and its intensity. In urban areas sudden and intense rainfall cannot drain away as quickly as in rural areas where the soil is exposed.

Surface water flood events could occur without a Flood Warning, e.g. as a result of a blockage or collapse. Such situations are the responsibility of the landowner, or the Environment Agency but, if the watercourse in question is one that is maintained by the City Council, the Emergency Incident Officer may will liaise with the Engineers and Senior Emergency Officer to mobilise Council resources to address the problem. Regular programmed checks and maintenance of the watercourses and pumping stations are carried out to minimise and prevent such occurrences. All trash screens are inspected weekly to prevent build-up of blockages.

After a flooding event United Utilities should check that all sewers and their drains are functioning properly and not blocked. Any suspected blockages should be brought to their attention.

The City Council has the powers under the Land Drainage Act, 1991, to serve notice on landowners to carry out and recharge works. However, this is a lengthy process and is not normally appropriate in an emergency situation. Where a privately owned watercourse requires urgent works because it is causing a nuisance or gives rise to conditions prejudicial to health, powers are available under the Public Health Act / Environmental Protection Act. Health and Housing Service administers these powers on behalf of the Council.

Groundwater flooding occurs when the level of water underground (the 'water table') rises and water emerges above the natural surface. It generally happens in low-lying areas, particularly those which sit above layers of permeable rock such as chalk. Groundwater flooding events occur after prolonged heavy rain lifts the water table. Some areas of the District are known to be susceptible to this but it may also occur in new locations. In such an event a site meeting with other emergency services should be held to determine the best course of action, dependant on the circumstances. It should be noted that sand bags are usually ineffective in Groundwater flooding events as the water merely rises on both sides of any barrier.

Rapid Response Catchments

A rapid response catchment (RRC) is a watercourse where the geography of the catchment can mean that at times of intense rainfall the water level in the stream or river rises very quickly and flooding can ensue.

There are three such recognised catchments in the District. Two are covered by Flood Warning Areas in this plan, namely Burrow Beck in Bowerham and Hala and also Whitley Beck in Galgate.

The third RRC is that of the River Roeburn, flowing down to Wray Village. In 1967, during a violent storm, the village was the scene of a catastrophic (Boscastle style) flood which destroyed several houses and bridges. Thankfully no-one was killed but it illustrated the potential power of the Roeburn in spate conditions. At present there is no river gauge on the Roeburn and so flood alerts and warnings are not available but the area needs to be borne in mind during storm conditions.

Key installations and high risk premises

SC2 LANCASTER QUAY: Skerton and Greyhound Bridges (west side), Carlisle Bridge, Factories and business premises on Marsh Industrial Estate and Lancaster Quayside, Our Lady's High School. The main A589 and A6 roads pass through the area and would probably be affected.

SC3 RIVER LUNE AT SKERTON POOL: Skerton and Greyhound bridges (eastern side), Sainsbury's Supermarket, Lancaster Bus Station, Factories and business premises between Caton Road and the River Lune. The main Lancaster one-way road system and Caton Road pass through the area and would probably be affected.

L4 HORNBY FLOOD AREA: A683 road passes through the flood area. Hornby WWTW.

L35 GALGATE FLOOD AREA: A6 road from Jcn 33 to Lancaster passes through the flood area

L50 HALTON FLOOD AREA:

FL 42 BURROW BECK: Flooding could affect the A6 main road at the junction with Collingham Park and also the adjacent West Coast Main Line.

TL01 LANCASHIRE COASTLINE AT MORECAMBE: Morecambe High School. Basement properties on Morecambe promenade and adjoining streets. The A589/A5105 main coastal road runs almost the full length of the affected area.

TL27 LANCASHIRE COASTLINE AT CARNFORTH: A6 road north of Carnforth and Motorway Junction 35 may be affected by River Keer flooding as may the LCC waste recycling centre on A6 near the motorway junction. WCML railway runs at low level through part of the flooding area.

TL23 and 24 LANCASHIRE COASTLINE AT HEST BANK AND BOLTON-LE-SANDS: West Coast Main Line runs at low level through the two flooding areas. Boarding kennels in low lying fields to east of railway line.

TL05 LANCASHIRE COASTLINE AT SUNDERLAND: The White Lund industrial estate and associated business parks are vulnerable to extreme breach flooding as is the Heysham bypass.

TL04 LANCASHIRE COASTLINE AT HEYSHAM: Industrial and business premises in Heysham Port and surrounding area.

TL22 LANCASHIRE COASTLINE AT THURNHAM: Access road to Glasson Dock will be affected. Various caravan sites in the area are vulnerable to flooding.

Key operational sites

SC2 LANCASTER QUAY: None identified. Some premises previously in this FWA are now in SC3.

SC3 RIVER LUNE AT SKERTON POOL:

L4 HORNBY FLOOD AREA:

L35 GALGATE FLOOD AREA: None identified

L50 HALTON FLOOD AREA: None identified

FL42 BURROW BECK: None identified

TL01 LANCASHIRE COASTLINE AT MORECAMBE: RNLI lifeboat station. Morecambe Town Hall is not thought to be directly at risk but approach roads may be under water.

TL27 LANCASHIRE COASTLINE AT CARNFORTH:

TL24 LANCASHIRE COASTLINE AT HEST BANK AND BOLTON-LE-SANDS: None identified

TL05 LANCASHIRE COASTLINE AT SUNDERLAND: None identified

TL04 LANCASHIRE COASTLINE AT HEYSHAM: None identified

TL22 LANCASHIRE COASTLINE AT THURNHAM:

Evacuation procedures

Evacuation considerations for each area are shown in the relevant part of Appendix 'F'.

Vulnerable people

The Council will be particularly concerned to protect the vulnerable and will work with other agencies to achieve this. The Environment Agency's Floodline Warnings Direct contains the addresses of properties in flood risk areas. Additional information about vulnerable people within those areas may be available from various responder agencies. The Council will be able to contribute to information about vulnerable people with specific information from Council Housing (Sheltered Accommodation) and Strategic Housing (Disability living grants).

WARNINGS NO LONGER IN FORCE

End of Operations

When the notification is given by the EA (River Flooding emergency is over), or at an appropriate time after high tide, the Flooding Incident Officer will **inform all individuals and organisations with whom he/she has liaised with during the emergency** and request copy records of the incident.

All equipment must be returned to White Lund depot, or any other location it has been drawn from. Where appropriate the necessary maintenance, repair and replenishment of stocks should be carried out as soon as practicable so that the Council is ready for any further flooding.

ADMINISTRATION

Finance

In the event of any significant flooding incident Financial Services will provide support and assist the incident controllers to monitor expenditure and access the necessary resources. Further details regarding the powers of local authorities to incur expenditure, the Bellwin scheme for cost recovery and the management of any disaster relief funds can be found in the District Emergency Plan.

Debrief

After an incident of this nature it is appropriate to debrief the incident, assess the response and determine whether any revision is needed of the plan and procedures. For the largest incidents the Lancashire Resilience Forum will usually arrange a multi-agency debrief and it would be appropriate to hold an internal City Council debrief before the multi-agency review takes place. The Civil Contingencies Officer will usually make arrangements for this to take place.

Recovery procedures

After severe flooding the Council will be expected to take the lead in the Recovery Phase and the return to normality. This stage of the operation is detailed in the Council's **Community Recovery Plan**, which follows the latest national guidance. For major flooding and/or severe weather incidents, and where it is apparent from an early stage that there will be significant recovery issues a Recovery Group should be formed whilst the operational response is still live so that there is a plan for the Recovery Phase and a seamless transfer when the operational response concludes

Communications

A number of **Emergency communication methods** are available to the Council in an emergency situation. These include:

Landline telephony: The Council has dedicated number for the District Emergency Control Centre via the Council switchboard and in reserve two independent British Telecom telephone lines.

Mobile telephony: All Emergency Incident Officers, District Emergency Controllers and Senior Emergency Officers have mobile telephones (numbers kept in Emergency Call Centre). The DEIO phone is registered under the Mobile Telecoms Privileged Access Scheme (MTPAS) giving preference over other phones should mobile telephony be overwhelmed at an incident scene.

Satellite telephone: The Council has been issued with a satellite telephone for emergency purposes. This is kept in the District Emergency Control Centre where operators have been trained to use it. The confidential number of this telephone is .

Airwave radios: The Council has Airwave radios, equipped with Council only talk groups and also Interoperability talk groups enabling dialogue with emergency services, subject to such a talk group being opened on Airwave request.

As the Council is a registered Airwave user it would be permissible in a widespread emergency to request the loan of further radio handsets from another user organisation such as the Lancashire Constabulary, who maintain a small stock of handsets for emergency use by other organisations.

The RAYNET (Amateur Radio) organisation may well be able to assist with Communications – both radio and telephony – during a major incident. As a voluntary organisation they can be accessed through the County Emergency Planning Service.

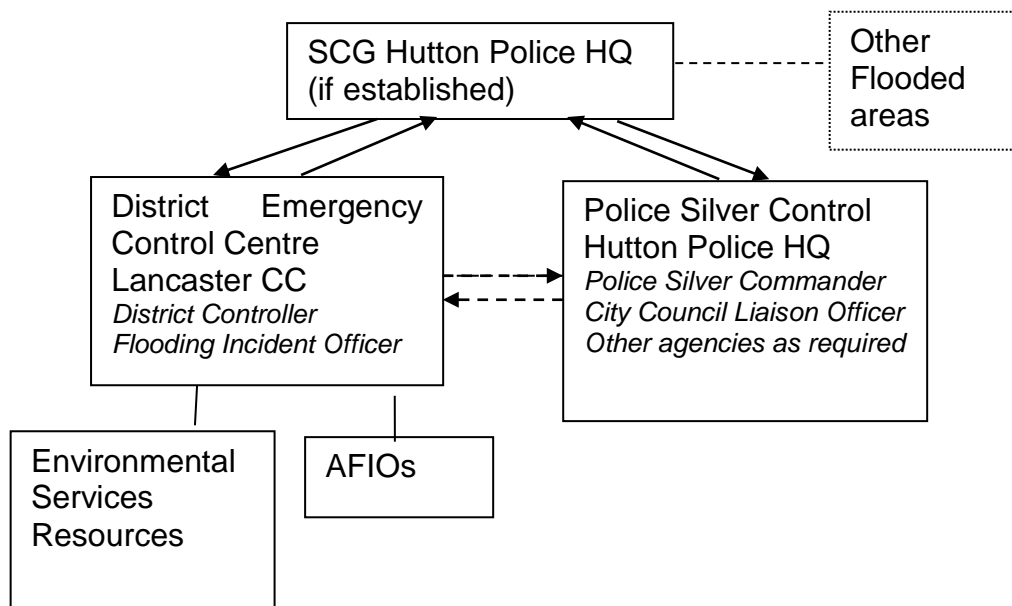
Press and Media Communications

The Council's Communications officers will provide media statements and press releases in conjunction with their counterparts in other responding agencies. They will also monitor and record media sources for information and ensure this is fed to the DECC manager for onward communication and dissemination. The overall aim is to provide media and communications support to the Council to allow it to meet its obligations as a Category 1 Responder agency in using the media to keep the general public informed.

In a flooding emergency it can be expected that BBC Radio Lancashire will cease normal programme transmissions and move into its public service broadcasting role known as Connecting in a Crisis. Further information can be obtained from <http://www.bbc.co.uk/connectinginacrisis/> . It is essential that this medium and others are used to pass up to date information messages to the public on a frequent and regular basis.

Organisation structure

The diagram shows how control centres in this plan talk to each other and to operational units.



Appendix A

Contact Numbers – correct as at October 2015

For the most up to date external numbers see the latest LCC Emergency Contacts list (issued monthly) – available from Emergency Call Centre, Civil Contingencies Officer or in DECC.

Lancaster City Council

Personal contact details of members of staff are securely held in the Emergency Call Centre and will not be released other than for appropriate emergency situations.

Engineering Team (includes Assistant Flooding Officers)	Working Hours Out of Hours
Duty Emergency Incident Officer (Contact via Emergency Call Centre)	24 hrs Mobile
Duty Senior Emergency Officer (Contact via Emergency Call Centre)	24hrs
Civil Contingencies Officer	Office Mobile
Emergency Call Centre	24 hrs public number
Environmental Services Chief Officer	Working Hours
Duty Officer	Working Hours Mobile

Other Organisations (Numbers not to be released to the public)

Coastguard	Crosby MRCC (24 hours)
Environment Agency, Warrington	24hr Regional Incident Hotline Emergency Contact Number NW Regional Office Flood Warning Room, Preston
Floodline (Information)	24hrs recorded information Fluvial 0222 Tidal 02242
Met Office NW England Regional Advisor Exeter Operations Centre	0161 740 6857 01392 886095
Lancashire County Council	
Emergency Planning Marsh Lane offices, Preston	Working Hours Fax Out of hours

Flooding plan
December 2015
Lancashire Constabulary

Divisional HQ, Lancaster
Police HQ, Hutton (Switchboard)
Force Incident Manager

Lancashire Fire & Rescue Service

Lancaster Fire Station
Morecambe Fire Station
Headquarters, Broughton

Office hours

North West Fire Control

24 hours
General Admin

North West Ambulance Service

Control Room, Broughton

24 hours
Secondary number

British Waterways

Regional office

Office Hours
Other Hours
Duty Manager

BT Security (Civil Resilience)

Network Rail

Emergency Contact

Route Zone Control

National Grid (Elec)

24 hours emergency number

National Grid Transco (Gas)

Emergency resource stocks
All Hours

Electricity North West Ltd.

24hr (General power outages)
24hr (Duty Manager Major Inc)
24 hr (Life and Death issues)

United Utilities (Water and Wastewater)

HQ, Warrington

Pumps, generators,
communications
Gen Enquiries 24 hrs
Cat 1 calls 24 hrs (North Rgn)
Cat 1 calls Duty Manager
Office

Emergency Planning

Pumping and Electrical Maintenance Contractors

Out of hours

Watercourse Maintenance Contractor

LCC CCDS

Office hours
Mobile

Community contacts

Sunderland Point

Appendix B

PUMPING STATION AND SCREEN LOCATIONS

Lancaster City Council Pumping Station Locations

<u>NAME</u>	<u>LOCATION REFERENCE</u>	Location Grid Reference

**** Trash screens on
core water courses
are maintained by
the Environment
Agency**

**Trash
Screen
Locations**

Screen ID	Council Maintained**	Name	Road	W
------------------	---------------------------------	-------------	-------------	----------

Appendix C

Sand Bags – Policy, Drop Zones, Suppliers & Advice

Policy on provision of Sandbags for Flood Defence

Sandbags can make a critical difference in diverting shallow flowing water that has somewhere else to go, or deflecting waves caused in shallow water by passing vehicles. However, they are not waterproof and will fail to keep floods out of buildings where the mean water level outside is higher than the doorstep or any airbrick ventilators.

Local Authorities have no statutory obligation to provide materials for flood protection but, in accordance with current Council policy, as a contingency against potential flooding risks, filled sand bags will be delivered to members of the public or businesses who order them. There is a charge for this service. This service is intended to allow preparations to be made to protect vulnerable properties in advance. This service will not be available at short notice or at the time of an extreme weather event. Details of other suppliers of sandbags are shown below.

These **Builders Merchants** in and around the City Council area have advised the Council that they will supply empty sand bags and sand and will deliver these. Delivery charges vary dependant on the value of the order and distance involved but in some cases free delivery is offered.

Also, some firms will fill the bags before delivery although an extra charge will be levied for this.

Builders Supplies (West Coast) Ltd, Middlegate, White Lund Industrial Estate, Morecambe.
01524 842299 www.bswc.biz

C & C Supplies (Collinson) Ltd, Nateby Works, Garstang PR3 0JB
01995 606311 <http://ccsupplies.co.uk>

Jewson Ltd, White Lund Rd, Morecambe.
01524 68878 www.jewson.co.uk

Keyline Builders Merchants Ltd, Marsh Point, Lancaster
01524 34141 www.keyline.co.uk

Naylor Myers Ltd, Cumberland Close, Low Bentham Road, Bentham LA2 7BP
01524 261389 www.myersgroup.co.uk

Travis Perkins, Euston Rd, Morecambe LA4 5LN
01524 410056 www.travisperkins.co.uk
(Branches also at Sandside and Kendal)

Travis Perkins also has submersible pumps available for hire.

Advice: Householders should not rely on the Council being able to respond to all needs in an emergency and should reflect upon measures they can take now to prepare for potential future

flooding. The Council recommends that occupiers of vulnerable properties use recognised flood defence products rather than sandbags to provide proper protection. **Removable Flood Boards**, air brick covers and other similar devices are a significantly more effective and convenient means of preventing water entry to properties than sandbags, and can be fitted by any reputable local builder.

Comprehensive and helpful advice on planning ahead for such emergencies is available on the following Websites:

- **Environment Agency – FLOODLINE Home Page:**

Information on Flood Warnings; Suppliers of Flood Protection Products; General Flood Protection and safeguarding your home

www.environment-agency.gov.uk/subjects/flood

<http://www.environment-agency.gov.uk/subjects/flood/floodwarning/>

or by calling the Environment Agency **FLOODLINE** on **0845 988 1188**.

- **Met Office**

Information on weather forecasting, weather warnings, climate change, business services

<http://www.metoffice.gov.uk/>

Appendix 'D'

Environmental Services – Composition of an Emergency Response Team

If flooding or severe weather is forecast the Council may decide to put resources on stand-by. A basic Emergency Response Team should comprise three members of staff using a council vehicle, ideally a Hiab crane fitted lorry. Dependant on the circumstances of the event suitable equipment should be taken and the deployed officers may use the checklist below - which is not exhaustive:

Equipment is kept at White Lund Depot.

Pallet(s) of sandbags

Wheelbarrow(s)

Set of manhole keys

Pickaxe and Sledgehammer

Shovels and Brushes

Hand-held torches

Traffic cones

Hazard-warning lamps

“Men at work” signs

“Flood danger” signs

Black plastic bin-liners

Large rake (for clearing culvert screens)

Rope

Hazard Tape

PPE - including waders

Basic hand tools - pliers, screwdrivers etc.

'Road closed' signs (for deployment on police authority)

For more serious incidents, and subsequent clean up operations, consideration must be given to deploying additional teams and special equipment. During an incident it is essential that the team(s) have ready access to the Stores for additional equipment and materials. The safety of Council staff deployed to flooding incidents is of the utmost importance and they must be briefed on potential dangers and the importance of working safely.

APPENDIX 'E'

Flood Alert and Warning - general procedures

The Environment Agency's system for contacting all the Authorities and Agencies that may be affected by a predicted flooding event has been previously referred to. The Council receives these messages via the Star Fax system and they are then passed to Engineering, Environmental Protection, Environmental Services, the Emergency Call Centre, the Civil Contingencies Officer and the Duty Emergency Incident Officer. This section outlines the Council's procedures to be adopted for each type of message.

Flood Alert Procedures

On receipt of an EA Flood Alert notification the Duty Emergency Incident Officer will liaise with the Council's Engineering Team and all the available information will be considered including weather forecasts, previous weather and the likelihood of a worsening situation. They will determine if any action is required by the Council. Whilst many Flood Alert notifications are unlikely to require practical activities by the Council it is important to be fully aware of the situation and the officers will address the items identified on the checklist shown here.

- Consider informing the City Council Emergency Call Centre
- Consider informing the Senior Emergency Officer
- Discuss the situation with the Senior or Assistant Operations Manager at White Lund Depot including available resources, personnel, equipment, sandbags and whether an Emergency Response Team should be put on stand by. Discussion should take place as soon as possible in working hours as once staff have left it can be difficult to muster a team.
- Consider the specific checklist for the area(s) for which the Flood Alert has been received and where necessary carry out any additional actions such as those for Sunderland Point.
- Be aware that flooding could occur in the specified or other areas.
- Be aware that the situation could worsen.
- Monitor local conditions
- Maintain an operational log of events and decisions.

Flood Warning

On receipt of an EA Flood Warning message a Flooding Incident Officer (FIO) will be appointed. During office hours or when such a warning has been anticipated the FIO will be a member of the Council's Engineering Team but for short notice events outside office hours the Duty Emergency incident Officer will take on this role, at least initially. The FIO should use the checklist shown below and keep a log of decisions made and action taken.

Flooding Incident Officer checklist:

- Inform the Senior Emergency Officer, the Head of Health and Housing (or nominated deputy) and the Duty Manager at Salt Ayre Sports Centre
- Inform the officers who may act as Assistant Flooding Incident Officers
- Inform the Duty Emergency Incident Officer (if not already aware).
- Establish contact with the EA Flood Warning Officer at the control room then maintain regular contact.
- Study the information from the EA, from Flood Risk maps (in the Engineering Section), this plan and any other sources of information to determine likely areas where action will be required.
- Confirm with the Operations Manager at White Lund depot that an Environmental Services team will be placed on standby. Discussion should take place as soon as possible in working hours as once staff have left it can be difficult to muster a team.
- Discuss with Senior Emergency Officer whether to open the DECC.
- Inform the Council's 24 hr Emergency Call Centre.
- Ensure telephone calls from the public are received and recorded.
- Establish contact with Lancashire Constabulary, Lancashire Fire & Rescue Service and Lancashire County Council Emergency Planning Unit. It can be anticipated that the police will have nominated a local inspector to coordinate the emergency response to flooding incidents and this officer should be contacted to discuss whether there is a need to establish a multi-agency control. Maintain liaison with all these agencies as necessary.
- Request further assistance from Assistant FIOs if necessary. The AFIOs will be deployed to monitor local conditions as directed.
- Consider the checklist for the area(s) concerned and implement any necessary local actions (such as those for Sunderland Point).
- Mobilise resources as necessary, including the Environmental Services Emergency Response Team (See Appendix 'E'), equipment, sandbags and the AFIOs to the areas where most needed.

- Maintain regular contact with all AFIOs and the Environmental Services Emergency Response Team to continuously monitor the overall situation and determine priorities.
- Consider the need to make available or distribute sandbags (see Appendices C and E)
- Liaise with other agencies regarding any properties with occupied basements that may be affected and the need to warn the occupiers.
- Liaise with County Council Highways Department regarding the need to erect warning signs and/or close roads to traffic, under the approval and direction of the Police.
- Call out additional resources as necessary from Environmental Services.
- Consider the need for further resources from external organisations. Consult with and obtain the approval of the Senior Emergency Officer before requesting mutual aid.
- Consider the need and prepare for the possible evacuation of the public in areas of risk.
- Maintain an operational log of events, and ensure AFIOs maintain detailed personal logs
- Ensure that the incident is debriefed after the event has concluded.

Severe Flood Warning Procedures

A Severe Flood Warning will only be declared by the EA after liaison with other LRF partner agencies and agreement of the severe risk to the public. On declaration of a Severe Flood Warning a Flooding Incident Officer (FIO) will be appointed if this has not already been done. Usually the FIO will be a member of the Council's Engineering Team but for short notice events outside office hours the Duty Emergency Incident Officer will take on this role, at least initially. The FIO should use the checklist shown below and keep a log of decisions made and action taken. The checklist may not be exhaustive and after a Severe Flood Warning matters must be kept constantly under review by the FIO and the District Controller, working with LRF partners, as new responses may be needed to the unfolding situation.

Remember that a Severe Flood Warning means that lives may be in danger and so the checklist items must be addressed promptly and the seriousness of the situation conveyed to all concerned.

Flooding Incident Officer (and District Emergency controller) checklist:

- Inform the Senior Emergency Officer, the Head of Health and Housing (or nominated deputy), Assistant Flooding Incident Officers, Duty Manager at Salt Ayre Sports Centre and the Duty Emergency Incident Officer.
- Confirm with the locally nominated police inspector and other responder agencies the need for a multi-agency control room to be established.
- Continue regular contact with the EA Flood Warning Officer, the Police, Fire & Rescue Service and LCC Emergency Planning Unit.
- Study the information from the EA, from Flood Risk maps, from this plan and any other sources of information to determine likely areas where action will be required.
- Inform the Council's 24 hr Emergency Call Centre.
- Confirm with the Senior Emergency Officer the need to establish a DECC for overall planning and control of Council operations. Once established the FIO should relocate there and work alongside the District Controller to interpret the likely effect of EA and Met Office predictions and advise on likely developments that will need a Council response.
- Consider nominating an Assistant Flooding Incident Officer (AFIO) to be based at the DECC/Customer Service Centre, as most public calls will be flooding related. It may also be necessary to have a Police representative in attendance.
- Arrange issue of public safety messages through the Council Communications Team.
- Continue to monitor local conditions especially at the known primary flooding areas.
- Continue to monitor weather forecasts, tide gauges and maintain liaison with the EA.
- Request further assistance from AFIOs and deploy as necessary to monitor conditions.

- Through DECC dispatch emergency response teams to areas where they are most needed but recognise the potential dangers of a Severe Flood Warning situation, and the teams limited capabilities. Ensure staff are properly briefed and do not put themselves in danger. Teams will be needed for 'clean up' when waters have subsided and should not be unnecessarily committed to floods.
- Maintain regular contact with AFIOs and Emergency response teams.
- Liaise with County Council Highways Department regarding the need to erect warning signs and/or close roads to traffic, under the approval and direction of the Police.
- Call out further resources as necessary from Environmental Services and Contractors.
- Discuss with Ops Manager at WLD the need for more sand bags to be filled or obtained.
- Consider the need for extra resources from external organisations. Consult and obtain approval of the District Controller or Senior Emergency Officer as necessary.
- Update the Emergency Call Centre/DECC/Customer Service Centres on a regular basis, particularly with information that can usefully be passed to the public.
- Consider with other agencies the need for possible evacuation of the public in areas of risk and if necessary prepare to open rest centres.
- Consider with other agencies whether any properties with occupied basements may be affected and the need to warn the occupiers.
- Consider the need to protect any vulnerable Council properties or infrastructure (including the Cable Street offices) and the possibility of moving vulnerable equipment or vehicles from White Lund Depot or other premises to safer locations.
- Consider the need to make parking available for vehicles displaced from flooded areas
- Maintain operational log of events/decisions. Ensure AFIOs maintain detailed personal log
- If the flooding event is expected to continue for an extended period, the District Controller must arrange a shift rota for all personnel involved to ensure continuity of cover.
- If conditions are such that major flooding and disruption is experienced, the District Controller will consult with the Senior Emergency Officer who may declare a Major Incident and bring the Council's District Emergency Plan into operation. In this situation the District Emergency Control Centre may operate under the direction of a Senior Emergency Officer.
- Arrange the early establishment of a Recovery Group to allow parallel working and a seamless transition into the Recovery phase once the operational response has concluded. The Council's **Community Recovery Plan** explains how this group and other sub groups will work and should be used for this aspect of the Council's response.

Appendix 'F'

Flood Warning areas in the Lancaster district

SC2 LANCASTER QUAY

012FWTSC2

FWA Quickdial Code 0222112

The Lancaster Quay Flood Warning Area lies within the Lower River Lune and Conder Flood Alert Area. The Flood Warning Area comprises the low lying area adjacent to the River Lune in Lancaster including St. Georges Quay.

The area is most at risk from tidal flooding but high flows in the River Lune can elevate levels at Lancaster Quay. The Flood Warning Area is shown on the Lancaster Quay map. New defences now protect St Georges Quay to a 100 year standard and a 200 year standard beyond Carlisle Railway Bridge, providing the demountable gates are in place.

There are a total of **1281 properties** at risk from flooding in the Lancaster Quay area. See Environment Agency Flood Warning Area Map at Appendix 'G'

Lead Times

The EA published local target for issuing warnings is 2 hours ahead of flooding.

Thresholds at Lancaster Quay Gauge

Flood Alert: 6.25mAOD (Actual)

This Flood Warning Area is divided into sub-areas that are listed below.

Flood Warning Area	Flood Warning Area Reference Code ¹	Locations Affected	Messages issued
River Lune at Lancaster Quay Area A	012FSTSC2A	Low lying land including Our Lady's Catholic College, and Properties off and including Lune Street, Earl Street, Greyhound Bridge Road, Morecambe Road and Owen Road	Flood Warning sub area Flood Warning update Severe Flood Warning
River Lune at Lancaster Quay Area B	012FSTSC2B	Low lying land including properties on St Georges Quay, River Street and Damside Street	Flood Warning sub area Flood Warning update Severe Flood Warning
River Lune at Lancaster Quay Area C	012FSTSC2C	Low lying land including Lune Industrial Estate, properties off and including Lune Street and Lancaster Cricket Club	Flood Warning sub area Flood Warning update Severe Flood Warning

¹ The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that partner agencies receive when a warning is issued

Property numbers and Probability of flooding

The number of properties that the EA expect to be affected by flooding in the Flood Warning Area will be reported to partners in the messages received from FWD. This Flood Warning Area is divided into Sub-Areas that are listed below

Flood Warning Area Reference Code ¹	Frequency of flooding	Probability of flooding	Trigger level (Ordnance Datum)	Number of properties
012FSTSC2A	1 in 25 yrs	4%	6.89mAOD	334
012FSTSC2B	1 in 100 yrs	1%	7.75mAOD	239
012FSTSC2C	1 in 200 yrs	0.5%	8.05mAOD	708

The Environment Agency advise that the amount of time between warning and flooding for this Flood Warning Area is approximately two hours. They will endeavour to give at least a two hour lead time for Flood Warnings, however this may not always be possible. There is no target lead time for Severe Flood Warnings as these may be issued before, during or after flooding.

Communication of Flood Warnings

Flood Warnings for this area will be sent to the public using the following methods:

Flood Warning Area Reference Code ¹	Quickdial Code	Warning Method
012FSTSC2A	0222112	Floodline Warnings Direct
012FSTSC2B	0222112	Loudhailers
012FSTSC2C	0222112	Media BBC Radio Lancashire Bay Radio

History of Flooding in this area (River defences constructed 2007-09)

Year	Month/Period	Properties/Area affected
2013	January	Surface water St Georges Quay area
2005	January	Former Lune Square (Damside St) area
2002	February	St Georges Quay and Aldcliffe area
2001	February	Aldcliffe area
1999	November	St Georges Quay area
1997	February	St Georges Quay and Aldcliffe area
1997	February	St Georges Quay area
1995	January	St Georges Quay area

Location of EA Flood Defences

Environment Agency flood defences in this area comprise flood walls and raised banks. There are other defences which are not owned or operated by EA and are not listed in this section.

Additional Operational Response by EA

Demountable flood defences will be installed across the road at St. Georges Quay when necessary to maintain the level of protection.

¹ The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that partner agencies receive when a warning is issued

Flood Warnings:

Response

Triggers	Area Affected	Response
<p>Flood Alert</p> <ul style="list-style-type: none"> • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments • Forecast snowmelts. 	<p>Lower Lune and Conder Catchment, including Lancaster Quay</p>	<p>Consider general items in Flood Alert checklist (Appendix 'D') and in addition:</p> <ul style="list-style-type: none"> • Inspect and evaluate • Verify conditions • Check if EA will be closing floodgates • Monitor conditions • Escalate or downgrade as deemed necessary
<p>Flood Warning</p> <ul style="list-style-type: none"> • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments, • Forecast snow melts, • Rising levels (trigger point reached), • Forecast level exceedance predicted, • Site observations, • Actual flooding, • Rainfall accumulations eg Flash flooding 	<p>River Lune Lancaster Quay A 012FSTSC2A Low lying land including Our Lady's Catholic College, and Properties off and including Lune Street, Earl Street, Greyhound Bridge Road, Morecambe Road and Owen Rd B 012FSTSC2B Low lying land including properties on St Georges Quay, River Street and Damside Street C 012FSTSC2C Low lying land including Lune Industrial Estate, Properties off and Including Lune Street and Lancaster Cricket Club.</p>	<p>Consider general items in Flood Warning checklist above and in addition:</p> <ul style="list-style-type: none"> • Bring in additional resources as required • Contact partner agencies as required • Confirm floodgates are being closed • Consider closing main roads and implementing diversions • Where possible warn occupiers of properties in Zones 'A' 'B' and 'C', which includes properties on the roads shown (left) and consider evacuation. • Notify vulnerable contacts • Consider delivery of sandbags to Quayside • Notify rest centres if conditions deteriorate. •

<p>Severe Flood Warning</p> <ul style="list-style-type: none"> • Notification agreed with LRF Partner agencies to be appropriate • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments, • Forecast snowmelts, • Rising levels (trigger point reached), • Forecast level exceedance predicted, • Site observations, • Actual flooding, • Rainfall accumulations e.g. Flash flooding, • Professional judgement, • Site observations of severe flooding, High trigger point exceedance 	<p>River Lune Lancaster Quay</p> <p>FWAs A, B & C above</p>	<p>As above, plus</p> <ul style="list-style-type: none"> • Open rest centres • Close roads and implement diversions • For the most extreme events, give full consideration to evacuation as these areas will be at risk under these circumstances. • Activate Council District Emergency Plan.
---	--	--

* The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails when a warning is issued by the Environment Agency

Defences

The quayside defences were constructed in 2007-9 to provide a standard of protection up to 1:100 years. They comprise a rear wall with gated and demountable access points.
Level of top of rear wall 7.8m

Food gates and demountable barriers will be closed/installed by the Environment Agency when river levels are predicted to be over 6.0m



Evacuation

If evacuation is necessary from Skerton the approach route should be from Morecambe Road and Slyne Road with evacuation carried out in reverse.

If evacuation from the Quayside is necessary a road approach should be via Lune Road, except in the most extreme events when this will also be flooded. An alternative access to the quayside properties would be the cycle track from Long Marsh Lane down to the quayside.

The Lancaster Quay Flood Warning Area lies within the Lower River Lune and Conder Flood Alert Area. The Flood Warning Area comprises the low lying area adjacent to the River Lune from Halton to Skerton Weir plus low lying land on the east side of the river down to Damside St.

There are a total of **641 properties** at risk from flooding in the Skerton Pool area. See Environment Agency Flood Warning Area Map at Appendix 'G'

Area Affected

The localities affected and the impact of these messages within this particular Flood Warning Area is described in the table below.

Flood Warning Area	Flood Warning Area Reference Code ¹	Locations Affected	Messages issued
River Lune at Skerton Pool Area A	012FWFSC3A	Low lying land including Lansil Way, Riverside Industrial Estate and Halton Training Camp.	Flood Warning sub area Flood Warning update Severe Flood Warning
River Lune at Skerton Pool Area B	012FWFSC3B	Low lying land including properties on and including Damside Street, North Road, Parliament Street, Kingsway, The Ramparts and Aldrens Lane, Lansil Industrial Est and Riverside Industrial Est.	Flood Warning sub area Flood Warning update Severe Flood Warning

Property Numbers and Probability of Flooding

The number of properties that the EA expect to be affected by flooding in the Flood Warning Area will be reported to partners in the messages received from FWD. This Flood Warning Area is divided into Sub-Areas that are listed below

Flood Warning Area Reference Code	Frequency of flooding	Probability of flooding	Trigger level (Station Datum) ²	Number of properties
012FWFSC3A	1 in 5 yrs	20%	2.23mASD	1
012FWFSC3B	1 in 25 yrs	4%	2.99mASD	640

The EA believe that the amount of time between warning and flooding for this Flood Warning Area is approximately two hours. The EA will endeavour to give at least a two hour lead time for Flood Warnings although this may not always be possible. There is no target lead time for Severe Flood Warnings as these may be issued before, during or after flooding.

¹ The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that partner agencies receive when a warning is issued

² Thresholds at Skerton Weir gauge stated in relation to Station Datum (mASD). To convert to mAOD add on 4.75m

Flood Warning Area Reference Code ¹	Quickdial Code	Warning Method
012FWFSC3A 012FWFSC3B	0222113 0222113	Floodline Warnings Direct Loudhailers Media BBC Radio Lancashire Bay Radio
Should the main methods fail the EA will endeavour to fax Flood Alerts and Warnings to those organisations covered by this plan using a fax bureau service.		

History of Flooding in this area

Year	Month/Period	Properties/Area affected
2005	January	Halton, Skerton and Lansil Industrial areas
2005	January	Halton and Skerton areas
2002	February	Halton, Lansil and Riverside Industrial areas

Location of EA Flood Defences

Environment Agency flood defences in this area comprise flood walls and raised banks. There are other defences which are not owned or operated by EA and are not listed in this section.

Response

Triggers	Area Affected	Response
Flood Alert <ul style="list-style-type: none"> Severe weather warnings, Heavy rainfall warnings, Forecast thunderstorm activities, Forecast rain on saturated catchments Forecast snowmelts. 	Lower Lune and Conder Catchment, including Skerton Pool	Consider general items in Flood Alert checklist (Appendix 'D') and in addition: <ul style="list-style-type: none"> Inspect and evaluate Verify conditions Monitor conditions Escalate or downgrade as deemed necessary

<p>Flood Warning</p> <ul style="list-style-type: none"> • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments, • Forecast snow melts, • Rising levels (trigger point reached), • Forecast level exceedance predicted, • Site observations, • Actual flooding, • Rainfall accumulations e.g. Flash flooding 	<p>River Lune Skerton Pool A 012FWFSC3A Low lying area adjacent to the River Lune from Halton to Skerton Weir, including Lansil Way, Halton Training Camp and Riverside Park Industrial Estate. B 012FWFSC3B Low lying land including properties on and including Damside Street, North Road, Parliament Street, Kingsway, The Ramparts and Aldrens Lane, Lansil Industrial Estate and Riverside Industrial Estate.</p>	<p>Consider general items in Flood Warning checklist above and in addition:</p> <ul style="list-style-type: none"> • Bring in additional resources as required • Contact partner agencies as required • Consider closing main roads and implementing diversions • Where possible warn occupiers of properties in Zones 'A' and 'B', which includes properties on the roads shown (left) and consider evacuation. • Notify vulnerable contacts • Notify rest centres if conditions deteriorate. •
<p>Severe Flood Warning</p> <ul style="list-style-type: none"> • Notification agreed with LRF Partner agencies to be appropriate • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments, • Forecast snowmelts, • Rising levels (trigger point reached), • Forecast level exceedance predicted, • Site observations, • Actual flooding, • Rainfall accumulations e.g. Flash flooding, • Professional judgement, • Site observations of severe flooding, High trigger point exceedance 	<p>River Lune at Skerton Pool</p> <p>This comprises Area A and Area B, see above.</p>	<p>As above, plus</p> <ul style="list-style-type: none"> • Open rest centres • Close roads and implement diversions • Where possible warn occupiers of properties throughout Zones A and B and consider evacuation. • Activate Council District Emergency Plan.

L4 HORNBY FLOOD AREA

012FWFL4

FWA Quickdial Code 0222122

The Flood Warning Area comprises the low lying area adjacent to River Wenning including Main St, Station Rd, Lancaster Rd, Stanley Drive and the Wastewater Treatment Works. **162** properties are potentially affected by flooding in Hornby village. See Environment Agency Flood Warning Area Map at Appendix 'G'

Triggers	Area Affected	Response
<p>Flood Alert Lower Lune and Conder Catchment</p> <ul style="list-style-type: none"> • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments • Forecast snowmelts. 	<p>Lower Lune and Conder Catchment, including: River Wenning at Hornby A 012FWFL4A 8 properties North of Hornby Bridge to the junction with Post Horse Lane including Old Vicarage Rest Home are specifically at risk. The Flood Alert also applies to various other communities alongside the River Lune and its tributaries.</p>	<p>Consider general items in Flood Alert checklist (Appendix 'D') and in addition:</p> <ul style="list-style-type: none"> • Inspect and evaluate • Verify conditions • Monitor conditions • Escalate or downgrade as deemed necessary
<p>Flood Warning (Hornby)</p> <ul style="list-style-type: none"> • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments, • Forecast snow melts, • Rising levels (trigger point reached), • Forecast level exceedance predicted, • Site observations, • Actual flooding, • Rainfall accumulations e.g. Flash flooding 	<p>River Wenning at Hornby B 012FWFL4B: A further 103 properties including: North of Hornby Bridge to Monteagle Drive junction. Properties on Monteagle Drive, Hornby Hall Close and Post Horse Lane. Properties south of Hornby Bridge on Main Street, and the first sections of Lancaster Road and Station Road.</p>	<p>Consider general items in Flood Warning checklist (Appendix 'D') and in addition:</p> <ul style="list-style-type: none"> • Bring in additional resources as required • Consider delivery of sandbags to Hornby • Contact partner agencies as required • Consider closing A683 main road and implementing diversions. Note that roads in Wray can also be flooded. • Where possible warn occupiers of properties in Zone 'A', which includes properties on the roads shown (left) and consider evacuation. • Notify vulnerable contacts • Notify rest centres if conditions deteriorate. • Designated Rest Centres are in Lancaster but there are several others in Lune Valley villages. That in Hornby is likely to be affected by flooding there and it may be necessary to open rest centres to the north of Hornby.

<p>Severe Flood Warning (Hornby)</p> <ul style="list-style-type: none"> • Notification agreed with LRF Partner agencies to be appropriate • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments, • Forecast snowmelts, • Rising levels (trigger point reached), • Forecast level exceedance predicted, • Site observations, • Actual flooding, • Rainfall accumulations eg Flash flooding, • Professional judgement, • Site observations of severe flooding, High trigger point exceedance 	<p>C 012FWFL4C</p> <p>As above plus a further 51 properties including Hornby St. Margaret's C of E Primary School, Stanley Drive and further sections of, Monteagle Drive, Lancaster Road and Station Road.</p>	<p>As above, plus</p> <ul style="list-style-type: none"> • Open rest centres • Put Council major incident plan into action • Where possible warn occupiers of properties in Zone 'B', which includes properties on the roads shown (left) and consider evacuation.
--	---	---

This Flood Warning Area is divided into sub-areas that are listed below.

Flood Warning Area Reference Code*	Frequency of flooding	Probability of flooding	Number of properties
012FWFL4A	1 in 5 years (without stop logs)	20%	8
012FWFL4B	1 in 25 years	4%	103
012FWFL4C	1 in 200 years	0.5%	51

*The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that Partners receive when an Environment Agency warning is issued.

Defences

There are Environment Agency flood defences in this area comprising earth embankments upstream and downstream of the road bridge and, in some sections, concrete retaining walls.

There are other defences which are not owned or operated by the Environment Agency. These are not listed in this section.

L35 GALGATE

012FWFL35

FWA Quickdial Code 0222116

Galgate Flood Warning Area lies within the River Conder Catchment and is split into two Sub Areas based on SFRM outlines. Potentially flooding could occur from three watercourses within this FWA; the River Conder, Whitley Beck and Ou Beck. Only one gauge is used to trigger Galgate FWA, this is situated on the River Conder at Vernon Crescent. In total there area **207** properties within Galgate FWA *but further properties are being constructed around the village and may come within the FWA*. See Environment Agency Flood Warning Area Map at Appendix 'G'

Eighteen properties flooded and the A6 was inundated to a depth of 0.5m in Oct 1998 when the upper Stoney Lane culvert on Whitley Beck surged as a result of a blockage. This blockage is likely to occur again as the UU pipe crossing the culvert around 1 metre inside the entrance has not been moved.

In Aug 2004 eighteen properties flooded when Whitley Beck surcharged at Laund Fields access bridge due to the volume of water. Water flowed down Stoney Lane and flooded properties on Stoney Lane and Salford Road. Water only got back into the channel when residents and the fire brigade knocked down a wall at No. 10 Salford Road although one way valves have since been fitted into this wall.



Whitley Beck Culvert under the A6 in the centre of Galgate: If the culvert blocks for any reason the water overflows onto Stoney Lane running down to the A6 crossroads and Salford Rd beyond.

Post & panel Conder flood defences by the river level measurement station at Vernon Crescent: The post and panel flood defence on the River Conder has been considered unsafe when river levels are very high. Measures are being taken to help prevent a collapse of the wall in the short term and complete replacement is planned in the long term.

Lead Times: Target for issuing warnings is 1 hour ahead of flooding. This may not be achievable if the source of flooding is from Whitley Beck which is a rapid response catchment.

Thresholds at Galgate Gauge: Flood Alert: 1.70m/18.262m AOD (Actual)

Flood Warning Area Ref Code*	Frequency of flooding	Probability of flooding	Trigger level	Number of properties
012FWFL35A	1 in 10 years	10%	2.15/18.71m AOD	93
012FWFL35B	1 in 200 years	0.05%	2.77m/19.33m AOD	115

*The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that Partners receive when a warning is issued.

Evacuation routes

Galgate village is effectively in two parts, due to the railway embankment. In addition, the only crossing point of the railway in the village is on Salford Road, where the River Conder is likely to flood. Therefore, in a serious flooding situation resources will have to approach the western half of the village from the Scotforth area via Highland Brow.

Response

Triggers	Area Affected	Response
<p>Flood Alert</p> <ul style="list-style-type: none"> • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments • Forecast snowmelts. 	<p>Lower Lune and Conder Catchment, including: Village of Galgate 207 properties at risk in total</p>	<p>Consider general items in Flood Alert checklist (Appendix 'D') and in addition:</p> <ul style="list-style-type: none"> • Inspect and evaluate • Verify conditions • Monitor conditions • Escalate or downgrade as deemed necessary
<p>Flood Warning</p> <ul style="list-style-type: none"> • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments, • Forecast snow melts, • Rising levels (trigger point reached), • Forecast level exceedance predicted, • Site observations, • Actual flooding, • Rainfall accumulations eg Flash flooding 	<p>River Conder at Galgate Area A 012FWFL35A areas shown in yellow on map.</p>	<p>Consider general items in Flood Warning checklist (Appendix 'D') and in addition:</p> <ul style="list-style-type: none"> • Bring in additional resources as required • Consider delivery of sandbags to Galgate • Contact partner agencies as required • Consider closing A6 main road and side roads • Where possible warn occupiers of properties in Zone 'A', which includes properties on Main Rd, Stoney Lane, Chapel Street, Salford Rd, Meadow Park and Leachfield Rd and consider evacuation. • Notify vulnerable contacts • Notify rest centres if conditions deteriorate. •

<p>Severe Flood Warning</p> <ul style="list-style-type: none"> • Notification agreed with LRF partners to be appropriate • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorms • Forecast rain on saturated catchments, • Forecast snowmelts, • Rising levels (trigger point reached), • Forecast level exceedance predicted, • Site observations, • Actual flooding, • Rainfall accumulations e.g. Flash flooding, • Professional judgement, • Site observations of severe flooding, High trigger point exceedance 	<p>River Conder at Galgate Area B 012FWFL35B areas shown in green on map.</p>	<p>As above, plus</p> <ul style="list-style-type: none"> • Open rest centres • Put Council major incident plan into action • Where possible warn occupiers of properties in Zone 'B', which comprises additional properties on Main Road, Salford Road, Chapel Street and Chapel Lane, Vernon Crescent, Conder Green Rd, Leachfield Rd and Bank Close, and consider evacuation. • If the level of water is such that the post and panel flood defences are felt to be vulnerable to collapse the following properties should be evacuated: <ul style="list-style-type: none"> a) 23 Vernon Crescent b) Railway Farm c) 10 Salford Road d) 23 Salford Road e) 25 Salford Road f) 22 Main Road, A6 g) 24 Main Road, A6 h) 24a Main Road, A6 i) 24b Main Road, A6
--	---	--

FL42 BURROW BECK 012FWFL42 FWA Quickdial Code 0222115

Burrow Beck Flood Warning Area was created in March 2011 when the potential ‘flash flood’ characteristics of the beck were identified. The beck flows through residential areas of Bowerham and Hala before passing under the A6 and the main railway line. Only one gauge is used to trigger Burrow Beck FWA, this being situated in the stream behind Lancaster Leisure Park.

There is no previous history of serious flooding from the Burrow Beck although it contains numerous low bridges and culverts that easily block resulting in water flowing over the top when the stream is swollen and the green on Hala Estate is sometimes under water. If current proposals for building in the Burrow Beck catchment go ahead there may be an increase in water run off leading to more instances of flooding.

Lead Times

Target for issuing warnings is 1 hour but this may not be achievable in this rapid response catchment.

Thresholds at Lancaster Leisure Park Gauge

There is no Flood Alert phase for this FWA. The initial notification for Burrow Beck is ‘Flood Warning’.

Flood Warning Area Ref Code*	Frequency of flooding	Probability of flooding	Trigger level	Number of properties
012FWFL42A	1 in 100 years	1%	1.02m	73
012FWFL42B	1 in 1000 years	0.1%	1.43m	168

Evacuation routes

Burrow Beck bisects a number of roads that may well be flooded and if that is the case access for properties on the west bank evacuation will need to be from Scotforth Road, Barton Road Cork Road and Canterbury Avenue. For properties on the east bank Bowerham Road may need to be approached via Newlands Road or Bowerham Lane and the Hala Estate via Hala Hill and Bentham Road.

Response

Triggers	Area Affected	Response
<p>Flood Alert</p> <ul style="list-style-type: none"> • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments • Forecast snowmelts. 	<p>Flood Alert for the Lower River Lune and River Conder: River Lune, Conder and Keer and other watercourses from Kirkby Lonsdale to Galgate including Gressingham, Carnforth, Hornby, Wray, Bentham and Lancaster.</p>	<p>Consider general items in Flood Alert checklist (Appendix ‘D’) and in addition:</p> <ul style="list-style-type: none"> • Inspect and evaluate • Verify conditions • Monitor conditions • Escalate or downgrade as deemed necessary

L50 RIVER LUNE AT HALTON 012FWFL50

FWA Quickdial Code 0222116

The Halton Flood Warning Area lies within the Lower River Lune and Conder Flood Alert Area. The Flood Warning Area comprises the low lying area adjacent to the River Lune from Halton to Skerton Weir.

There are a total of **117 properties** at risk from flooding in the Halton area. See Environment Agency Flood Warning Area Map at Appendix 'G'

Area Affected

The localities affected and the impact of these messages within this particular Flood Warning Area is described in the table below.

Flood Warning Area	Flood Warning Area Reference Code ¹	Locations Affected	Messages issued
River Lune at Halton Area A	012FWFL50A	The Boat House, Tithebarn Cottage, Tower House, Church View, Clock House, Forgebank Walk and Mill Lane.	Flood Warning sub area Flood Warning update Severe Flood Warning
River Lune at Halton Area B	012FWFL50B	Station Road, Riverside Close, Ivy Cottage, White Lion Hotel, Church Brow, Denny Beck Lane and Farm	Flood Warning sub area Flood Warning update Severe Flood Warning

Property Numbers and Probability of Flooding

The number of properties that the EA expect to be affected by flooding in the Flood Warning Area will be reported to partners in the messages received from FWD. This Flood Warning Area is divided into Sub-Areas that are listed below

Flood Warning Area Reference Code	Frequency of flooding	Probability of flooding	Trigger Levels (Station Datum) ²	Number of properties
012FWFL50A	1 in 5 yrs	20%	2.23mASD	42
012FWFL50B	1 in 25 yrs	4%	2.99mASD	75

The EA believe that the amount of time between warning and flooding for this Flood Warning Area is approximately two hours. The EA will endeavour to give at least a two hour lead time for Flood Warnings although this may not always be possible. There is no target lead time for Severe Flood Warnings as these may be issued before, during or after flooding.

¹ The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that partner agencies receive when a warning is issued

² Thresholds at Skerton Weir gauge stated in relation to Station Datum (mASD). To convert to mAOD add on 4.75m

Flood Warning Reference Code ¹	Area	Quickdial Code	Warning Method
012FWFL50A 012FWFL50B		0222116 0222116	Floodline Warnings Direct Loudhailers Media BBC Radio Lancashire Bay Radio
Should the main methods fail the EA will endeavour to fax Flood Alerts and Warnings to those organisations covered by this plan using a fax bureau service.			

History of Flooding in this area

Year	Month/Period	Properties/Area affected
2005	January	Halton, Skerton and Lansil Industrial areas
2005	January	Halton and Skerton areas
2002	February	Halton, Lansil and Riverside Industrial areas

Location of EA Flood Defences

Environment Agency flood defences in this area comprise flood walls and raised banks. There are other defences which are not owned or operated by EA and are not listed in this section.

Response

Triggers	Area Affected	Response
Flood Alert <ul style="list-style-type: none"> Severe weather warnings, Heavy rainfall warnings, Forecast thunderstorm activities, Forecast rain on saturated catchments Forecast snowmelts. 	Lower Lune and Conder Catchment, including Halton	Consider general items in Flood Alert checklist (Appendix 'D') and in addition: <ul style="list-style-type: none"> Inspect and evaluate Verify conditions Monitor conditions Escalate or downgrade as deemed necessary

<p>Flood Warning</p> <ul style="list-style-type: none"> • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments, • Forecast snow melts, • Rising levels (trigger point reached), • Forecast level exceedance predicted, • Site observations, • Actual flooding, • Rainfall accumulations e.g. Flash flooding 	<p>River Lune Halton A 012FWFL50A Low lying area adjacent to the River Lune in Halton including The Boat House, Tithebarn Cottage, Tower House, Church View, Clock House, Forgebank Walk and Mill Lane. B 012FWFL50B Low lying area adjacent to the River Lune in Halton including Station Road, Riverside Close, Ivy Cottage, White Lion Hotel, Church Brow, Denny Beck Lane and Farm</p>	<p>Consider general items in Flood Warning checklist above and in addition:</p> <ul style="list-style-type: none"> • Bring in additional resources as required • Contact partner agencies as required • Consider closing main roads and implementing diversions • Where possible warn occupiers of properties in Zones 'A' and 'B', which includes properties shown (left) and consider evacuation. • Notify vulnerable contacts • Notify rest centres if conditions deteriorate. • The nearest designated Rest Centre is Salt Ayre SC but if this is likely to be affected by flooding the alternative is Central Lancaster High School.
<p>Severe Flood Warning</p> <ul style="list-style-type: none"> • Notification agreed with LRF Partner agencies to be appropriate • Severe weather warnings, • Heavy rainfall warnings, • Forecast thunderstorm activities, • Forecast rain on saturated catchments, • Forecast snowmelts, • Rising levels (trigger point reached), • Forecast level exceedance predicted, • Site observations, • Actual flooding, • Rainfall accumulations e.g. Flash flooding, • Professional judgement, • Site observations of severe flooding, High trigger point exceedance 	<p>River Lune Halton</p> <p>This comprises Area A and Area B, see above.</p>	<p>As above, plus</p> <ul style="list-style-type: none"> • Open rest centres • Close roads and implement diversions • Where possible warn occupiers of properties throughout Zones A and B and consider evacuation. • Activate Council District Emergency Plan.

TL01 LANCASHIRE COASTLINE AT MORECAMBE 012FWCTL01 FWA Quickdial Code 0224214

The Flood Warning Area includes promenades and adjacent roads between Morecambe Golf Course and Lower Heysham, properties on Rydal Road, Oakley Road, Twemlow Parade, Penrith Avenue and Main Street. See Environment Agency map of Flood Warning Area at Appendix 'G'

Area Affected

The localities affected and the impact of these messages within this particular Flood Warning Area is described in the table below.

Warning Level	Flood Area Code*	Warning Reference	Locations affected
Flood Warning	Lancashire Coastline at Morecambe Area A 012FSCTL01A		Promenades & adjacent roads between Rydal Rd & Lower Heysham & properties on Rydal Rd, Oakley Rd, Twemlow Parade, Penrith Ave and Main St.
Flood Warning	Lancashire Coastline at Morecambe Area B 012FSCTL01B		Promenades and adjacent roads (Marine Road East, Coastal Road) between Morecambe Golf Course and Church Lane.
Flood Warning	Lancashire Coastline at Morecambe Area C 012FSCTL01C		Promenades and adjacent roads (Marine Road Central) and piers between Church Lane and Stone Jetty.
Flood Warning	Lancashire Coastline at Morecambe Area D 012FSCTL01D		Promenades, adjacent roads (Marine Road West/A589) and the car park between Stone Jetty and Rydal Road.
Flood Warning	Lancashire Tidal Breach at Morecambe Area A 012FWCBLTTL01A		Properties close to the sea between Victoria Parade and Princes Crescent, including Morecambe County High School.
Flood Warning	Lancashire Tidal Breach at Morecambe Area B 012FWCBLTTL01B		Properties close to the sea between Church Lane and Lord Street.

*The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that Partners receive when a warning is issued.

Property Numbers and Probability of Flooding

This Flood Warning Area is divided into sub-areas that are listed below.

Flood Warning Area Reference Code*	Frequency of flooding	Probability of flooding	Number of properties
012FSCTL01A	1 in 200 yrs	0.5%	93
012FSCTL01B	1 in 200 yrs	0.5%	0
012FSCTL01C	1 in 200 yrs	0.5%	2
012FSCTL01D	1 in 200 yrs	0.5%	4
012FWCBLTTL01A	1 in 1000 yrs	0.01%	224
012FWCBLTTL01B	1 in 1000 yrs	0.01%	18

*The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that Partners receive when a warning is issued.

The EA will try to give at least 6 hours notice of flooding but this may not always be possible.


Triggers	Area Affected	Response
<p>Flood Warning (Tidal) Combined factors including</p> <ul style="list-style-type: none"> • Forecast of high tides. • Low pressure • Significant onshore winds • Other relevant weather or tidal factors 	<p>Lancashire Coastline at Morecambe</p>	<p>Consider general items in Flood Alert checklist (Appendix 'D') and in addition:</p> <ul style="list-style-type: none"> • Inspect and evaluate • Verify conditions • Monitor conditions • Escalate or downgrade as deemed necessary • Consider deployment of flood boards (See next page). Engineers in liaison with Env Services staff. • If flooding does occur pay particular attention to any basement properties.

Morecambe Promenade 210215



Storm Board Locations (Subject to change during 2016 as wall is rebuilt)

WAVE REFLECTION WALL - FLOODBOARDS

<u>Location</u>	<u>Letter</u>
Morecambe Golf Club	A
-	B
-	C
-	D
	E
-	F
-	G
-	H
-	I
-	J
-	K
-	L
-	M
-	N
-	O
Morecambe Town Hall	P (+Sandbags at Play Area)
-	Q
Marine View	R
-	S
Pier	T
-	U
-	V
Marineland	M/LAND
Midland	W
Station	X
Carlton	Y
-	?
Battery	Z
-	Z1
Rydal Road	
Oakley Road Heysham	



TL27 LANCASHIRE COASTLINE AT CARNFORTH
012FWCTL27 FWA Quickdial Code 0224211

There are a total of **53 properties** at risk in the Flood Warning Area. See Environment Agency Flood Warning Area Map at Appendix 'G'

Warning Areas are described in the table below.

Warning Level	Flood Area Code*	Warning Reference	Locations affected
Flood Warning	Lancashire Coastline at Carnforth Area A 012FWCTL27A		Properties at Warton Bridge, Galley Hall and Marsh House Farm plus agricultural land along both banks of the River Keer.
Flood Warning	Lancashire Coastline at Carnforth Area B 012FWCTL27B		Properties at Warton Grange Farm, Cotestones Farm and Crag Bank plus agricultural land on the left bank of the River Keer.

*The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that Partners receive when a warning is issued.

Property Numbers and Probability of Flooding

This Flood Warning Area is divided into sub-areas that are listed below.

Flood Warning Area Reference Code*	Frequency of flooding	Probability of flooding	Number of properties
012FWCTL27A	1 in 200 yrs	0.5%	20
012FWCTL27B	1 in 200 yrs	0.5%	33

*The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that Partners receive when a warning is issued.

The EA will try to give at least 6 hours notice of flooding although this may not always be possible. There are no specific operational responses for this area beyond those described at Appendix 'E'
Defences: There are EA defences in this area, which comprise earth embankments including one on the left bank of the River Keer extending from a point north of Marsh House Farm to high ground near Galley House.



Midland Terrace with River Keer in foreground

TL24 LANCASHIRE COASTLINE AT BOLTON-LE-SANDS
012FWCTL24 FWA Quickdial Code 0224212

There are a total of **24 properties** at risk in the Flood Warning Area. See Environment Agency Flood Warning Area Map at Appendix 'G'

Warning Level	Flood Area Code*	Warning Reference	Locations affected
Flood Warning	Lancashire Coastline at Bolton-le-Sands Area A 012FSCTL24A		Agricultural land, properties and caravan parks adjacent to the seafront west of Bolton-le-Sands.
Flood Warning	Lancashire Tidal Breach at Bolton-le-Sands Area A 012FSCBLTTL24A		Agricultural land west of Bolton-le-Sands.

Property Numbers and Probability of Flooding

This Flood Warning Area is divided into sub-areas that are listed below.

Flood Warning Area Reference Code*	Frequency of flooding	Probability of flooding	Number of properties
012FSCTL24A	1 in 200 yrs	0.5%	24
012FSCBLTTL24A	1 in 1000 yrs	0.1%	0

*The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that Partners receive when a warning is issued.

The EA will try to give at least 6 hours notice of flooding although this may not always be possible.

There are no specific operational responses for this area beyond those described at Appendix 'E'

Defences

There are EA defences in this area, which comprise earth embankments including a main one between Red Bank Farm and high ground west of Bolton-le-Sands. There are other defences which, are not owned or operated by the EA. These are not listed in this section.



Sea defences at Bolton-le-Sands beach

TL23 LANCASHIRE COASTLINE AT HEST BANK
012FWCTL23 FWA Quickdial Code 0224213

There are a total of **29 properties** at risk in the Flood Warning Area. The Flood Warning Area includes the sewage works, caravan park, health club and several private residences. It also covers agricultural land and part of the coastal road along the seafront at Hest Bank. See Environment Agency Flood Warning Area Map at Appendix 'G'

Warning Level	Flood Warning Area Reference Code*	Locations affected
Flood Warning	Lancashire Coastline at Hest Bank Area A 012FSCTL23A	Sewage works, caravan park, health club and private houses. Agricultural land and part of the coastal road along the seafront at Hest Bank.
Flood Warning	Lancashire Tidal Breach at Hest Bank Area A 012FSCTL23B	Sewage works, caravan park, health club and private houses. Agricultural land and part of the coastal road along the seafront at Hest Bank.

Property Numbers and Probability of Flooding

This Flood Warning Area is divided into sub-areas that are listed below.

Flood Warning Area Reference Code*	Frequency of flooding	Probability of flooding	Number of properties
012FSCTL23A	1 in 200 yrs	0.5%	20
012FSCTL23B	1 in 1000 yrs	0.1%	9

*The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that Partners receive when a warning is issued.

The EA will try to give at least 6 hours notice of flooding although this may not always be possible.

There are no specific operational responses for this area beyond those described at Appendix 'E'

Defences: There are a few properties located close to the beach to the east of Morecambe. These properties are fronted by a rock revetment that protects part of the area.

There are other defences that are not owned or operated by the EA and not listed in this section.



TL05 LANCASHIRE COASTLINE AT SUNDERLAND
012FWCTL05 FWA Quickdial Code 02242221

There are **64 properties** at risk in the Flood Warning Area. The FWA includes agricultural land, coastal roads, caravan sites and properties in and around Potts Corner, Sunderland, Overton, Bazil and Heaton. See Environment Agency Flood Warning Area Map at Appendix 'G'

Warning Level	Flood Area Code*	Warning Reference	Locations affected
Flood Warning	Lancashire Coastline at Sunderland Area A 012FSCTL05A		Agricultural land, coastal roads, caravan sites and properties in and around Pott's Corner, Sunderland, Overton, Bazil and Heaton.
Flood Warning	Lancashire Tidal Breach at Sunderland Area A 012FSCBLTTL05A		Agricultural land and farm buildings south of Oxcliffe Road/Mellishaw Lane in the Heaton-with-Oxcliffe CP Region.
Flood Warning	Lancashire Tidal Breach at Sunderland Area B 012FSCBLTTL05B		Agricultural land, caravan parks and properties in and around Middleton, Overton and Morecambe (Sandylands, West End, White Lund Trading Estate).

Property Numbers and Probability of Flooding

This Flood Warning Area is divided into sub-areas that are listed below.

Flood Warning Area Reference Code*	Frequency of flooding	Probability of flooding	Number of properties
012FSCTL05A	1 in 200 yrs	0.5%	64
012FSCBLTTL05A	1 in 1000 yrs	0.1%	2
012FSCBLTTL05B	1 in 1000 yrs	0.1%	1357

*The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that Partners receive when a warning is issued.

The EA will try to give at least 6 hours notice of flooding although this may not always be possible.

There are specific operational responses for Flood Alerts and Flood Warnings for Sunderland Point village including the requirement for the Council's Duty Emergency Incident Officer to speak to a designated community contact and assess any requirements. These are covered in detail in the Community Emergency Plan for the village.

Defences

There are number of defences in this area. From the upper extent of the Flood Warning Area on the Lune to the lower extent of the Flood Warning Area at Shore Fields Caravan Park, including:

- Section A (River Lune from Lancaster to Sunderland): On the right bank of the River Lune there are a number of flood defences that protect areas of low lying land. At the outfall of Oxcliffe Dyke there is an embankment between Lancaster Road and high ground at the household refuge site. Farther downstream along the River Lune there is an embankment between high ground north of Oxcliffe Pool and high ground at Moss Road, and an embankment that is positioned east of Heaton. East of Overtop there are privately maintained embankments from Wandales Point to Bazil Point. North-west of Bazil Point there is an Environment Agency embankment that ties into high ground at Bazil and Overtop. From the left bank of Lades Pool, west of Overtop, an embankment runs approximately west to Alderley Bank. Another embankment, which extends to Sunderland Point, ties into this embankment west of Overtop.
- Section B (Sunderland): The defences fronting Sunderland generally consist of square concrete blockwork jointed in bitumen placed on a slope of around 1 in 2 (vertical to horizontal). However, the defences do not defend the access road across Lades Marsh, which will be flooded during regular tidal events.
- Section C (Potts Corner): The defences at the site consist of a rubble mound revetment at a slope of around 1 in 2.5 (vertical to horizontal). The defences extend from Potts Corner in the north, to approximately 700 metres to the south with the exposure to wave action reducing along the length of the defence.
- Section D (Shore Fields Caravan Park): No significant hard defences front the site. Rather, the defences at the site consist of a steeply eroded embankment with some ad-hoc rubble and concrete placed at areas of previous erosion along the site. The crest level of the embankment varies considerably along the length of the defence.



Sunderland Point 051213

TL04 LANCASHIRE COASTLINE AT HEYSHAM
012FWCTL04 FWA Quickdial Code 0224221

There are a total of **20 properties** at risk in the Flood Warning Area. The Flood Warning Area includes industrial properties, quays and grounds in Heysham Harbour. See Environment Agency Flood Warning Area Map at Appendix 'G'

Warning Level	Flood Area Code*	Warning Reference	Locations affected
Flood Warning	Lancashire Coastline at Heysham Area A 012FSCTL04A		Industrial properties, quays and grounds in Heysham Harbour.

Property Numbers and Probability of Flooding

This Flood Warning Area is divided into sub-areas that are listed below.

Flood Warning Area Reference Code*	Frequency of flooding	Probability of flooding	Number of properties
012FSCTL04A	1 in 200 yrs	0.5%	20

*The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that Partners receive when a warning is issued.

The EA will try to give at least 6 hours notice of flooding although this may not always be possible.

There are no specific operational responses for this area beyond those described at Appendix 'E'

Defences

Sloping masonry harbour wall with wave return wall at crest and cobbled toe protection.



TL22 LANCASHIRE COASTLINE AT THURNHAM

012FWCTL22 FWA Quickdial Code 02242222

The Flood Warning Area includes properties and agricultural land in and surrounding Hillam, Glasson and Bank Houses, including land generally west of Lancaster Road and Marsh Lane in the Thurnham Moss region. See Environment Agency Flood Warning Area Map at Appendix 'G'

Warning Level	Flood Area Code*	Warning Reference	Locations affected
Flood Warning	Lancashire Coastline at Thurnham Area A 012FSCTL22A		Properties and agricultural land in and surrounding Hillam, Glasson and Bank Houses, including land west of Lancaster Road and Marsh Lane in the Thurnham Moss region.
Flood Warning	Lancashire Tidal Breach at Thurnham Area A 012FSCBLTTL22A		Properties and agricultural land in and surrounding Moss Edge in the Cockerham Moss region.
Flood Warning	Lancashire Tidal Breach at Thurnham Area B 012FSCBLTTL22B		Properties and agricultural land between Moss Edge and Garstang Road/Lancaster Road/B5272.

Property Numbers and Probability of Flooding

This Flood Warning Area is divided into sub-areas that are listed below.

Flood Warning Area Reference Code*	Frequency of flooding	Probability of flooding	Number of properties
012FSCTL22A	1 in 200 yrs	0.5%	259
012FSCBLTTL22A	1 in 1000 yrs	0.1%	3
012FSCBLTTL22B	1 in 1000 yrs	0.1%	80

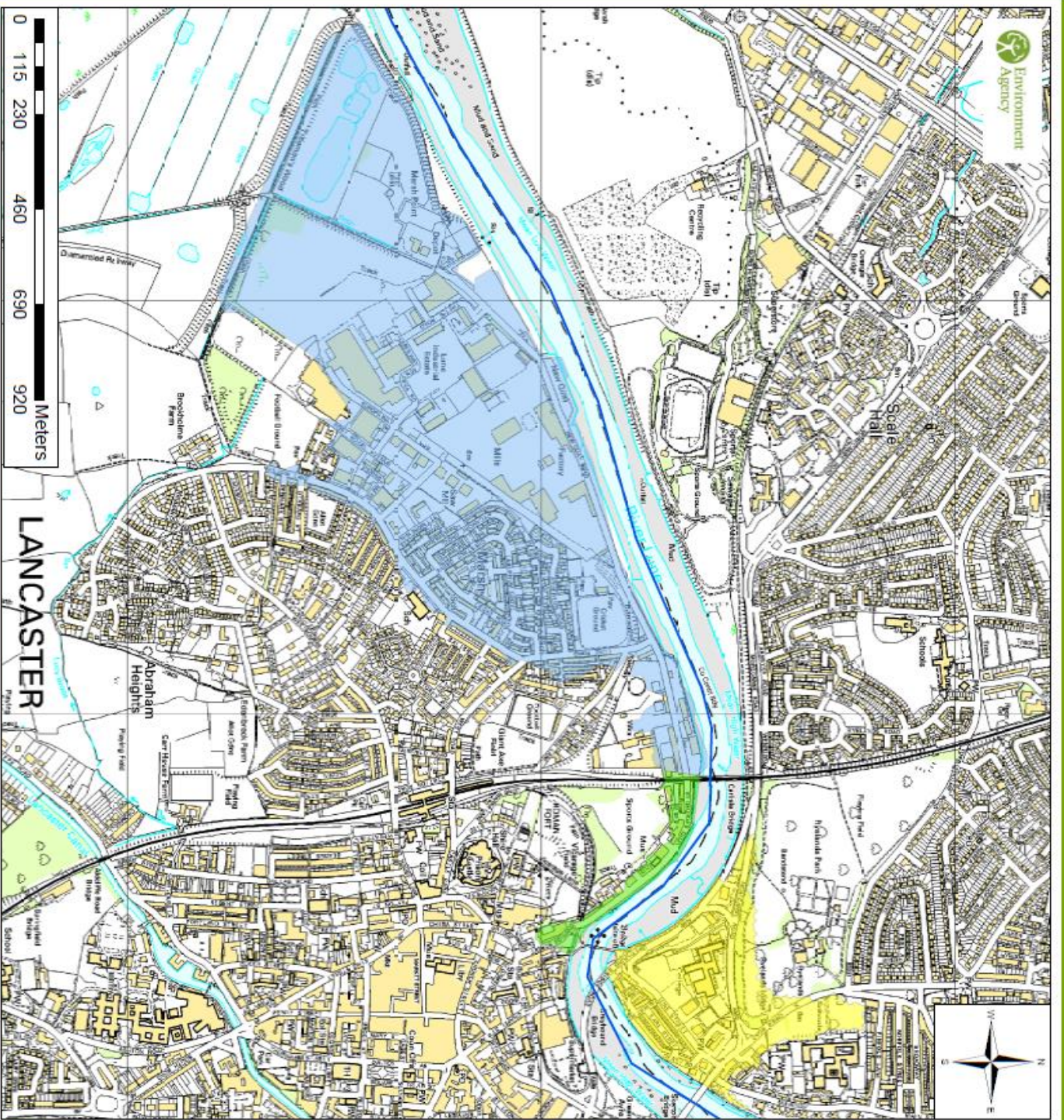
*The Flood Warning Area Reference Code is the unique code that is given to all Flood Warning Areas. This appears on all faxes and emails that Partners receive when a warning is issued.

The EA will try to give at least 6 hours notice of flooding but this may not always be possible.

Appendix 'G'

Environment Agency Maps of Flood Warning Areas – Lancaster District





SC2	Lancaster Quay
SC3	Skerton Pool
L4	Hornby and Lower Lune Valley
L35	Galgate
FL42	Burrow Beck
L50	Halton
TL01	Morecambe
TL27	Carnforth
TL24	Bolton-le-Sands and TL23 Hest Bank
TL05	Sunderland Point
TL04	Heysham
TL22	Thurnham



SC2 River Lune at Lancaster Quay

Click on Tools to convert files to PDF.

Legend

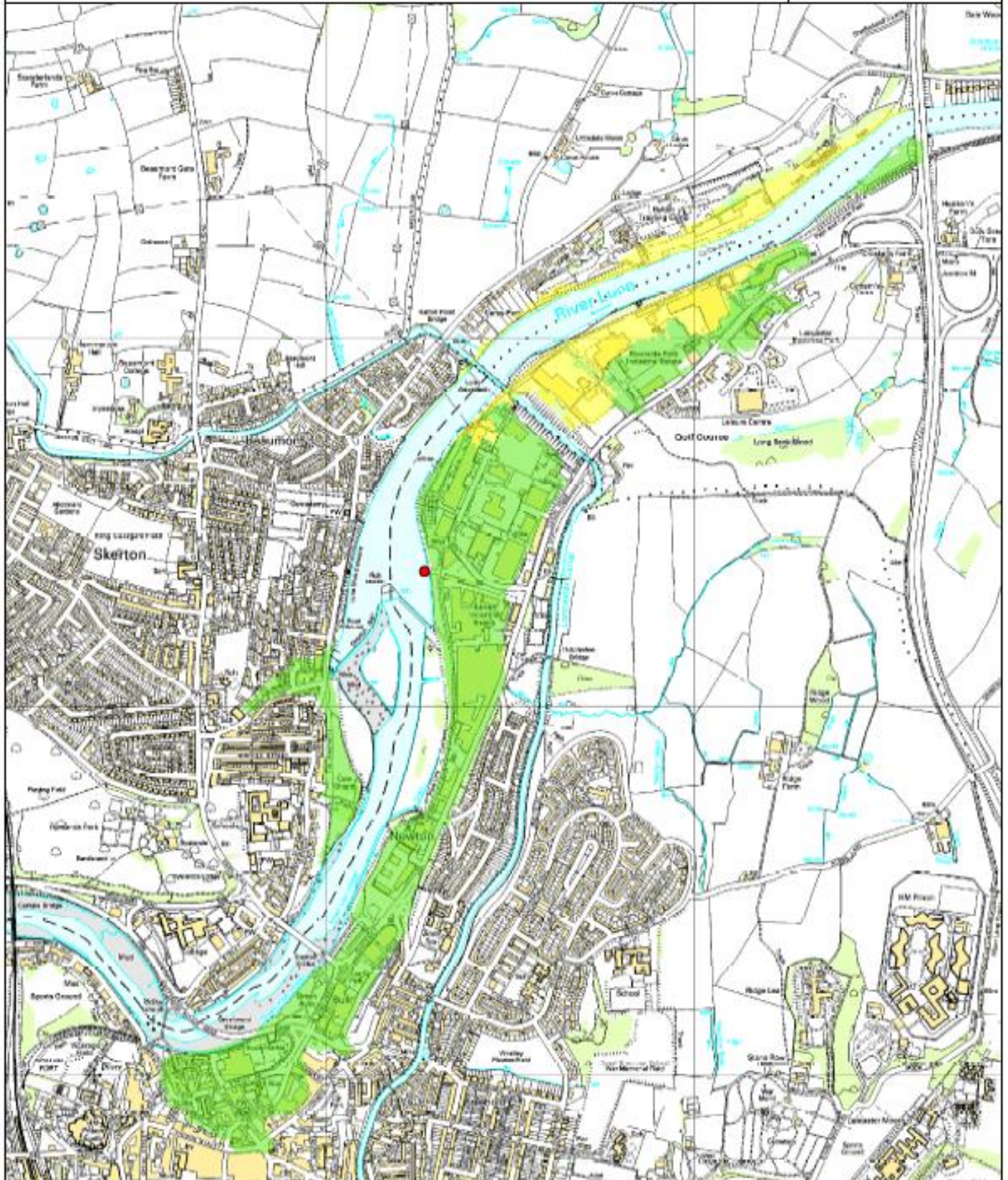
-  Main River
-  River Lune at Lancaster Quay, Area A
-  River Lune at Lancaster Quay, Area B
-  River Lune at Lancaster Quay, Area C

Area	No. of Properties
Area A	337
Area B	239
Area C	708

© Environment Agency copyright and/or database rights 2015.
© Ordnance Survey copyright and/or database rights 2015.
All rights reserved. Ordnance Survey Licence No 100024198

Date: May 2015

SC3 Lancaster Skerton Pool



Legend

- Gauging Station
- River Lune at Skerton Pool, Area A
- River Lune at Skerton Pool, Area B

Property Numbers

7
640

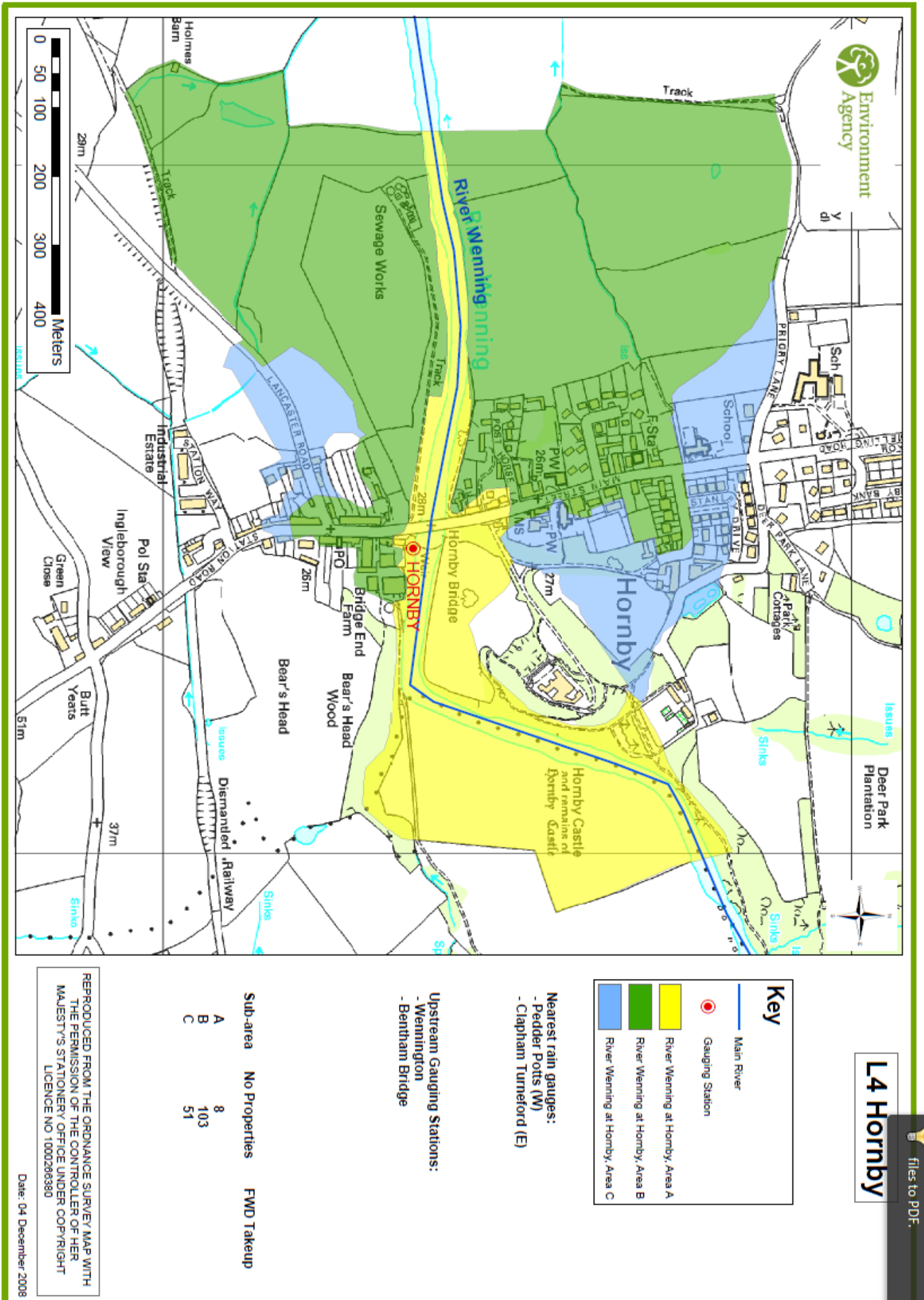
0 0.1 0.2 0.3 0.4



Kilometers



© Environment Agency copyright and/or database rights 2015.
© Ordnance Survey copyright and/or database rights 2015.
All rights reserved. Ordnance Survey Licence No 100024199.



L4 Hornby

Key

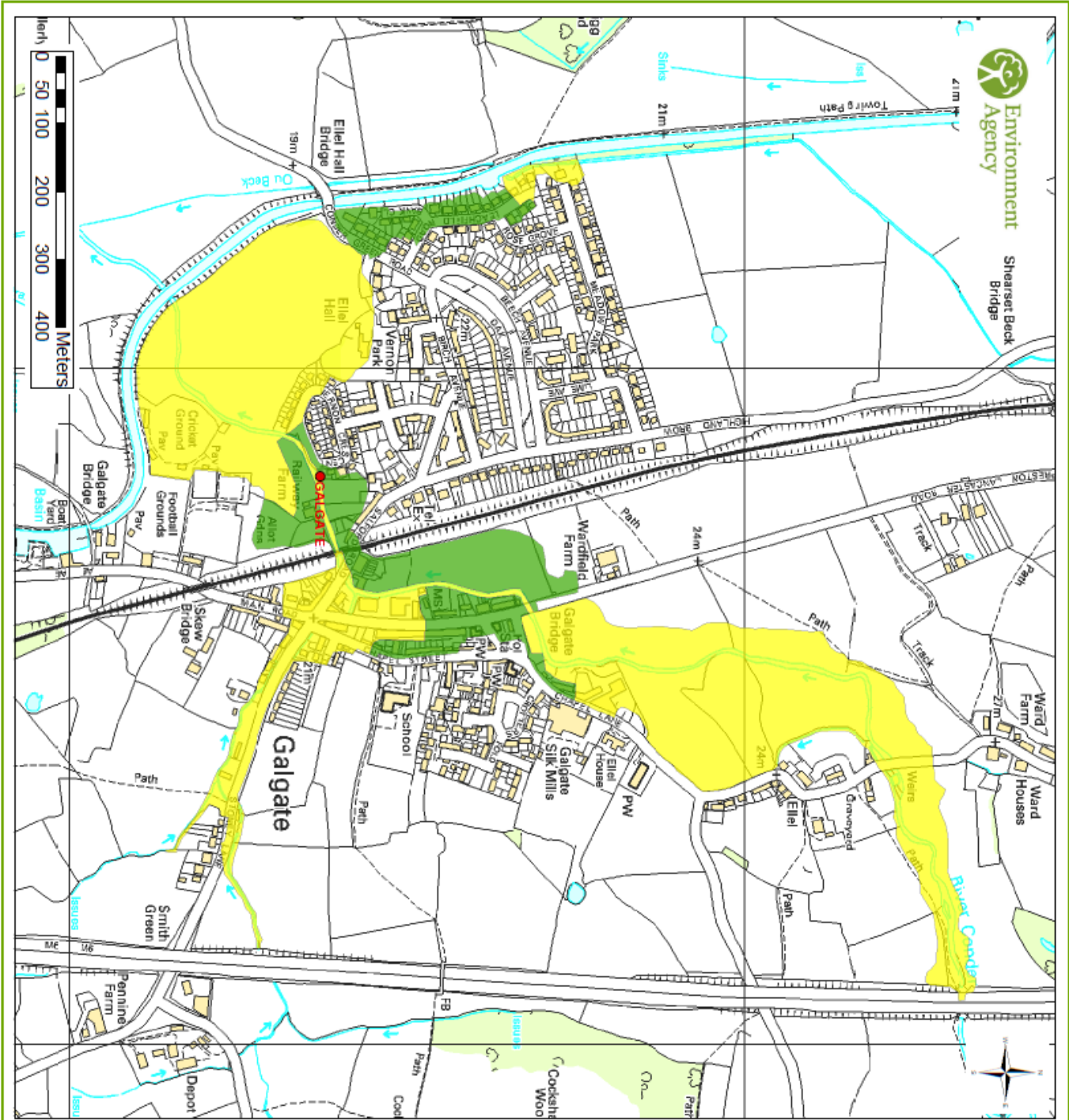
- Main River
- Gauging Station
- River Wenning at Hornby, Area A
- River Wenning at Hornby, Area B
- River Wenning at Hornby, Area C

- Nearest rain gauges:**
- Pedder Potts (W)
 - Clapham Turneford (E)

- Upstream Gauging Stations:**
- Wennington
 - Bentham Bridge

Sub-area	No Properties	FWD Takeup
A	8	
B	103	
C	51	

REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER COPYRIGHT LICENCE NO 10002069390



L35 Galgate

Key

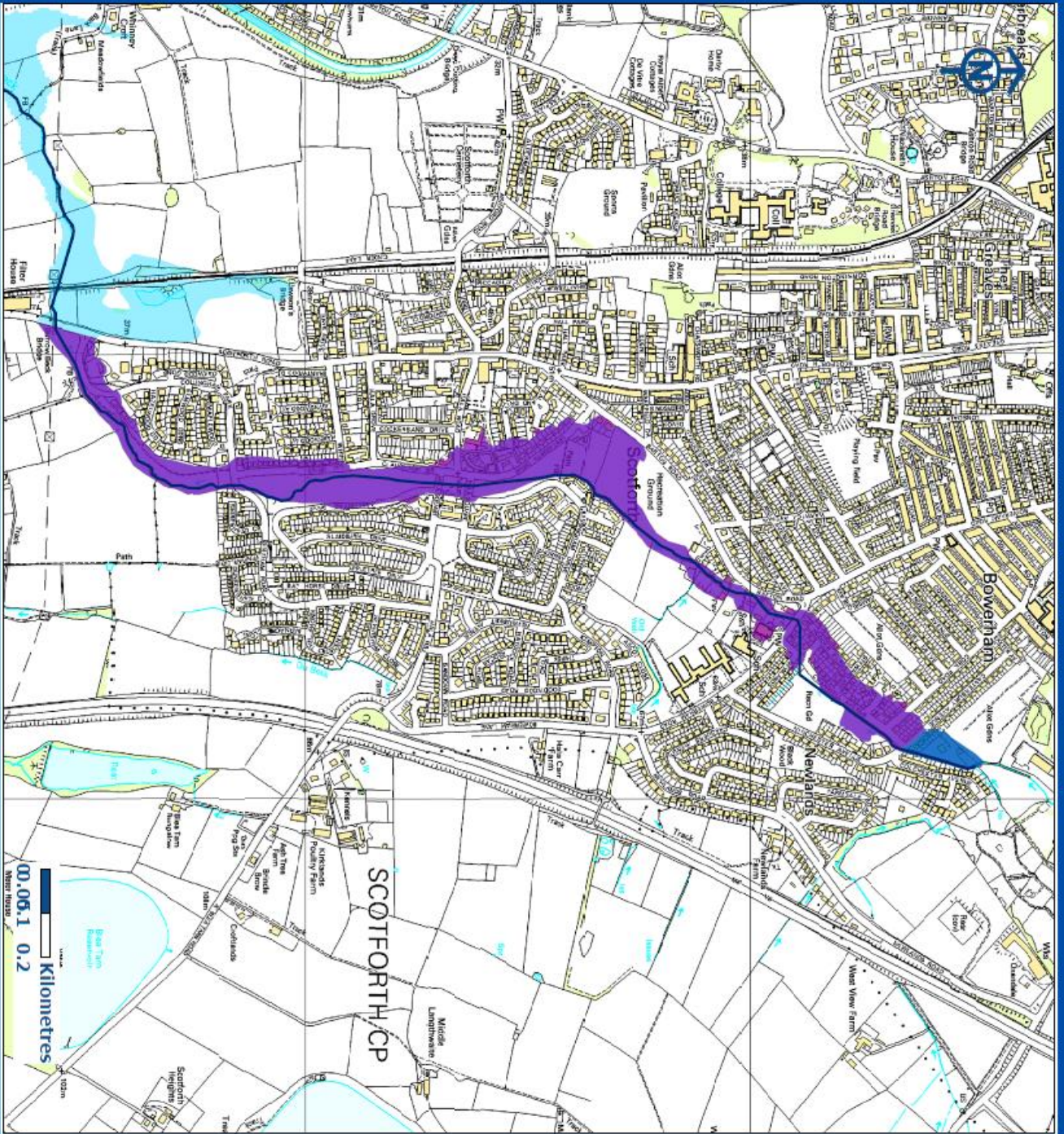
- Gauging Station
- River Conder at Galgate, Area A
- River Conder at Galgate, Area B

Nearest rain gauge:
- Turnersford

Sub-area	No Properties	FWD Takeup
A	93	
B	115	

REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE UNDER COPYRIGHT LICENCE NO 1000206380

Date: 04 December 2008



Click on Tools to convert files to PDF.

Legend

-  Main River
-  012PWF/L42A
-  012PWF/L42B
-  Extreme Flood Outline

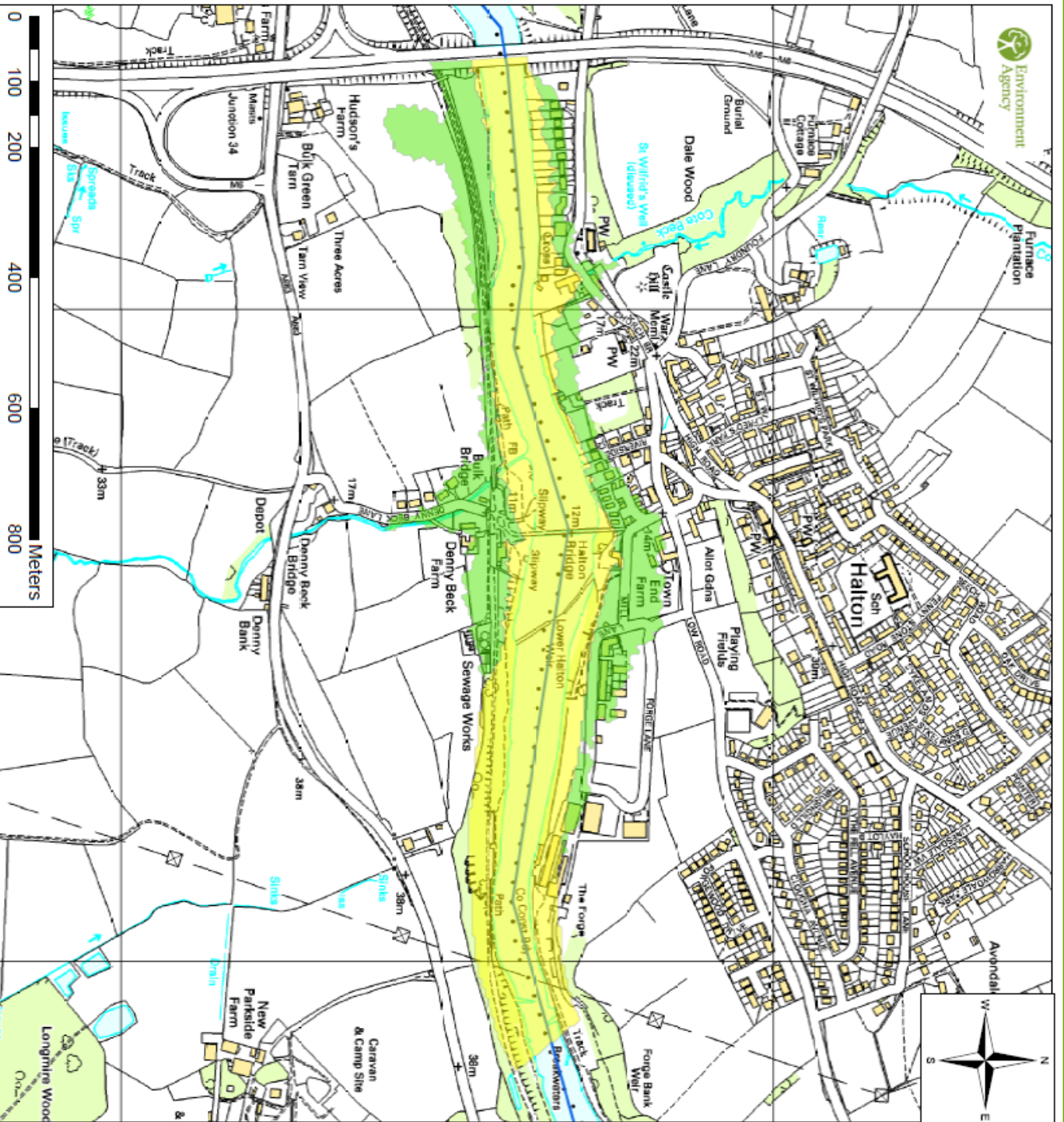
The data provided is based on that currently available to the Agency. It should not be taken as definitive as full surveys may not have been carried out. Localised flooding from drains and small watercourses is not included. The Agency accepts no liability for any loss or damage arising from the interpretation or use of the information.

The extreme flood outline represents a 0.1% chance of flooding in any one year to this extent (1 in 1000 year flood event)

This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office. © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Environment Agency, 100028580, 2010.

Burrow Beck at Lancaster

Flood Warning Area: 012PWF/L42



Furnace
Plantation



L50 River
Lune at Halton

Click on Tools to convert
files to PDF.

Legend

- River Lune at Halton, Area A
- River Lune at Halton, Area B
- Main River

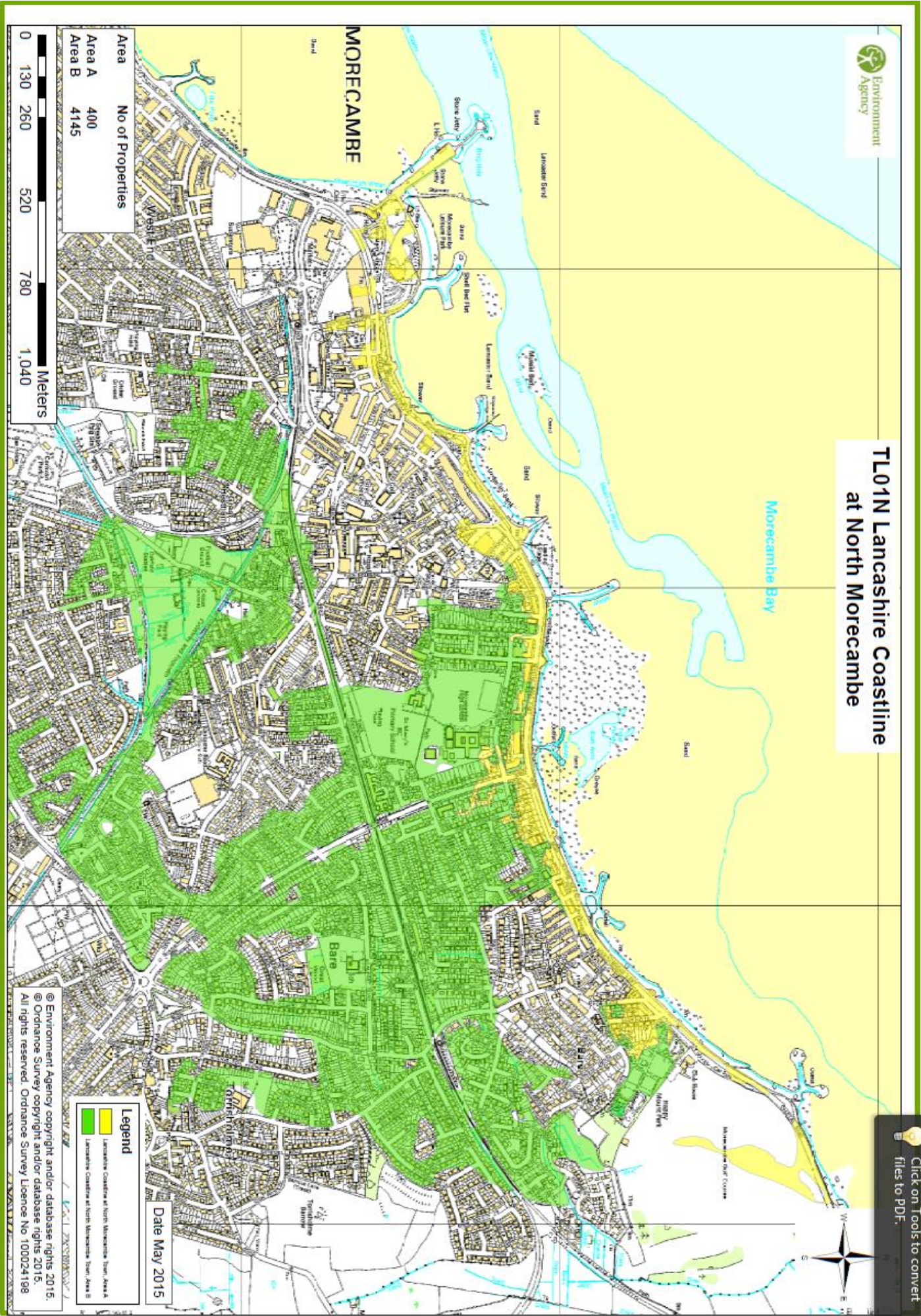
Area	No of Properties
Area A	42
Area B	75

© Environment Agency copyright and/or database rights 2015.
© Ordnance Survey copyright and/or database rights 2015.
All rights reserved. Ordnance Survey Licence No 100024198

Date: May 2015



TL01N Lancashire Coastline at North Morecambe



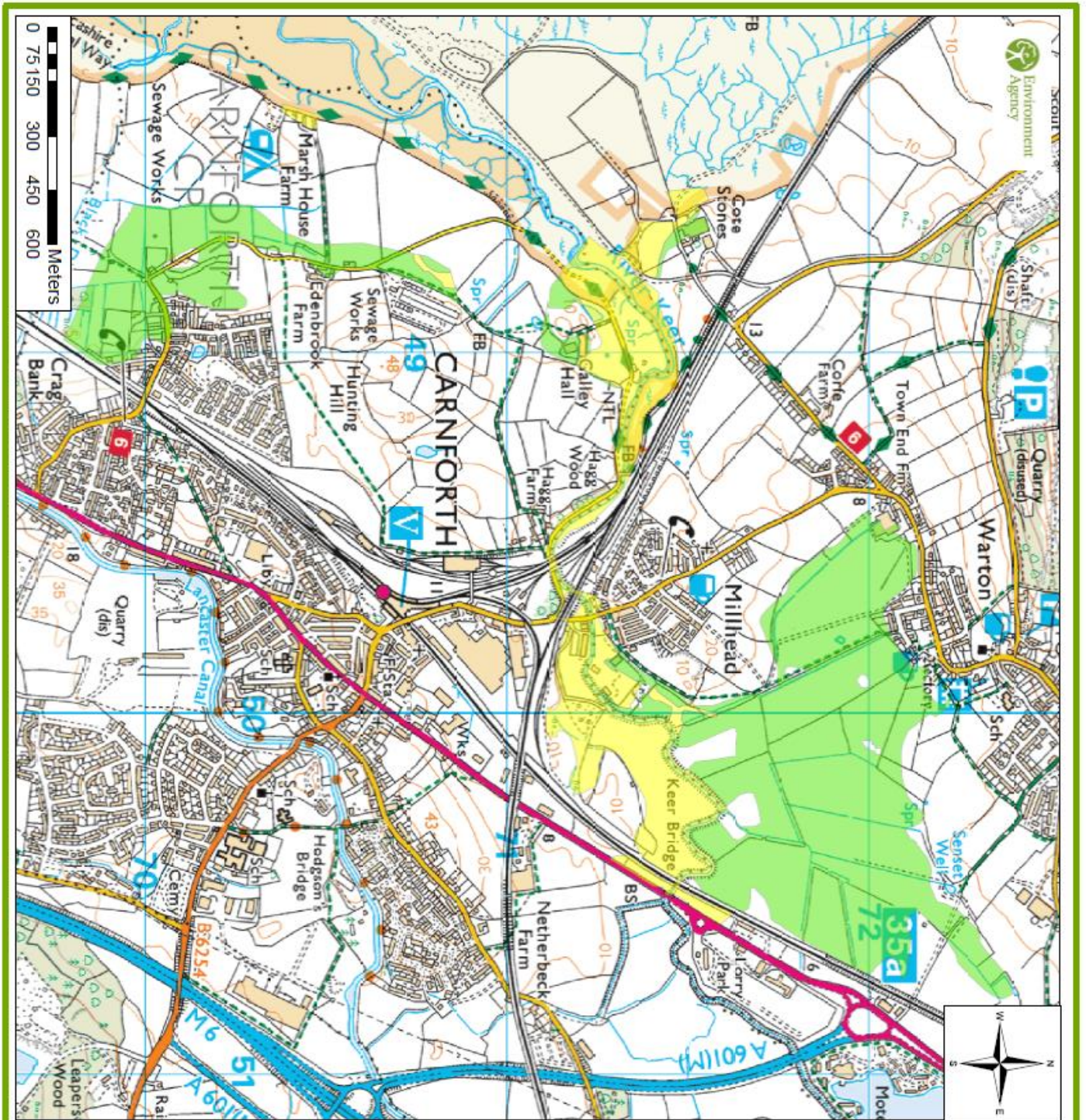
Click on Tools to convert files to PDF.

Legend

- Lancashire Coastline at North Morecambe (TL01N)
- Lancashire Coastline at North Morecambe (TL01N)



Date May 2015

© Environment Agency copyright and/or database rights 2015.
 © Ordnance Survey copyright and/or database rights 2015.
 All rights reserved. Ordnance Survey Licence No 100024198



TL27 Lancashire Coastline
at Carnforth

Legend

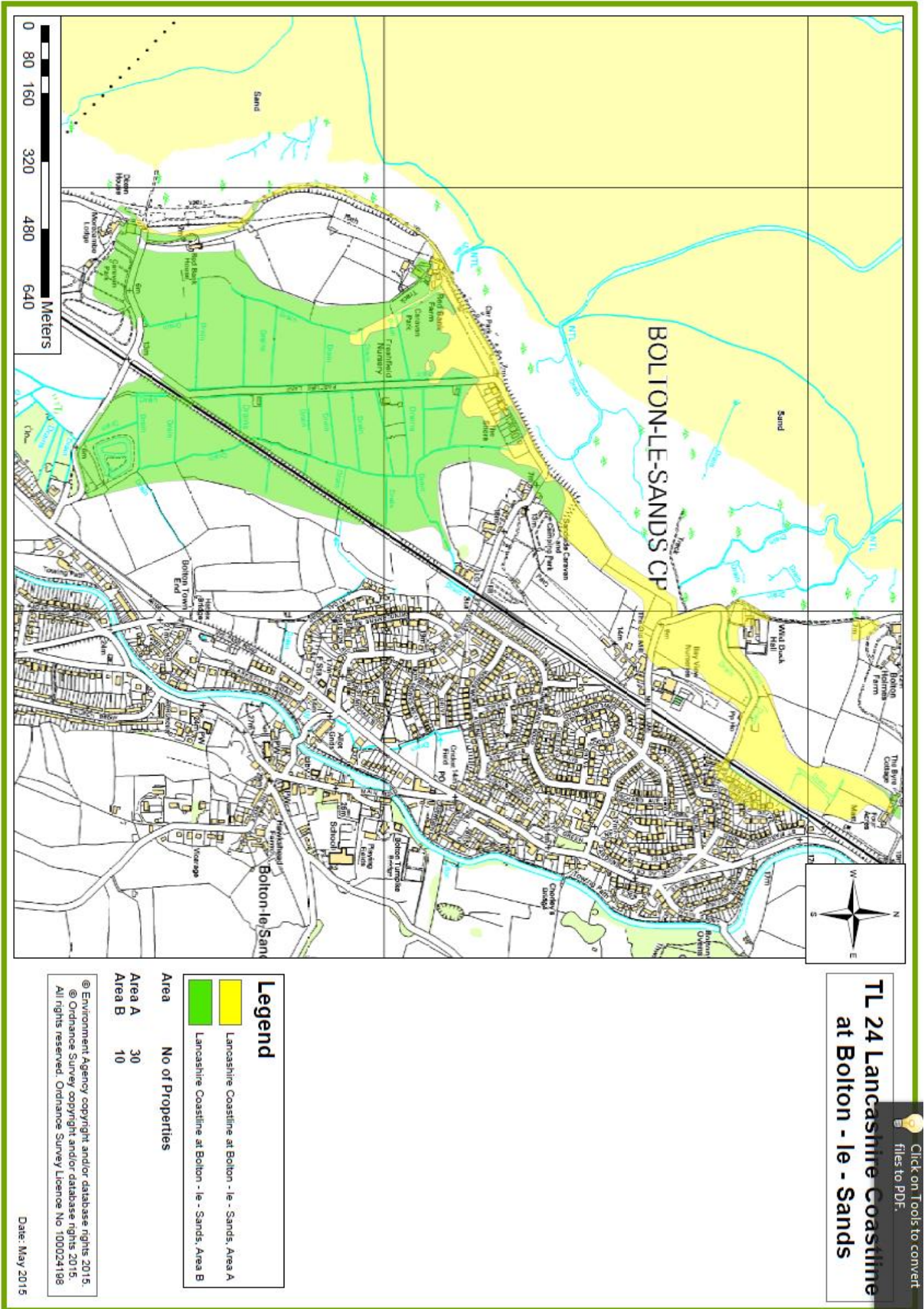
	Lancashire Coastline at Carnforth, Area A
	Lancashire Coastline at Carnforth, Area B

Area	No of Properties
Area A	20
Area B	33

© Environment Agency copyright and/or database rights 2015.
© Ordnance Survey copyright and/or database rights 2015.
All rights reserved. Ordnance Survey Licence No 100024198



Date: May 2015

Click on Tools to convert files to PDF.



**TL 24 Lancashire Coastline
at Bolton - le - Sands**

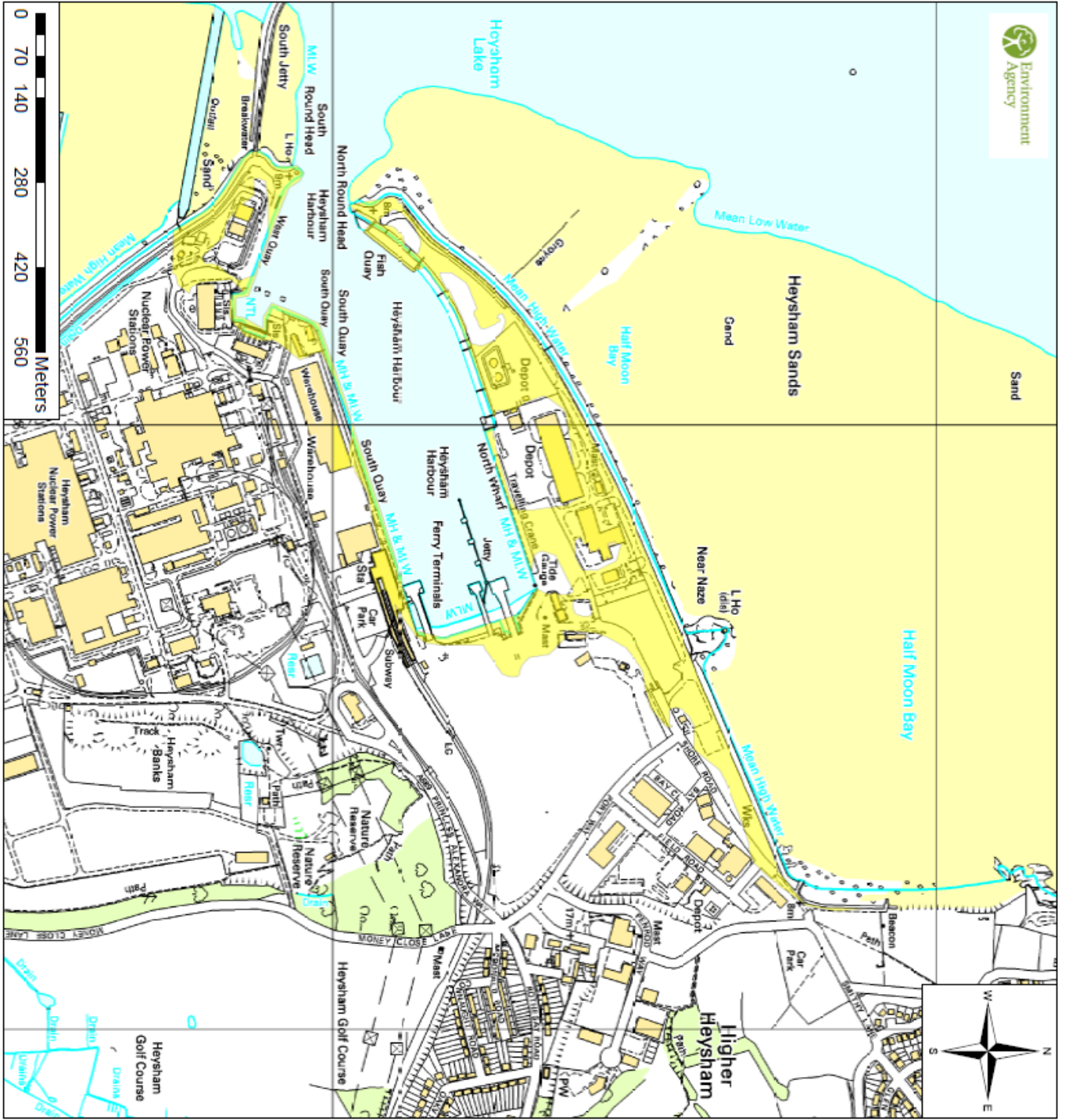
Click on Tools to convert files to PDF.

Legend	
	Lancashire Coastline at Bolton - le - Sands, Area A
	Lancashire Coastline at Bolton - le - Sands, Area B

Area	No of Properties
Area A	30
Area B	10

© Environment Agency copyright and/or database rights 2015.
© Ordnance Survey copyright and/or database rights 2015.
All rights reserved. Ordnance Survey Licence No 100024198

Date: May 2015



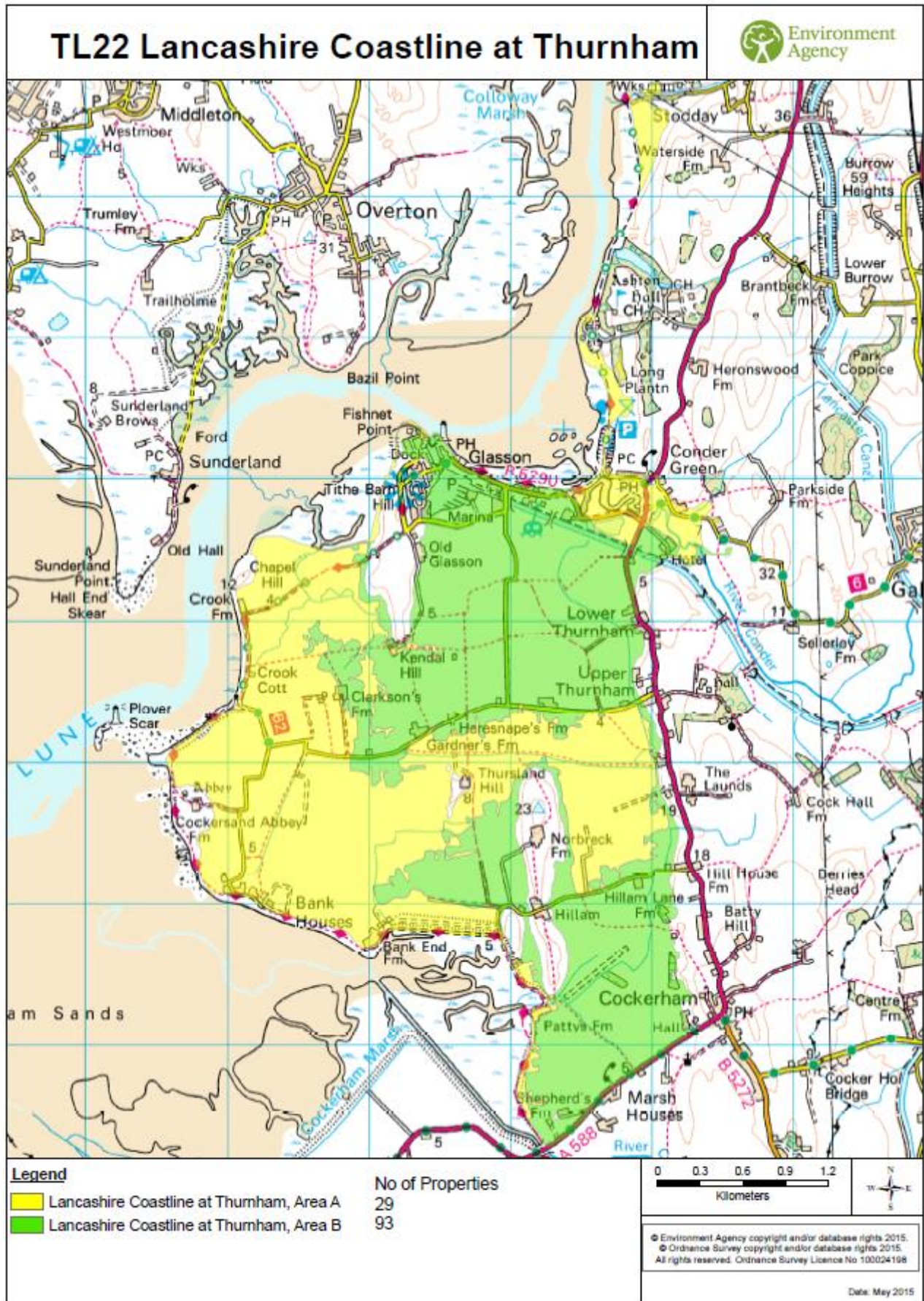
TL04
Lancashire Coastline
at Heysham

Legend

Lancashire Coastline at Heysham, Area A

Area	No of Properties
Area A	6

© Environment Agency copyright and/or database rights 2015.
 © Ordnance Survey copyright and/or database rights 2015.
 All rights reserved. Ordnance Survey Licence No 100024198



- **APPENDIX 'H'**

POLICY LOGS

OPERATIONAL LOGS

For use in any circumstances where iModus logging system is not available

OPERATIONS LOG

Date

Sheet Number of

Serial No.	Time	From	To	Incident or Occurrence	Action Taken

Signed:	Print Name:
---------	-------------



Version 2.4

This decision-making log template replicates hard copy log books retained in the District Emergency Control Centre. Log sheets should normally be handwritten, kept in duplicate, consecutively numbered, timed and dated.

Decision making and policy log

DECISION REF No:

DATE OF
DECISION.....

.....
OFFICER MAKING POLICY DECISION TIME OF DECISION.....

POLICY

REASON(S)

OFFICER MAKING ENTRY (if different) SIGNATURE OF OFFICER MAKING POLICY

.....
Date & Time

.....
Date & Time