

**Flood and Coastal Erosion Risk
Management Strategy
(2014-2017)**



Document Information

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1.0 Introduction

1.1 Why has this strategy been done?

This strategy is a requirement under the Flood and Water Management Act 2010. The Act requires each Lead Local Flood Authority (LLFA) in England and Wales to set out how it will manage flooding and coastal erosion in its area. Sefton Council is a Lead Local Flood Authority and this strategy will satisfy this statutory need. It also satisfies the requirements under the Flood Risk Regulations 2009 for a Flood Risk Management Plan.

1.2 What is the purpose of this strategy?

The purpose of this Strategy is to help individuals, communities, businesses and authorities to better understand and manage flood risk within Sefton.

1.3 What type of risk does this strategy cover?

This strategy will consider flooding from all sources and includes coastal erosion. It can be difficult to identify the source of flooding during an incident and often it can be a combination of different sources. By including all sources of flood risk within this strategy it provides a clear overview of flood risk within Sefton and the co-ordinated approach between partners, who have different roles and responsibilities for managing these risks. It is worth emphasising that a partnership approach is key to managing these risks as they are not limited by organisational or political boundaries.



What is flooding from all sources?

Surface water flooding occurs when high intensity rainfall flows over the surface of the ground and ponds in low lying areas. This can be made worse when the ground is saturated or when the drainage network does not have the capacity to cope with the additional flow of water.

Groundwater flooding occurs when water levels in the ground rise above the ground surface. Flooding of this type tends to occur after long periods of heavy rainfall and can last for weeks or even months.

River flooding occurs when a watercourse cannot accommodate the volume of water that is flowing into it. Watercourses include everything from large rivers down to small drainage ditches.

Coastal flooding occurs during storms when there is an increased risk of high sea levels causing overtopping or breaching of coastal flood defences leading to flooding inland.

Reservoir flooding results from the complete or partial failure of a reservoir structure. It may be caused by erosion due to seepage, overtopping of the dam beyond its design level or through accidental damage to the structure.

Sewer flooding occurs when the sewer network cannot cope with the volume of water that is entering it or when pipes within the network become blocked. This type of flooding is often experienced during times of heavy rainfall when large amounts of surface water overwhelm the sewer network.

Highway flooding is caused by heavy rainfall or water overflowing from blocked or overloaded drains, soakaways and gullies causing water to pond within the highway network or from a lack of a formal drainage system.

Canal flooding may occur when there is a breach in the canal structure which allows the water in that length of canal to flow out and flood areas close to the breach.

Burst Water Mains can cause flooding but it is not possible to predict when or where this may happen.

1.4 What area does this strategy cover?

This strategy covers the administrative boundary of Sefton which is a coastal, low-lying area heavily influenced by 3 estuaries (Mersey, Ribble and Alt) and 2 rivers (Alt and Crossens Channel). The low lying nature of the borough means that water needs to be pumped through it in order for it to drain out into the sea. Sefton is at risk from flooding and erosion from the sea, flooding from surface water, sewers, groundwater (saturation), watercourses, rivers, reservoirs and canals. Whilst this strategy considers Sefton, the risk does not stop at our boundary. We have an area of high risk that lies on the border with Liverpool and we rely on watercourses within West Lancashire to convey water from Sefton. Water from Knowsley also crosses through Sefton before reaching the sea.

Approximately 1 in 7 properties are at risk from internal flooding in Sefton

Coastal erosion at present affects the coastline around Formby and from Hightown to Crosby. These areas have the potential to expand as the climate changes with sea levels rising and predicted increased storminess. There will be limited impacts over the next fifty years; however, we believe this will significantly increase as we approach the end of the century. This potential change has been identified in the Local

Plan as a Coastal Change Management Area, the extent of this area may change as we improve our understanding of coastal erosion.



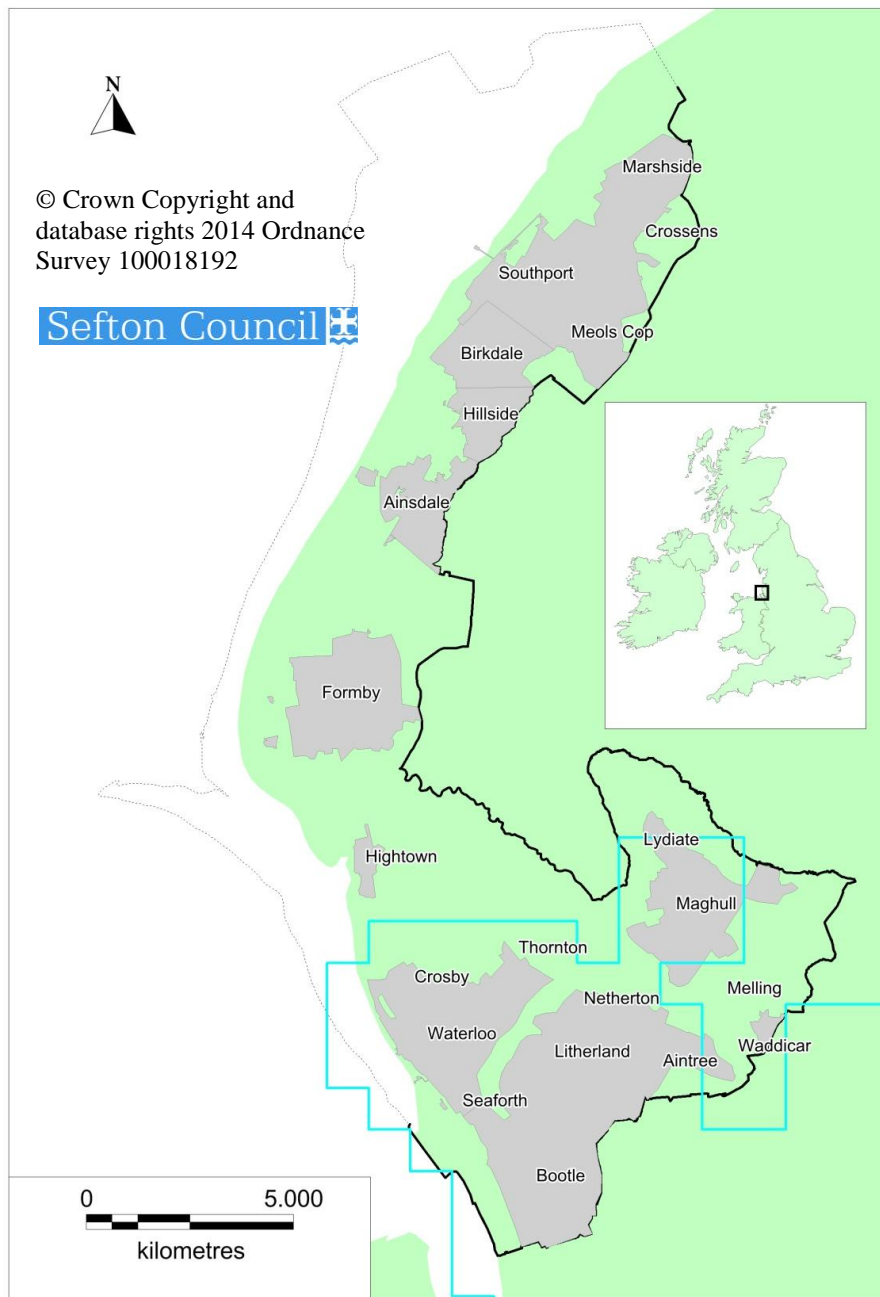


Figure 1: Location of Sefton and the areas identified as being at a high risk of flooding as part of the Preliminary Flood Risk Assessment 2009 (Blue Area).

1.5 How will this strategy be kept up to date?

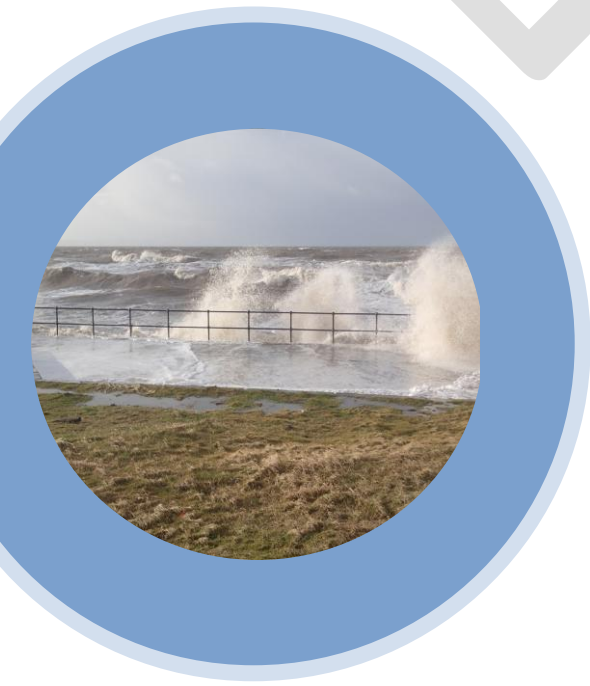
This strategy will be reviewed and updated every three years. However, it may be necessary to review the Strategy sooner if there are any changes required from the implementation of new regulations or changes in our understanding of the flood and coastal erosion risk in Sefton.

2.0 Aims and objectives

2.1 The strategy

The objectives of the strategy are to:

- Present an overview of the risk in Sefton from flooding and coastal erosion
- Present an overview of the management of flood and coastal erosion in Sefton
- Signpost readers to other relevant documents or agencies for more detailed information
- Comply with the legislation of the Flood and Water Management Act (2010).
- Comply with the legislation of the Flood Risk Regulations (2009).



3.0 Flood and coastal erosion risk in Sefton

3.1 What is a flood?

A flood is any occasion where water covers land which is not normally covered by water and it can result from one, or a combination of sources. The level of risk and significance of a flood depends on the depth, velocity and aerial extent of the water. This strategy does not include flooding from burst water mains as it is not possible to predict where this may happen. Nor does it include flooding from public sewers where it does not involve rainwater as this issue is dealt with solely by United Utilities.

The key difference with coastal erosion and flood risk is that a property only falls into the sea once. If a home is flooded it can be flooded many times. We are often more confident about when a home is at risk of coastal erosion compared to flooding.

3.2 What is coastal erosion?

Coastal erosion is the wearing away of land and the removal of beach sediments by wave action, tidal currents, wave currents or drainage.

3.3 What is flood and coastal erosion risk?

Flooding and coastal erosion are natural processes. They occur when specific environmental factors or a combination of factors happen. They only become a problem when they have the potential to adversely impact on people, property, infrastructure and the environment. Flood risk, by definition, is the



combination of the probability of a flood occurring and the potential consequences should that flood occur. Coastal erosion is slightly different in that it tends to be a gradual process and the risk is more to do with when the impact happens.

$$RISK = LIKELIHOOD \times IMPACT$$

The likelihood (or probability) of flooding is described as the chance that a location will flood in any given year. These are often expressed as a percentage and/or return period as outlined in Table 1.

Probability	Percentage range (per year)	Return period (per year)
High	Greater than 1.3% (e.g. 2%)	1 in 75 or greater (e.g. 1 in 50)
Moderate	Between 0.5% - 1.3%	Between 1 in 200 to 1 in 75
Low	0.5% or less (e.g. 0.1%)	1 in 200 or less (e.g. 1 in 1000)

Table 1: How probability is defined as percentages and return periods

The lower the percentage then the less probability there is of flooding in any one year; the higher the percentage then the more chance there is of flooding in any one year.

Although rare, floods with a low probability are likely to have greater impacts that are often far more severe compared to the high probability, more frequent events.

The consequences of flooding depend on the source of the flood and the vulnerability of the area. The source of the flood determines the potential for it to cause damage and will be influenced by the following factors:

- Depth of flood water
- Velocity of flood water
- Rate of onset
- Duration
- Wave action effects
- Water quality

A 1 in 100 year storm has the same chance of occurring in any given year. It does not mean that if one occurred this year we are safe for the next 99 years.

The vulnerability of the area affected by flooding determines the potential for damage to be caused and will be influenced by the following factors:

- The number of properties and/or the size of the area affected

- The type of development and infrastructure
- The characteristics of the population at risk
- The presence and reliability of mitigation measures to manage flood risk

The combined influence of these factors will determine flood risk in any area.

3.4 Where is at risk in Sefton?

As Sefton is a low lying pumped catchment area adjacent to the sea, it has had some significant flood incidents over the years. In the late seventies a secondary sea defence embankment in Crossens was breached flooding 110 properties. In the early nineties the Leeds and Liverpool Canal burst its banks flooding over 200 properties. In July 2010 50 properties were flooded in Seaforth and in September 2012 40 properties in Maghull were flooded.

Figures 2 to 6 show our current understanding of the risk from flooding and coastal erosion in Sefton. For this strategy they are shown at a borough wide scale but more detail can be found on the Environment Agency's website. The maps show the extent of the impacts and the increasing severity, but also show that the locations with the greatest number of houses at risk are consistent. The number of houses at risk is shown for 500m squares to give an indication of where the risk of greatest impacts to our communities is. Sefton has approximately 120,000 homes of which about 72,000 may be impacted by external flooding in their gardens or adjacent roads and 15,600 are at risk of internal flooding during a 1 in a 100 year event including climate change.

*For more detailed
flood risk maps go
to:
www.gov.uk/flood*



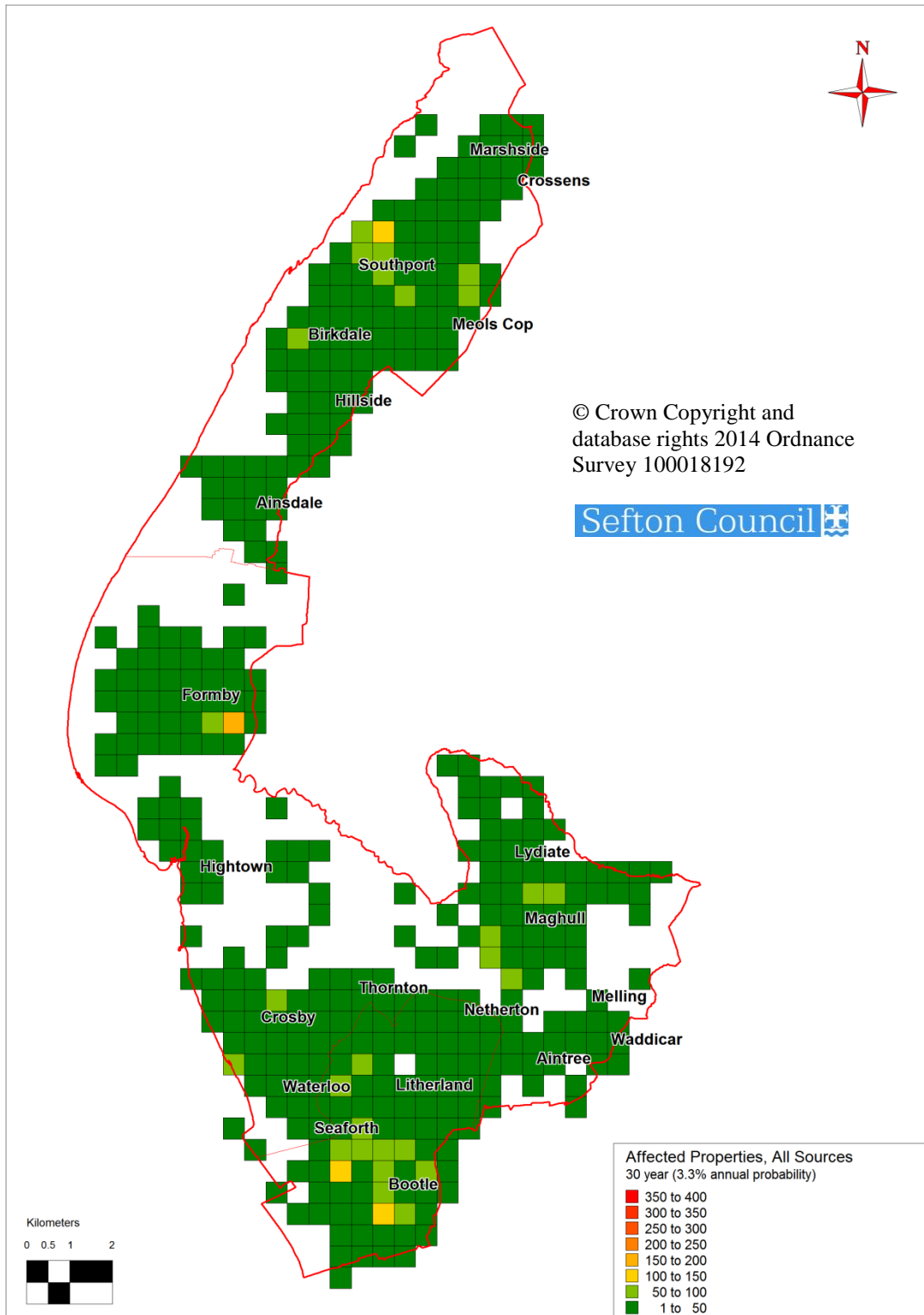


Figure 2: Flood risk from all sources in Sefton for a 1 in 30 year (3.3%) event

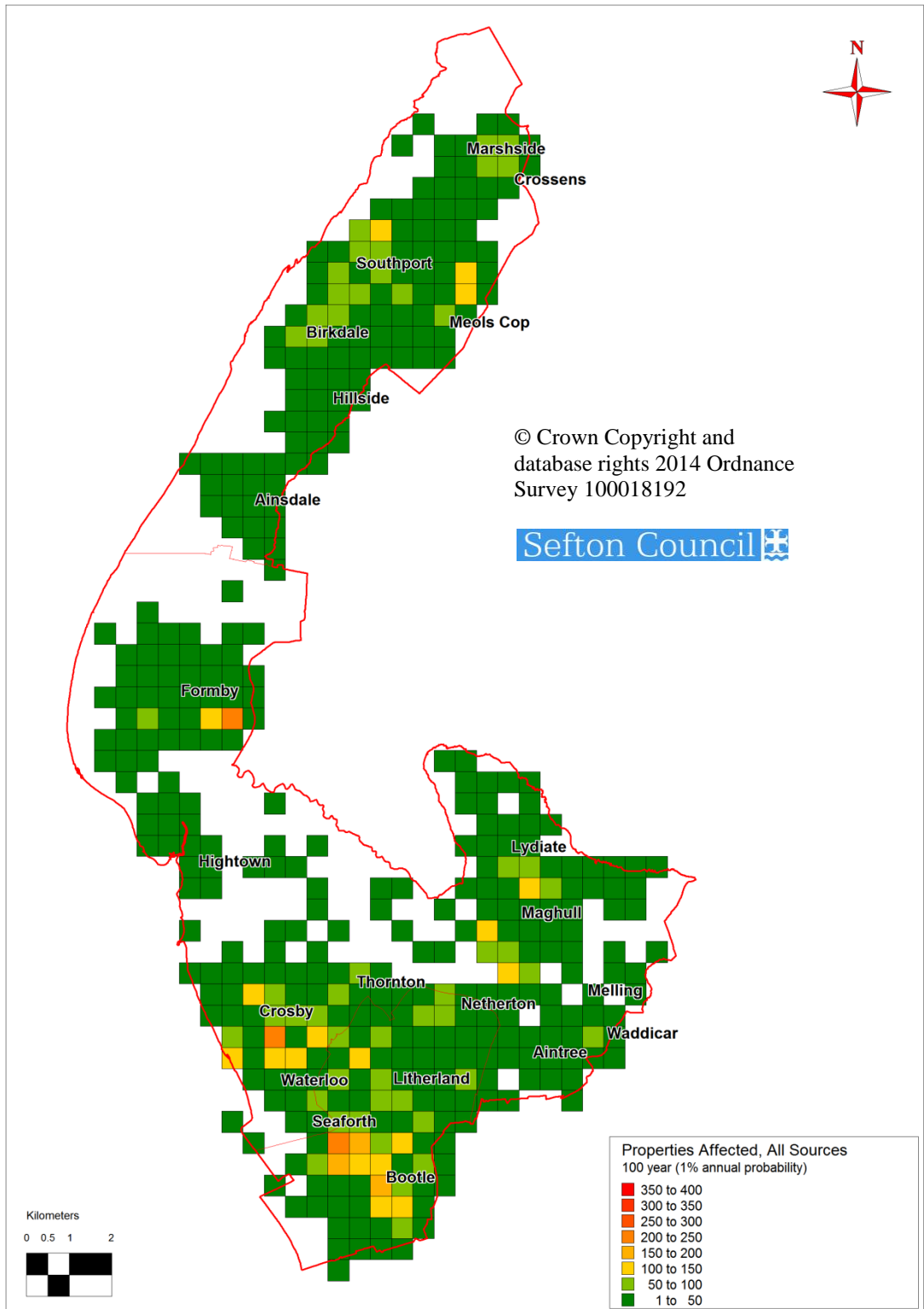


Figure 3: Flood risk from all sources in Sefton for a 1 in 100 year (1%) event

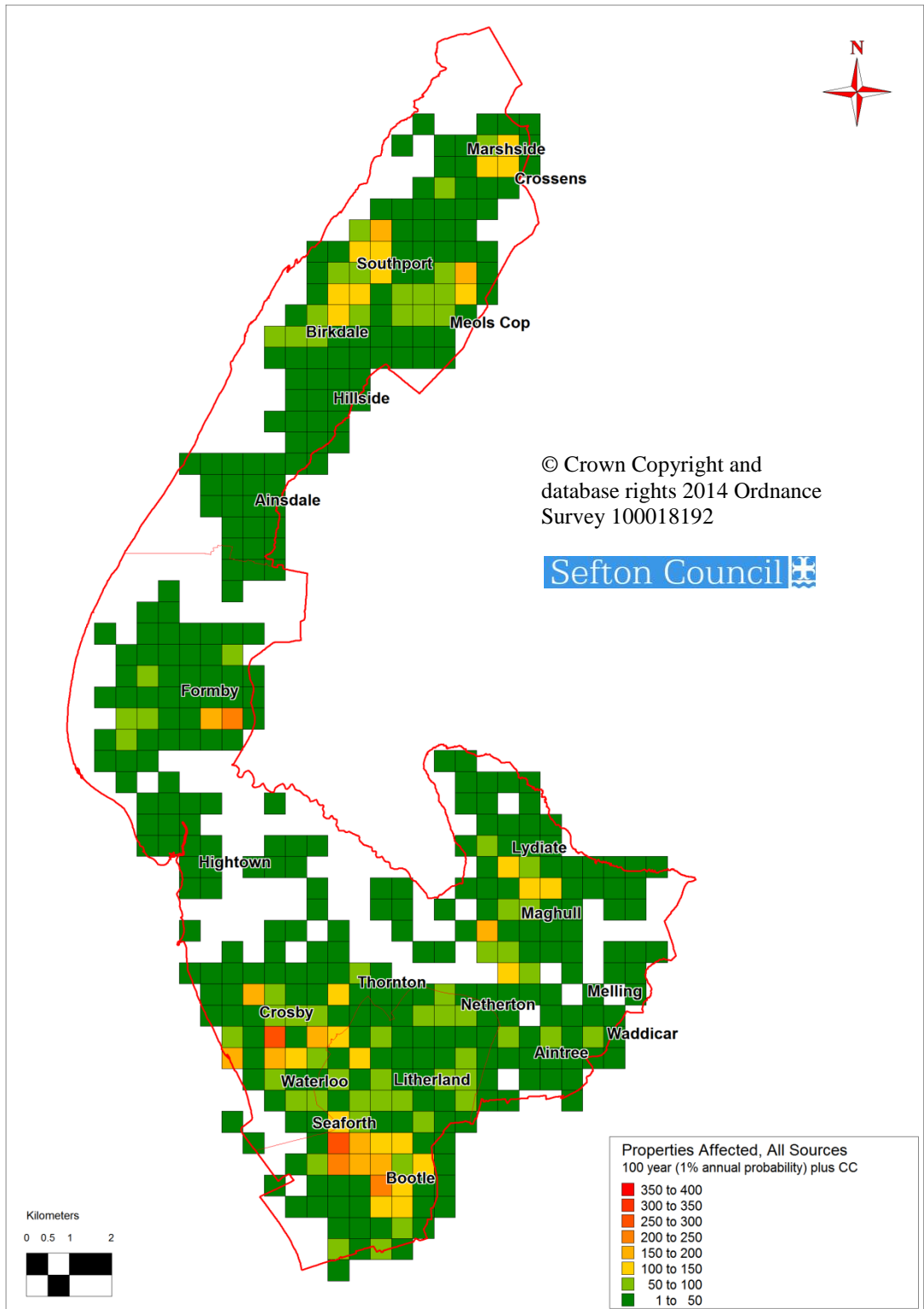


Figure 4: Flood risk from all sources in Sefton for a 1 in 100 year (1%) event plus an allowance for climate change

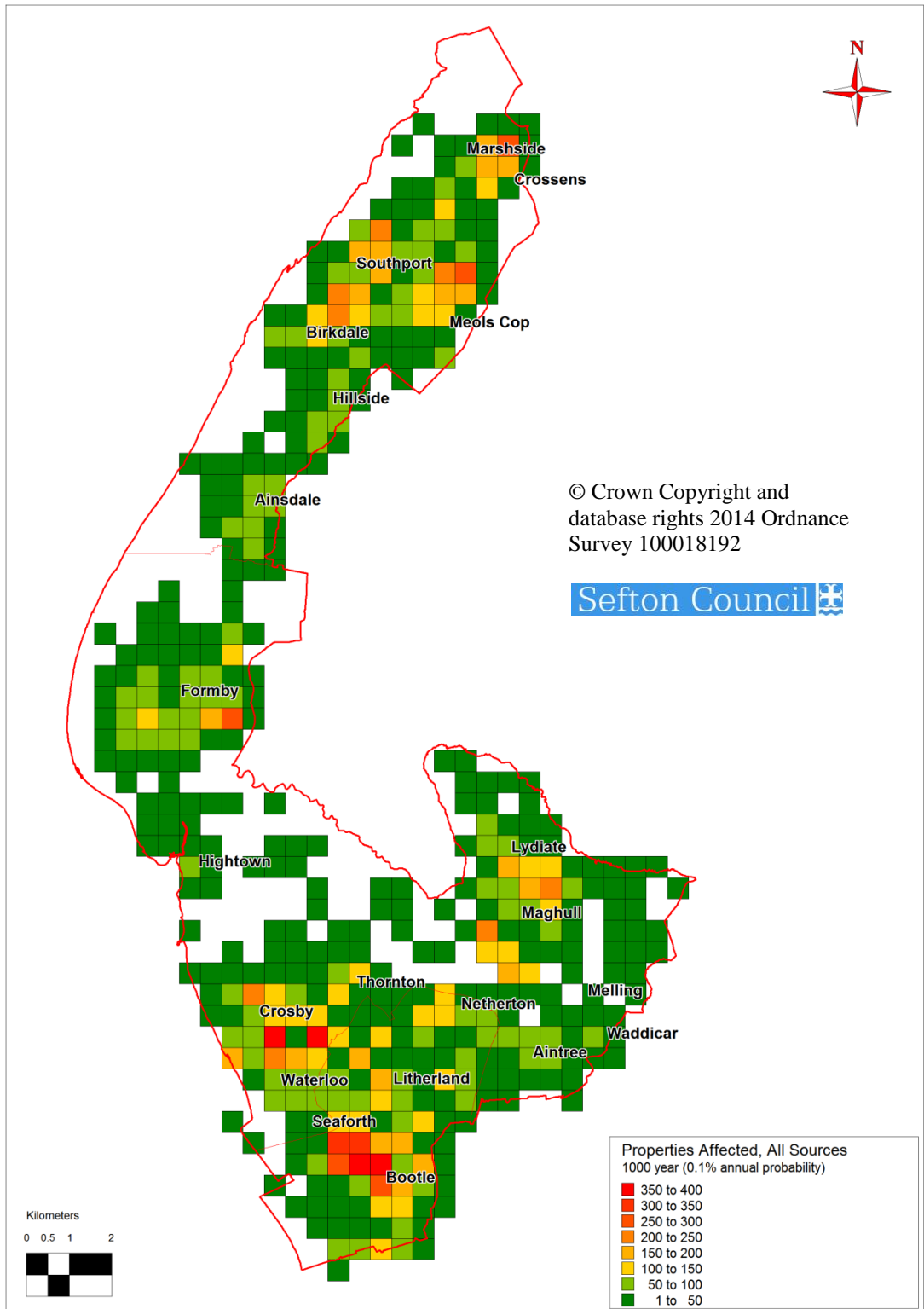


Figure 5: Flood risk from all sources in Sefton for a 1 in 1000 year (0.1%) event

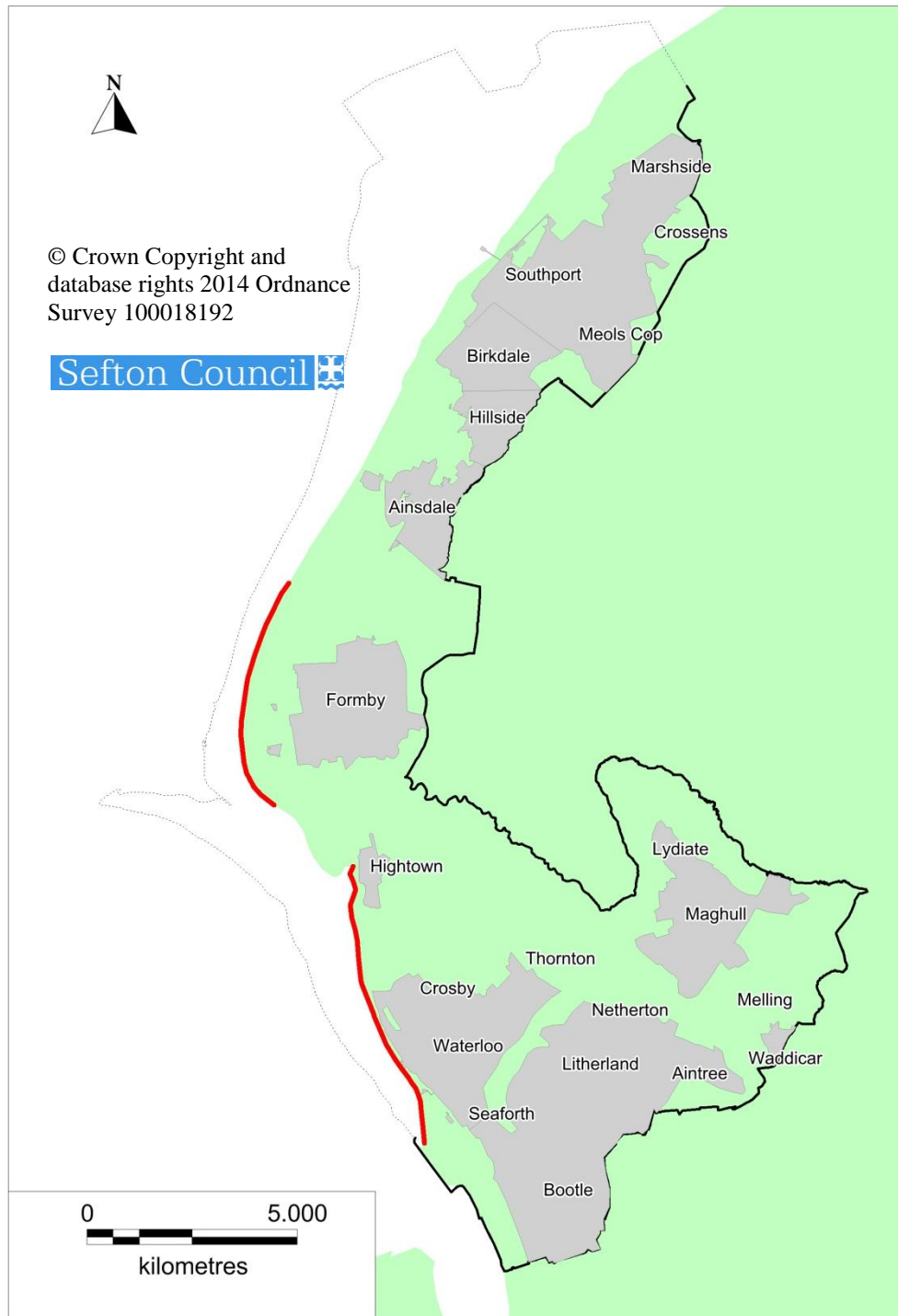


Figure 6: Coastal erosion risk in Sefton (Red / bold lines show areas at highest risk) – refer to the Shoreline Management Plan for greater detail

The red lines in figure 6 indicate the areas currently experiencing coastal erosion or where we have defences in place to manage coastal erosion but which have a limited lifespan.

3.5 Climate change and future flood risk

Globally our climate is changing and we are likely to see and feel the effects of this change through warmer wetter winters, hotter drier summers, increased storminess and sea level rise.

Flood risk is a combination of probability and consequence; with climate change there are a number of factors which will lead to a higher probability of flooding and more serious potential consequences in the future. This will result in an increase in the risk of flooding and coastal erosion across Sefton.

The factors which have the potential to lead to an increase in flood and coastal erosion risk include:

- The prediction that climate change will lead to more frequent and more severe extreme weather and rising sea levels, and therefore to more extreme floods and coastal erosion events with more serious consequences;
- Any deterioration in the condition and performance of existing drainage infrastructure and flood defence structures over time will increase future flood and coastal erosion risk;
- New development and changes in land use may lead to an increase in impermeable surfaces, general loss of vegetation cover and loss of flood plains, therefore causing increased levels of runoff during heavy rainfall events.



4.0 How flood and coastal erosion risk is managed in Sefton

4.1 Overview of flood and coastal erosion risk management in Sefton

Figure 7 illustrates how flood and coastal erosion risk is managed by Sefton Council from its vision, objectives, actions and influences of guiding principles set out in the National Flood and Coastal Erosion Risk Management Strategy. An explanation of the diagram follows:

The vision for the management of flood and coastal erosion risk is set in the centre of the diagram. The circles linked to the vision set out the detailed outcomes we are seeking and each is accompanied by activities that support their delivery. Around the outside are the principles that we will seek to work to, these will apply across all activities.

The activities are set out in more detail in section 4.3. They are also detailed in a Service Plan which includes how we will monitor and report on them and an Investment Plan which sets out how they are funded, the costs and the benefits.

Whilst the Flood and Coastal Erosion Risk Management Strategy, Service Plan and Investment Plan are separate documents it is only when considered together that they satisfy our legal requirements under the act and regulation mentioned in section 2.1.



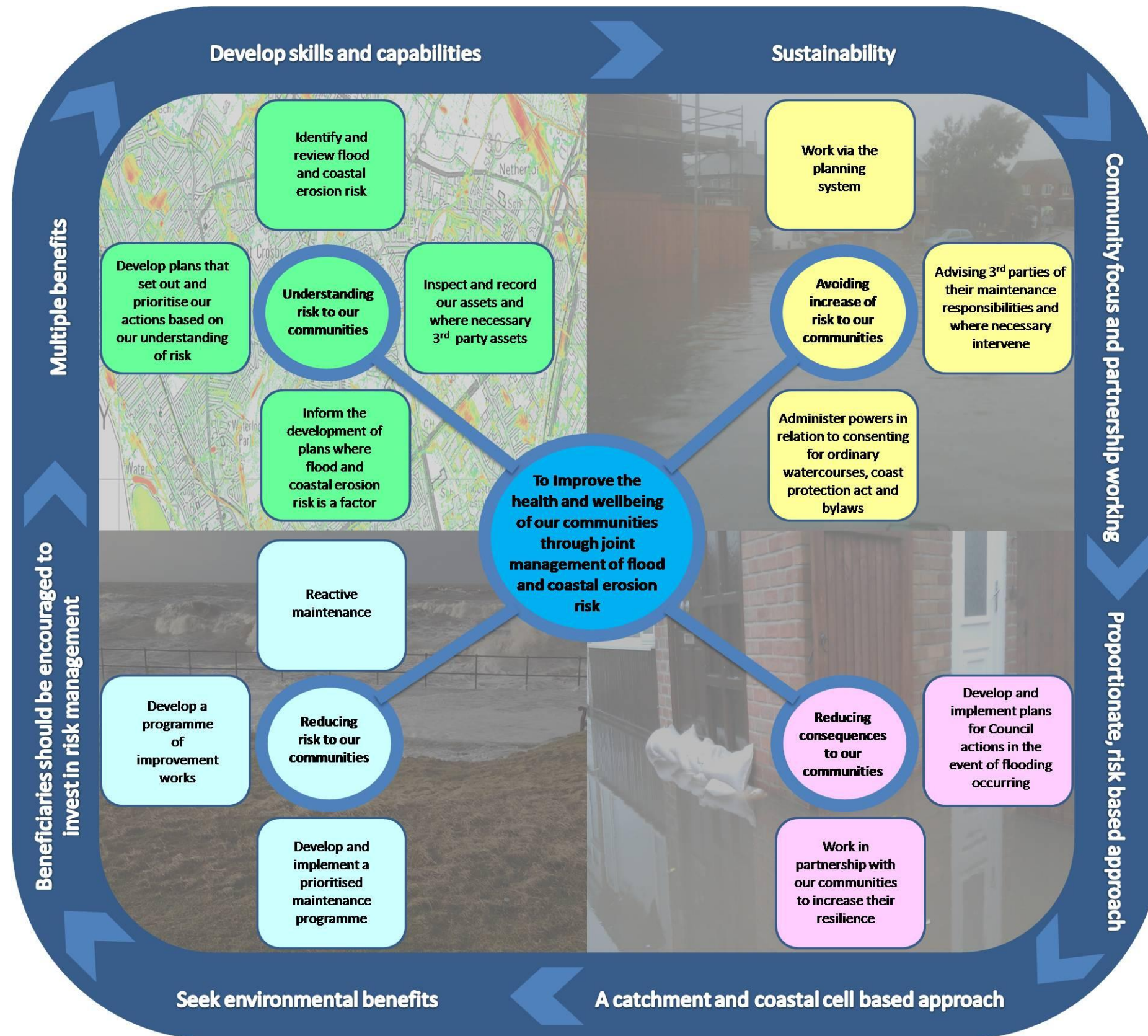


Figure 7: Management of FCERM in Sefton

4.2 Roles and responsibilities

The main authorities responsible for flood risk management are the Environment Agency, United Utilities and Sefton Council. The council will work in partnership with these key partners and other partners such as the Canals and Rivers Trust to achieve outcomes, multiple benefits and where possible reduce costs. This will require us to work to catchment and process boundaries rather than political boundaries and to contribute and co-ordinate with partners plans such as River Basin Management Plans.

Multiple benefits as mentioned above will include contributing to environmental, economic and social outcomes where possible.

A breakdown of the roles and responsibilities of the organisations involved in managing flood and coastal erosion risk are identified below:

Organisation	Roles	Main responsibilities
Sefton Council	<ul style="list-style-type: none"> • Lead local flood authority (LLFA). Specific responsibilities under the Flood and Water Management Act (2010). Amongst other responsibilities, this requires the LLFA to develop, maintain, apply and monitor a strategy for local flood risk management in its area, in consultation with local partners. It also requires investigation of local flood incidents and the maintenance of a register of structures/features that affect flood risk. • Member of the Merseyside Local Resilience Forum. • Emergency responder (Category 1 responder) • Coast Protection Authority 	<ul style="list-style-type: none"> • Emergency planning • Flood incident response • Flood recovery lead • Investigating flood events • As a Highways Authority maintain drains and gullies • Strategic overview • As a Coast Protection Authority we have powers in relation to the management of coastal erosion • As Local Planning Authority to prepare a Local Plan which directs inappropriate development away from areas of highest risk of flooding, but where it is necessary makes it safe without increasing flood risk elsewhere. • As landowners undertake riparian duties
Environment Agency	<ul style="list-style-type: none"> • Has a strategic overview of all sources of flooding and coastal erosion. 	<ul style="list-style-type: none"> • Fluvial (river) flooding from Main Rivers • Tidal (coastal) flooding

Organisation	Roles	Main responsibilities
	<ul style="list-style-type: none"> • Works with the Met Office and Flood Forecasting Centre to provide a flood warning service to communities and incident responders (Category 1 and 2 responders) • Works with communities at flood risk to raise awareness, improve resilience and establish flood action groups. • Have close links with Emergency responders and works closely with partner organisations. • Emergency responder (Category 1 responder) 	<ul style="list-style-type: none"> • Floodline Warnings Direct service • Maintenance of main rivers and Environment Agency owned defences • Enforcement and regulation on Main Rivers • Plans and constructs flood defences • Community Engagement • Pollution control • Member of the Merseyside Local Resilience Forum. • Partnership working with Lead Local Flood Authority and United Utilities
Local Resilience Forum (LRF)	<ul style="list-style-type: none"> • The LRF is a county-wide body, led by the police, consisting of Emergency responders and other interested parties. It is responsible for general emergency preparedness as set out in the Civil Contingencies Act (2004). • It has a specific group relating to Flood Planning and Response and is responsible for the Multi-Agency Flood Plan (MAFP) for Merseyside • Links in with other LRF sub-groups through executive groups. 	<ul style="list-style-type: none"> • Multi Agency Flood Plan • Coordinates responders involved in flood response and planning
National Flood Forum	<ul style="list-style-type: none"> • Registered charity established in 2002, which supports communities and individuals at flood risk. • Helps raise flood awareness and with post-flood recovery. Facilitates and supports community flood groups. • Works closely with local and national government. Provides insurance advice. Runs a directory of resilience products called the Blue Pages. 	<ul style="list-style-type: none"> • Insurance help and advice • Recovery support for communities and individuals
Land Owners	<ul style="list-style-type: none"> • Primary responsibility for the protection of their property 	<ul style="list-style-type: none"> • Allowing the flow of water to pass without obstruction

Organisation	Roles	Main responsibilities
	<ul style="list-style-type: none"> If you own land adjoining a watercourse you have certain rights and responsibilities (riparian landowner) 	<ul style="list-style-type: none"> Maintaining river beds and banks
Fire and Rescue service	<ul style="list-style-type: none"> Search and rescue, including boat rescue, and may be involved in evacuation of flooded areas. Part of the LRF and involved in emergency planning. Emergency responder (Category 1 responder) May pump floodwater where circumstances allow, including high-volume pumps. 	<ul style="list-style-type: none"> Incident response Pumping of flood water Search and rescue
Merseyside Police	<ul style="list-style-type: none"> Respond to flood emergencies, organise the command and control (Operational, Tactical and Strategic) during events as well as operational response during incidents. Participates in the LRF and involved in emergency planning (through the LRF). Emergency responder (Category 1 responder) 	<ul style="list-style-type: none"> Command and Control Evacuation Temporary road closures and cordons
Highways Agency	<ul style="list-style-type: none"> Lead responsibility for providing and managing highway drainage and roadside ditches under the Highways Act 1980. 	<ul style="list-style-type: none"> Highway drainage and road side ditches.
United Utilities	<ul style="list-style-type: none"> Manage the risk of flooding from water supply and public sewers and the potential risk to others from the failure of their infrastructure. 	<ul style="list-style-type: none"> Floods affecting public sewers Member of the Merseyside Local Resilience Forum. Partnership working with Lead Local Flood Authority and Environment Agency
Canal and Rivers Trust	<ul style="list-style-type: none"> Operate and manage the canal network in England and Wales. Perform inspections and maintenance of canals, bridges, towpaths etc., and monitor water levels. Responds to flooding from canal breaches. 	<ul style="list-style-type: none"> Flooding from canals Support to LLFAs

Table 2: Roles and responsibilities of those involved in flood risk management

4.3 Outcomes and activities

Table 3 relates each of our outcomes to the activities required to support it and the typical actions that might be undertaken as part of this activity. The table is colour coded to relate to the outcomes and activities in figure 7.

The same table is used in the Service Plan where it is extended to include specific deliverables and performance measures and similarly in the Investment Plan which includes funding and benefits. Due to the current financial climate benefits are phrased in the context of disbenefits if the activity were to be reduced or cease.

Outcome	Activity	Actions
Understanding risk to our communities	Identify and review flood and coastal erosion risk	<ul style="list-style-type: none"> • Monitoring of a range of conditions • Recording flood and coastal erosion events • Modelling of systems • Communicating the risk
	Develop plans that set out and prioritise our actions based on our understanding of risk	Develop and maintain: <ul style="list-style-type: none"> • Local Flood Risk Strategy • Preliminary Flood Risk Assessment • Flood Risk Management Plan • Shoreline Management Plan • Surface Water Management Plan • Coastal Change Study • Catchment Plans (Flood Risk Management Plans)
	Inform the development of plans where flood and coastal erosion risk is a factor	<ul style="list-style-type: none"> • Local Plan • Strategic Flood Risk Assessment • Green Space • Habitat Management • Coastal Management

Outcome	Activity	Actions
	Inspect and record our assets and where necessary 3rd party assets	<ul style="list-style-type: none"> • Develop and maintain a database containing information about assets important to flood risk management • Develop and implement a risk based inspection programme for the assets • Identify and designate assets which are in third party ownership and although not their primary function are important for flood risk management
Avoiding increase of risk to our communities	Work via the planning process	<ul style="list-style-type: none"> • Develop and maintain evidence relating to flood risk in the format of the Strategic Flood Risk Assessment (SFRA) to inform the Local Plan and decisions on planning applications. The most recent update of the SFRA has been completed in 2013 • As and when the relevant sections of the Flood and Water Management Act 2010 are enacted the Council will establish and operate a SuDS (Sustainable Drainage) Approval Body (SAB). It is anticipated that this will include adopting and maintaining SuDs • Develop and maintain local guidance for Flood Risk Assessments (FRA) which sets out what we will expect in such assessments and how we will consider them over and above that set out in National Planning Guidance. • As a Local Planning Authority consider planning applications in relation to flood risk and apply the policies and procedures set out in the Local Plan, SFRA, Flood and

Outcome	Activity	Actions
		Coastal Erosion Risk Management Strategy, FRA guidance and National Planning Policy. This will include consideration of contributions towards flood and coastal erosion risk management.
	Administer powers in relation to consenting for ordinary watercourses, coast protection act and bylaws	<ul style="list-style-type: none"> • Establish consenting procedures and raise awareness of need for consents • Review and enact bylaws • Review procedures and enact recommendations relating to the Coast Protection Act
	Advising 3rd parties of their maintenance responsibilities and where necessary intervene	<ul style="list-style-type: none"> • Communicate riparian duties • Identify issues or receive in complaints relating to lack of maintenance • Identify and enter into negotiations with riparian owners • Where negotiations fail commence enforcement proceedings • Where necessary undertake works ourselves
Reducing risk to our communities	Develop and implement a prioritised maintenance programme	<ul style="list-style-type: none"> • Identify catchments and associated critical infrastructure • Develop and implement an asset management plan which will include a prioritised maintenance plan based on the number of properties at risk and the vulnerability of the resident
	Develop a programme of improvement works	<ul style="list-style-type: none"> • Identify capital maintenance and improvement works • Develop a forward plan and bid for funding to undertake the work • Implement works when funds become

Outcome	Activity	Actions
		available
	Undertake reactive maintenance	Respond to reactive maintenance needs on a prioritised basis
Reducing consequences to our communities	Work in partnership with our communities to increase their resilience	<ul style="list-style-type: none"> • Share our understanding of flood and coastal erosion risk • Discuss with communities options for increasing their resilience • Provide advice and support on what to do before during and after a flood
	Develop and implement plans for Council actions in the event of flooding occurring	<ul style="list-style-type: none"> • Emergency Plan • Resilience Plan

Table 3: Details of how the Council will deliver flood and coastal erosion risk management in Sefton.

5.0 Wider environmental context

5.1 How have the wider environmental implications of our actions to manage flood and coastal erosion risk been considered?

We are committed to seeking opportunities to contribute to wider environmental and social improvements as we implement this strategy, especially for our most deprived communities. We will take into account other Council and Partner objectives and where possible support their outcomes whilst achieving those set out in this strategy.

A Strategic Environmental Assessment has been developed alongside it to ensure that the approaches we have set out don't have unwanted adverse impacts on the environment.



6.0 Funding

6.1 How are the council funding flood and coastal erosion risk management?

The Council, at the time of writing, spend £383,600 per year from revenue funding for a team delivering this service. Of this £146,600 is staff costs and the balance of £237,000 is works costs. As well as directly delivering activities some of the staff time is spent on developing schemes with a view to drawing in external funding, the scale of external funding drawn in can range from less than £100,000 per year through to multi-million pound projects developed and delivered over a number of years. Other areas of the Council contribute to these outcomes especially Planning and Emergency Planning but their costs are not included here.

These costs are broken down between service areas in the Investment Plan along with outlines of the schemes that are currently receiving or being developed with a view to receiving external funding.



7.0 Monitoring and review

7.1 How is the council monitoring and reviewing the delivery of flood and coastal erosion risk management in Sefton?

The monitoring of the delivery of this service area is set out in the Service Plan. This strategy along with the Service Plan and Investment Plan will be reviewed after three years and will be reported on annually. The annual report and review will be presented to the Cabinet Member for approval and will also be made publically available.

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8.0 Further reading

Sefton Council Flood and Coastal Erosion Risk Management Investment Plan

<http://www.sefton.gov.uk/advice-benefits/crime-and-emergencies/flooding-advice.aspx>

Sefton Council Flood and Coastal Erosion Risk Management Service delivery Plan

Web address

<http://www.sefton.gov.uk/advice-benefits/crime-and-emergencies/flooding-advice.aspx>

National Flood and Coastal Erosion Risk Management Strategy

<https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england>

Website references to be added:

Shoreline Management Plan

Preliminary Flood Risk Assessment

Local Plan

Strategic Flood Risk Assessment

Making Space for Nature

Biodiversity 2020

