Kent County Council

Flood Response Plan

Issue 1
February 2010

Next scheduled review: February 2011

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Issue & Review Register

Summary of changes	Issue number & date	Approved by
New Issue	February 2010	David Cloake Head of Emergency Planning

NOTE: The latest version of this plan can always be found at on the KCC intranet site and KCC Intranet site.

Next review scheduled: February 2011

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Distribution List

Title	Role/Organisation
All Chief Officers	KCC
All Resource Directors	KCC
All Cabinet Members	KCC
KCC Flood Risk Management Committee Members	KCC
Directorate Senior Management Teams	KCC
All nominated directorate contacts for emergency planning	KCC
All KCC Emergency Planning Group officers	KCC
Flood Management Team	Environment Agency

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GENERIC TRIGGERS, ACTIONS AND INFORMATION

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1. Introduction

1.1 The purpose of this plan is to set out the principles that govern the Kent County Council response to a significant flood within their local authority administrative area.

1.2 This Plan sits underneath the Pan Kent Multi Agency Flood Plan and Kent County Council Major Emergency Plan and alongside the relevant emergency plans of all Category 1 and 2 Responders and other organisations concerned with supporting the response of the community to a flood.

1.3 The Plan is produced and maintained by Kent County Council to meet the requirements of the Civil Contingencies Act 2004. This Plan is built upon the existence and maintenance by Category 1 and 2 Responders of their own plans for response to flooding.

2. Scope

2.1 The main objective of the Plan is to ensure a coordinated response to a flood, which will protect life and well-being with the mitigation of property and environmental damage as a strong supporting objective.

2.2 The focus of this plan is primarily on coastal and fluvial flooding. The procedures also apply, in part, to surface water and ground water flooding resulting from excessive rainfall, although some responsibilities will be different for this circumstance.

2.3 This plan incorporates guidance arising from the Pitt Review and acknowledges and recognises the impacts of climate change and associated extreme climatic events in compliance with National Performance Indicator NI 188.

2.4 The Plan provides information on actions, roles and responsibilities in response to a flood in the Kent County Council area. All responding agencies will hold copies of specific plans relevant to themselves and which will be used when responding in conjunction with this Plan. Other Kent-wide plans/frameworks may also be active; copies are available to responding agencies from the Kent Resilience Forum Business Management Support Unit (KRF BMSU), KCC Emergency Planning Group or on the KRF Extranet site. Specifically these include the following:

- Pan Kent Strategic Emergency Framework
- Pan Kent Multi-agency Flood Plan
- Kent Recovery Framework
- Kent County Council Flood Response Plan
- Local Multi-agency Flood Plans
- Kent County Council Rest Centre Guidelines
- KRF Identifying Vulnerable People in an Emergency Plan

2.5 The procedures in this response plan will be activated when any of the following criteria are met:

- Met Office Severe Weather Warning received for heavy rain or rapid snow melt;
- Flood Watch/Flood Warning/Severe Flood Warning is issued;
- Properties are threatened as a result of flooding;
- Properties are threatened by flooding;
- Intelligence received indicates flooding may occur.

See section six for more detail of the plan activation.

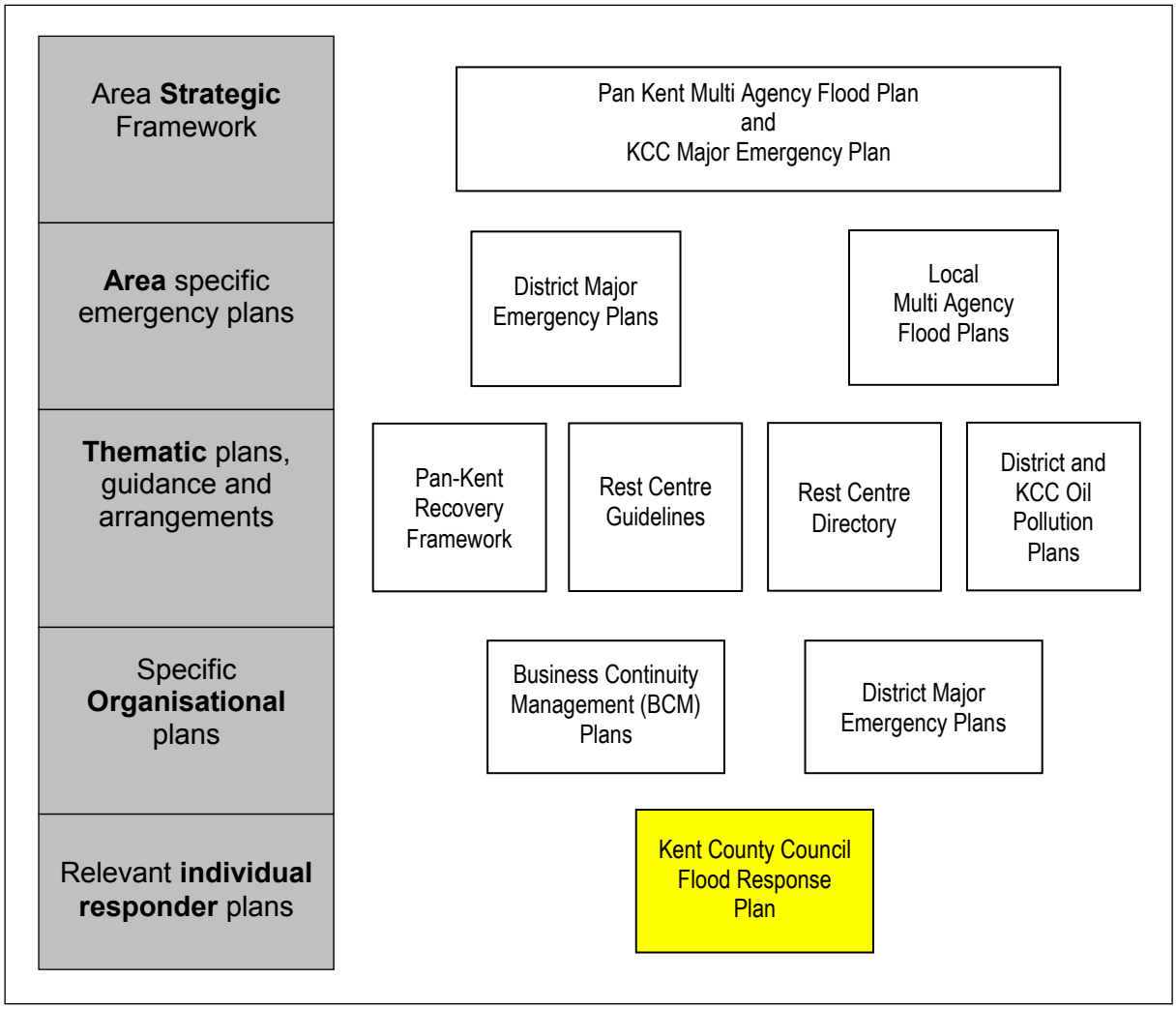
3. Audience

3.1 This document is intended for use by all Kent County Council Directorates to inform and support their planning for and response to major flooding events within the county.

4. Related and Interdependent Plans

The relationships between response plans are indicated in the diagram below.

Figure 4.1 - Related and Interdependent Plans



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5. The Risk of Flooding

5.1 Risk Assessment

Risk is a product of the likelihood and impact of a given hazard or threat. The impact will depend upon the exposure of people and property to the hazard and their respective vulnerability to harm. In Kent, the risks from flooding vary according to the source of the flooding and the characteristics of the people and property exposed to flooding.

Assessed risk details, including critical infrastructure, are contained in the Risk Registers at RRF (Regional Resilience Forum), LRF (Local Resilience Forum) and at local responder level.

Residual risk is that remaining after mitigation measures (in this case tidal and fluvial defences) have been taken, recognising that flood risk cannot be eliminated entirely.

5.1.1 Community Risk Register

An assessment of the risk of flooding in Kent can be found in the Community Risk Register (at Local Resilience Forum Level).

http://www.kent.gov.uk/publications/community-and-living/kent-community-risk-register.htm

The risk of flooding in Kent is divided into 7 main categories under the Hazard Category of Severe Weather.

H19 - Flooding: Major coastal and tidal flooding affecting more than two UK regions
(This is the national picture to provide context for local risk assessment).

HL16 - Local coastal / tidal flooding (affecting more than one Region).

HL17 - Local coastal / tidal flooding (in one Region).

H21 - Flooding: Major fluvial flooding affecting parts of more than two UK regions.
(This is the national picture to provide context for local risk assessment)

HL18 - Local / Urban flooding (fluvial or surface run-off).

HL19 - Local fluvial flooding.

HL20 - Localised, extremely hazardous flash flooding.

Risk is assessed based on the likelihood and impact to give an overall Risk Rating. The risk assessment within the Community Risk Register gives a 'Very High' Risk Rating outcome for all of the above hazards.

More locally coastal flood risk is seen by the Kent Resilience Forum Risk Assessment and Severe Weather Sub Groups as the highest risk due to the length of coastline in Kent, the nature of that coastline and the size and demographic profile of the communities living in coastal areas and following advice from the Environment Agency.

5.2 Flood Risk

In total, some 70,000 properties in Kent are in the floodplain. In addition, many more people work in, visit or travel through potentially vulnerable areas and could be unfamiliar with the risk.

As a result of man-made climate change, both the chance and consequence of flooding are increasing. Sea level rise, more frequent and higher storm surges and increased winter rainfall and more intense summer rainfall will add to existing risk and it may not prove possible to improve fixed defences sufficiently to maintain or raise protection standards.

Floods are mostly natural events that result either from excessive rainfall that leads to rivers overflowing their banks, or from tidal storm surges on the coast or in estuaries. They cause death and damage only because human activity takes place in areas such as river valleys or estuaries where floodwater spreads. In urban areas, man made drainage systems may have inadequate capacity or become blocked leading to flooding also.

To limit both the chance and consequences of flooding, the customary response has been to construct fixed, raised defences in the form of walls or embankments or other structural measures such as bypass channels or pumped drainage systems. These do not eliminate the risk of flooding occurring. They may though, lead to a false sense of security or complacency in those living or working in the defended areas, who would be unprepared for a flood should one occur. The consequences of flooding may also be controlled by avoiding development in flood risk areas, as advocated by PPS25 (Planning Policy Statement 25 – Development and Flood Risk) For this reason, it is prudent to put in place measures to address the residual flood risk as advocated by PPS 25.

This Plan is a major element of the response to potential major and significant flooding in Kent.

In this document, reference to risk implies a function of both the chance or likelihood of a hazard becoming a reality and the consequences or impact of that occurrence. The consequence will depend upon the exposure of people and property to the hazard and their respective vulnerability to harm.

5.3 Flooding Sources

Kent is potentially vulnerable from several flooding sources (as described below). These may occur separately or in combination.

5.3.1 Tidal Flood Risk

5.3.1.1 Tidal Flood Risk General Information

Through overtopping of existing defences as a result of a severe storm surge in the North Sea, either in combination with high freshwater flows from upstream, or a surge alone, through a breach resulting either from a malicious act, accident or structural failure in existing defences (embankments and barriers), failure of a barrier to operate, either during a normal tidal sequence or a storm surge.

There are defended and undefended tidal floodplains of the Thames Estuary, Medway Estuary and East Kent Coast. These defences are maintained and owned by the Environment Agency or Local Council depending on the stretch of coastline.

The chance of overtopping of defences from a storm surge tide should be evident several hours beforehand. There is continuous monitoring of tide levels as tides move southward down the East coast from Scotland, and the Environment Agency aims to issue a warning at least 2 hours in advance. The tidal defences for Kent and the Thames Estuary provide varied levels of protection against a storm surge with a statistical return period of 1 in 1000 years, or an annual chance of 0.1%. Because of ground levels, floodwater could be several metres deep in places and, close to the site of overtopping, floodwater velocities could exceed 1 metre per second; enough to sweep people off their feet. Floodwater may not drain away naturally from coastal areas because of their topography. Recovery will necessitate pumping and water could be present in an area for weeks. The water will be brackish as well as polluted and this will cause additional damage.

By its nature, a breach in defences is unlikely to be predictable, although it is possible that signs of weakness may be evident prior to failure. Whether these would be recognised as such is uncertain. It follows that it must be assumed that no advance warning will be provided. The risk of breach occurring would increase with the severity of a storm and responders should be alert to the possibility of a breach when a flood warning or severe flood warning has been issued. A breach is likely to occur when there is a significant height differential between the water level and the ground level behind the defence. This will result in a torrent of floodwater affecting an area behind the defence which will present a threat to life and possibly cause damage to buildings. An added hazard would result from large objects, such as cars, and other debris carried by the floodwater. As with overtopping, floodwater depths may be considerable in places. Depending on the nature of a breach, some floodwater may drain away as the tide recedes but it is likely that many areas will remain inundated.

5.3.1.2 Tidal Flood Risk in Kent

The Kent coastline is some 326 miles long (524.6 km) and poses a potential tidal flooding risk to 369 square miles of land (593.8 km) within the county (excluding Medway's administrative area). A map showing areas within Kent vulnerable to coastal (or tidal) flooding can be found at figure 1. at the end of Section 5.

5.3.2 Fluvial Flood Risk

5.3.2.1 Fluvial Flood Risk General

As a result of freshwater flows in a tributary that exceed the capacity of the channel if undefended, or overtop the defences, or through a breach, howsoever caused, in the defences during high flows caused by prolonged or intense (summer thunderstorm) rainfall.

Flood risk is continuous along the corridors of the tributaries of the Kent Rivers, which is to say that any flood will move downstream and progressively affect the flood plain unless defences are in place. The standard of protection afforded by defences varies from river to river and, in many cases, along the river itself. It is also the case that the susceptibility of the rivers to flooding varies. The larger rivers in Kent and Medway are most likely to cause flooding from the autumn to the spring. In this circumstance, it will generally be the case that a warning will be issued in advance by the Environment Agency when there is the likelihood of flooding or defences being overtopped.

As with a tidal breach, no advance warning of a breach in fluvial defences can be expected, although during a period of very high level and high velocity flows responders should be alert to the possibility of a breach when a flood warning or severe flood warning has been issued. Water depths and velocities will generally be less than those associated with tidal flooding, but may still present a hazard to life.

5.3.2.2 Fluvial Flood Risk in Kent

The landscape of Kent is defined by its river systems. The largest, the catchment of the **River Medway**, covers 930 square miles (2,409 km^2) comprising some 25% of the area of the county. The River Medway, flows for 70 miles (113 km) from just inside the West Sussex border to the point where it enters the Thames Estuary in north Kent. The River Medway is tidal downstream of Allington Lock, Maidstone.

Tributaries of the River Medway include:

- **The River Eden** - flows through the Weald of Kent from the border with Surrey, rising from the source in Titsey parish, Surrey and flowing eastward through the Wealden clay to join the River Medway near Penshurst.
- **The River Bourne** - begins its course west of Oldbury Hill on the Greensand Ridge in the parish of Ightham and enters the River Medway upstream of East Peckham.
- **The River Teise** - begins in Dunorlan Park in Tunbridge Wells and flows eastwards through Lamberhurst, passing Bayham Abbey. Here the small River Bewl, on which is the reservoir Bewl Water, joins the Teise. The Teise bifurcates 1.2 miles (2km) south west of Marden, the minor stream flows directly to Twyford Bridge, Yalding, while the major stream joins the River Beult at Hunton, 0.9 miles (1.5km) downstream from Yalding.
- **The River Beult** - has its several sources on the Weald west of Ashford, and then flows through Headcorn, where it is joined by the major stream of the Teise. The river enters the Medway at Yalding.

- **The River Loose** - is a relatively short river starting near Langley south east of Maidstone running west through Loose and joining the River Medway at Tovil.
- **The River Sherway** - flows from Egerton to the River Beult at Headcorn.
- **The River Len** - has its source at a small watershed south of Lenham. This heavily modified small river flows in a westerly direction and joins the Medway at the Archbishop's Palace Gardens in Maidstone town centre. The Len has been dammed at various points along its course, including Chegworth Mill, Leeds Castle, Mote Park, Turkey Mill and Palace Avenue Mill Pond.

The second largest catchment in Kent is that of the **River Stour**. The River Stour is the generic name for a group of rivers. The major towns at Ashford and Canterbury have grown up on the banks of the River Stour. The river is tidal downstream of Fordwich.

Its catchment area covers the eastern part of Kent and tributaries include:

- **River Upper Great Stour** - flowing from near Lenham to Ashford.
- **River East Stour** - rising near Hythe to Ashford.
- **River Great Stour** – flowing from Ashford to north west of Canterbury.
- **River Little Stour** – from Postling to join the Great Stour at Plucks Gutter, north west of Canterbury.
- **River Wantsum** - part of the old Wantsum Channel separating the Isle of Thanet from mainland Kent.
- **Whitewater Dyke** - running from Shadoxhurst to Ashford
- **Ruckinge Dyke** - from north of Hamstreet to Ashford
- **Aylesford Stream** - its source is north of Sevington to Willesborough

Other Kent rivers include the **River Darent** in the north west of the County, the **River Fleet** which rises at Springhead Nursery and joins the River Thames at Northfleet, the **River Dour** which flows from Temple Ewell to the sea at Dover and the **River Rother** which forms part of the geographical boundary between the administrative counties of Kent and East Sussex.

In addition, a large number of smaller watercourses persist within the county which can contribute to localised flooding. Significantly, these include the **Brockhill, Mill Lease, Saltwood and Seabrook Streams** all rising at the foot of the scarp of the Kent Downs and flowing into the **Royal Military Canal**. The **Enbrook Stream** and (now heavily modified) **Pent Stream A, B, C and D** have the same origin but flow into the English Channel and Folkestone Harbour respectively. The heavily modified courses of the **Plenty Brook** at Herne Bay and **Gorrell Stream** at Whitstable have both contributed to historic flooding events as they flow (or are pumped) to the sea.

A map showing areas within Kent vulnerable to fluvial flooding can be found at figure 5.1. at the end of Section 5.

5.3.3 Surface Water/Overland Flow Flood Risk

5.3.3.1 Surface Water/Overland Flow Flood Risk General

Usually, but not exclusively, as a result of intense rainfall in a summer thunderstorm that exceeds the capacity of the installed drainage system. Surface Water flooding is not currently, specifically, covered in this plan, but most responses from partner agencies apply.

The network of tunnels and drainage conduits may result in floodwater being conveyed beyond the area immediately affected by flooding.

Surface water flooding as a result of rainwater not being able to drain away at the rate at which it is accumulating can occur anywhere in Kent. Clearly flatter and low lying places are the most vulnerable, but these areas are not limited to river corridors or floodplains. The cause can be either a blocked drain or very high intensity rainfall of the type most usually associated with thunderstorms. Both causes are relatively unpredictable and so may result in flooding without any prior warning. Flooding may also result from high river levels preventing the discharge of drains. Water depths are rarely great, other than in local depressions or unless associated with river flooding. Local circumstances may give rise to significant water velocities. Surface water flooding, when unaccompanied by fluvial or tidal flooding, is likely to trigger a major incident only when widespread occurrence causes significant traffic disruption or strains the response capability.

In densely developed urban areas, there can be a rapid response to rainfall in both the natural and constructed drainage systems with the result that there may be no forewarning of fluvial and surface water flooding. The increased storminess associated with climate change will increase incidences of surface water flooding – especially within urban and suburban areas with large expanses of impermeable surfaces.

An Environment Agency map showing those areas within Kent vulnerable to surface-water flooding can be found at figure 5.2. at the end of Section 5.

5.3.4 Groundwater Flood Risk

5.3.4 Groundwater Flood Risk General

Groundwater flooding occurs when the water table within certain areas of Kent (namely on the chalk catchments) becomes high and can flood large areas, most notably in the chalk catchments in the east of Kent (**Little Stour, Nailbourne and Petham Bourne**) and west of Kent (**Darent catchment**). Due to the nature of groundwater flooding it causes a prolonged flood event, leaving areas waterlogged and/or flooded for up to months at a time. In these areas the groundwater levels are monitored by Environment Agency boreholes, and due to the slow onset of groundwater flooding it can be prepared for, but not halted.

The following are not covered by this plan:

- Foul Sewage - the impact is likely to be local: resulting from blockage or surcharging of the sewerage network leading to overflow through manholes etc: responsibility for response lies with the relevant utility company. However, flood water contaminated by foul water sewage may require additional actions by responders. This type of flooding often occurs in conjunction with, or as a result of, other forms of flooding and the source may be difficult to determine. This means that it is dealt with as part of the response the response to other forms of flooding listed above.

- Water Main Burst - the impact is likely to be local: responsibility lies with the relevant utility company.
- Contained Water - this includes statutory and other reservoirs, private lakes and canals. In respect of reservoirs covered by The Reservoirs Act 1975, the relevant statutory undertaker's emergency plan will apply. This planning is to be covered in separate reservoir planning, including a generic Kent Resilience Forum Reservoir Plan and a suite of other off-site plans for specific reservoirs.

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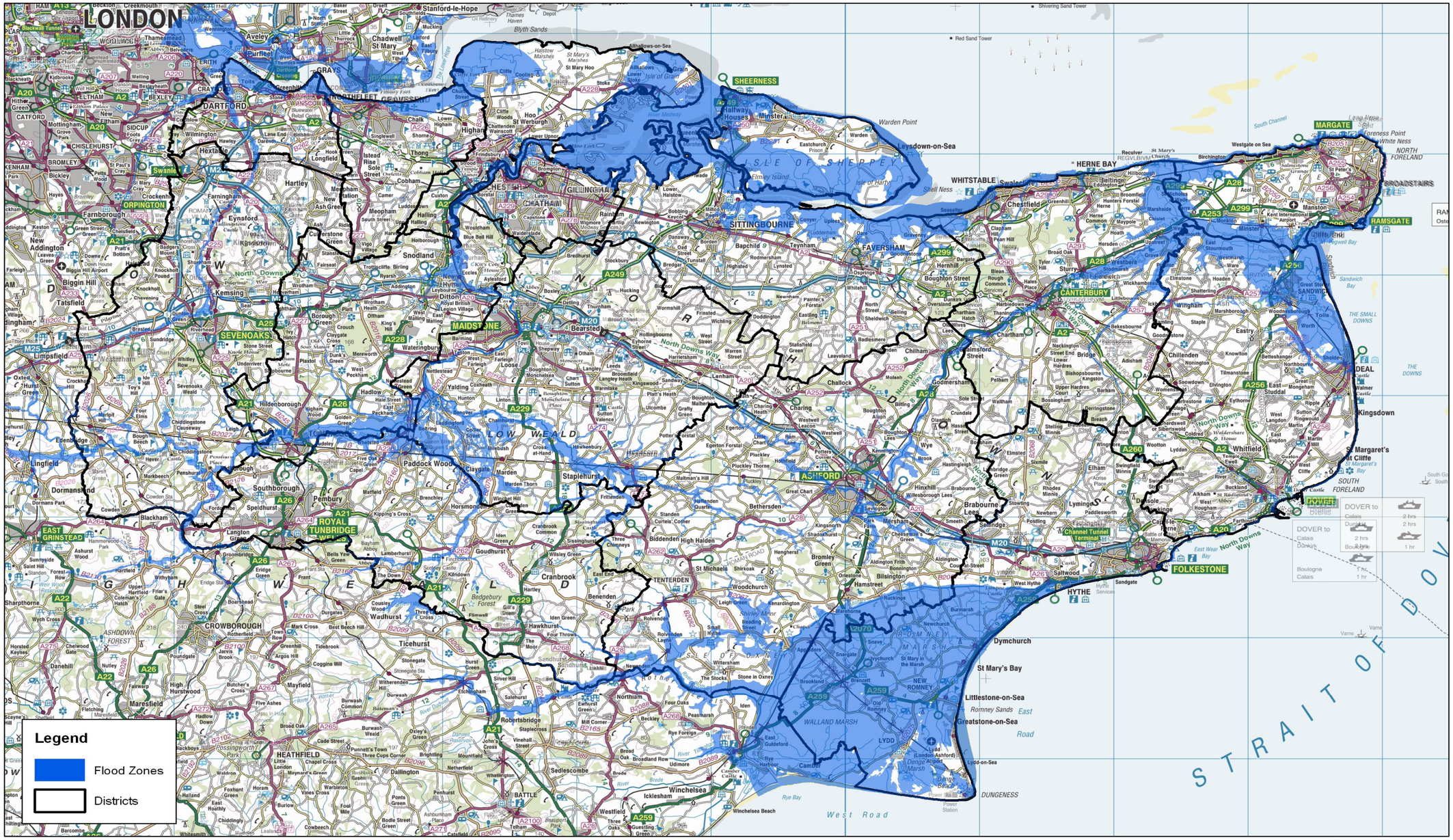
Figure 5.1: Map of Kent showing coastal and fluvial (river) flood zones (source: Environment Agency)



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Kent County Council

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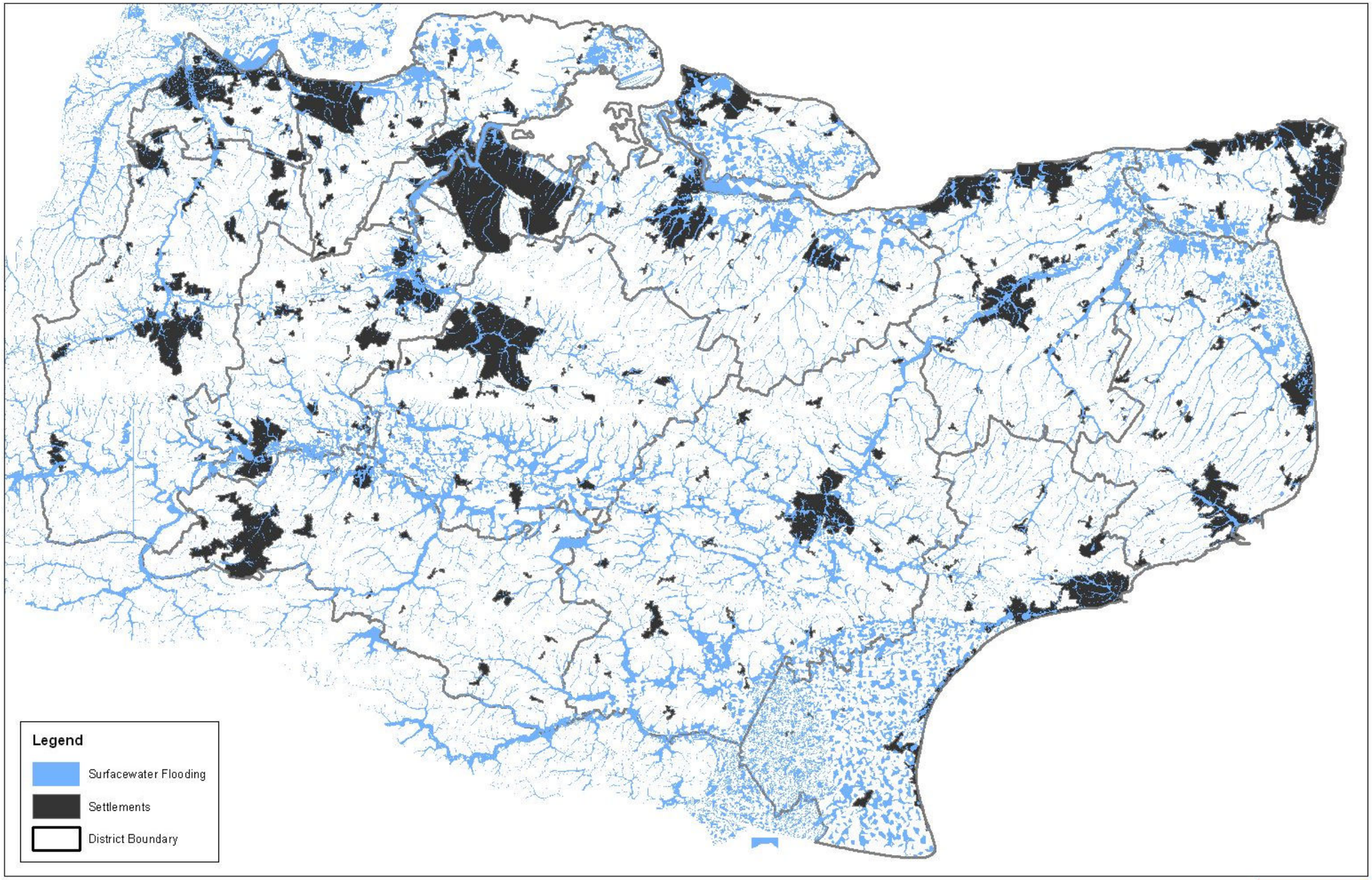
Figure 5.2: Map of Kent showing surface water flood risk (source: Environment Agency)



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6. Plan Activation

Figure 6.1 Plan Activation Flow Diagram

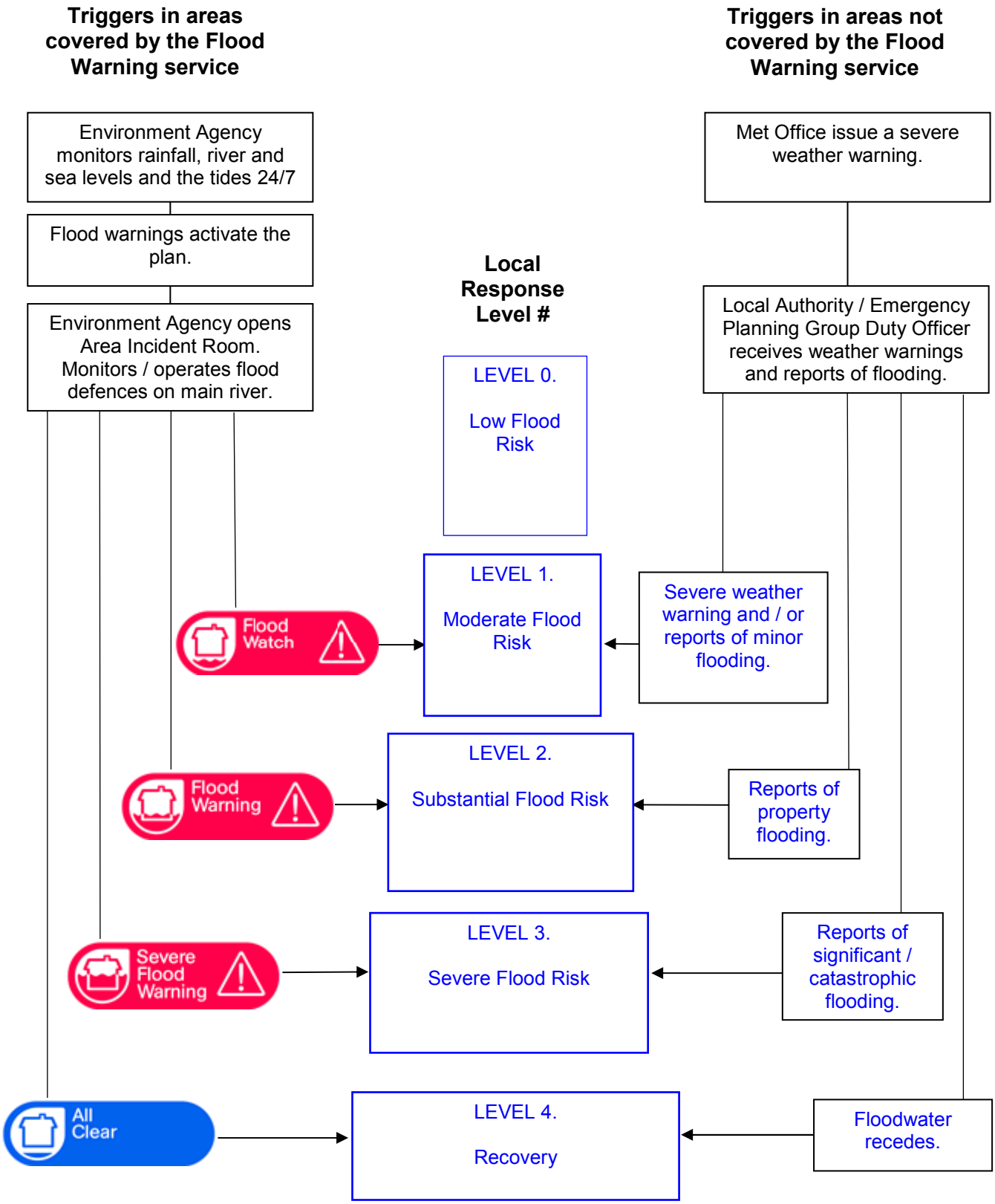
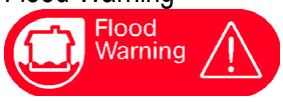


Figure 6.2 Common Triggers and Thresholds

Warning Level	Action	Section
Flood Watch 	**Emergency response unlikely (Kent County Council Emergency Planning Group Duty Officer liaison with Directorate contacts and key agency partners)**	
Flood Warning 	**Emergency response likely but limited (Kent County Council Emergency Planning Group Duty Officer liaison with Directorate contacts and key agency partners)**	
Severe Flood Warning 	**Emergency response probable (Kent County Council Emergency Planning Group Duty Officer liaison with Directorate contacts and key agency partners and Kent County Council Major Emergency Plan activated)**	
All Clear 	**Kent County Council Emergency Planning Group Duty Officer liaison with Directorate contacts and key agency partners on stand-down and possible recovery interventions**	

NOTE
See also 'Area Specific Thresholds and Triggers' for each of the identified flood vulnerable areas of Kent, in Part 2 of the Local Multi Agency Flood Plans.

6.3 Flood Warnings

6.1.1 Environment Agency Flood Warnings

The Environment Agency operates a flood warning service in areas at risk of flooding from rivers or the sea. If flooding is forecast, warnings are issued using a set of four easily recognisable codes. Comprehensive details are contained in the **Kent Local Flood Warning Plan**, maintained by the Environment Agency with the support of the members of the Flood Warning Planning Groups. It is intended to assist wider dissemination and understanding of Flood Warning arrangements and systems and is the prime reference document in this respect. A description of the codes is shown below as they are likely to apply in Kent.

Flood Watch

Issued when rivers are running bank full and further rainfall is expected. There may be minor flooding of low-lying land, roads and gardens. The alert is issued in order that the public at risk, the emergency services, local authorities and other bodies are aware of increasing chance of flooding and take appropriate preparatory action. Therefore the public can be prepared to minimise the effects in the event of a flood warning.

Flood Warning

Issued when flooding of homes and businesses is expected. Property owners, the public at risk, the emergency services, local authorities and other bodies should act to protect life and property.

In Kent, the rapid response of urban catchments to summer thunderstorms may preclude issue of a Flood Warning before some flooding has occurred.
In most instances, a Flood Warning will not escalate to a Severe Flood Warning, but Category 1 Responders should be alert to that possibility and liaise with the Environment Agency in that respect.

Severe Flood Warning

Issued when severe flooding is expected and there is extreme danger to life and property. This could relate either to extreme water depths or velocities, or when 100 or more properties are expected to be flooded in a particular flood warning area. In such circumstances, it is likely that there would be considerable disruption to traffic movement due to extensive road flooding.
Property owners, the public at risk, the emergency services and the civil authority should act to protect life and property. This is likely to involve an enhanced response and the commitment of significant resource.

In the event of a breach in defences or an intense summer thunderstorm, a Severe Flood Warning may be issued without prior issue of either a Flood Watch or a Flood Warning. A breach in the tidal defences would trigger an immediate Severe Flood Warning.

All Clear

Issued when there are no longer any Flood Watches or Flood Warnings in force in the area.

6.1.2 Flood Warnings received by Kent County Council

KCC Emergency Planning Group, KCC Adult Social Services (via their emergency planning officer) and Kent Highway Services are registered to receive these warnings:

6.1.3 Flood Warning Lead Time

Expected flood warning lead in times:

Fluvial	2 hours where possible but for many areas there may be little or no warning.
Surface water flooding:	No warning likely
Tidal:	2 to 12 hours approximate warning of flooding (this does not take into account breaches in existing defences where there is likely to be no warning at all). Note that on the North Kent coast normal flood defence closures of the Thames Barrier are accompanied by Flood Watches issued to riparian authorities downstream of the Barrier at Woolwich.

6.1.4 Flood Warning Dissemination Methods

- Floodline - 0845 988 1188 (24 hours)
- Floodline Warnings Direct - can be signed up for and automatically sends advance warning of area specific flooding by telephone, mobile, fax, pager, SMS text message or email. The system was designed to replace the Automated Voice Messaging System (AVMS) and gives information on the type of warning, the location, the situation and advice.
- The Environment Agency website – www.environment-agency.gov.uk/flood
- The Media - broadcasting on radio stations across Kent and national and local television news stations.
- Loudhailer - Kent Police/Environment Agency messages.

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7. Communication

7.1 Kent County Council Alerting Responsibilities

The Pan Kent Strategic Emergency Framework document setting out the agreed major incident alerting principles operated within Kent are set out at figure 7.1.

Kent County Council Emergency Planning Group operate a 24 hour, 7 days a week duty officer system and on receiving intelligence of actual or imminent flooding will cascade alerting calls to relevant KCC personnel and external partner agencies (including district councils and the military). Dependent upon the scale of the flooding incident the KCC emergency centre may be mobilised to help facilitate communication and command and control.

7.2 Door Knocking High Risk Properties

Within the Pitt Review of the 2007 floods he recommended the enhancement of Flood Warnings being issued with door knocking in the areas likely to be affected. Kent County Council will identify vulnerable people and inform the Police.

As part of this work, Kent Police have a procedure for door knocking which can be used in any emergency situation. They have agreed that this could be enacted and their man power used within a flood situation in conjunction with the local council.

During this interim period, those areas possibly requiring door knocking arrangements can be identified on an ad hoc basis by the local authorities, Environment Agency and Police. Data generated via GIS can assist in this process.

KCC Community Wardens will assist in the door knocking of high risk properties both physically and by assisting in the identification of vulnerable members of the community and by the use of the Community Warden Support Team to reach outlying areas.

In addition KCC Community Wardens can assist in the dissemination of severe weather warnings to all areas of their communities and by the identification of key persons within their communities who have access to possible evacuation centres or have skills or equipment which may be of use during the emergency.

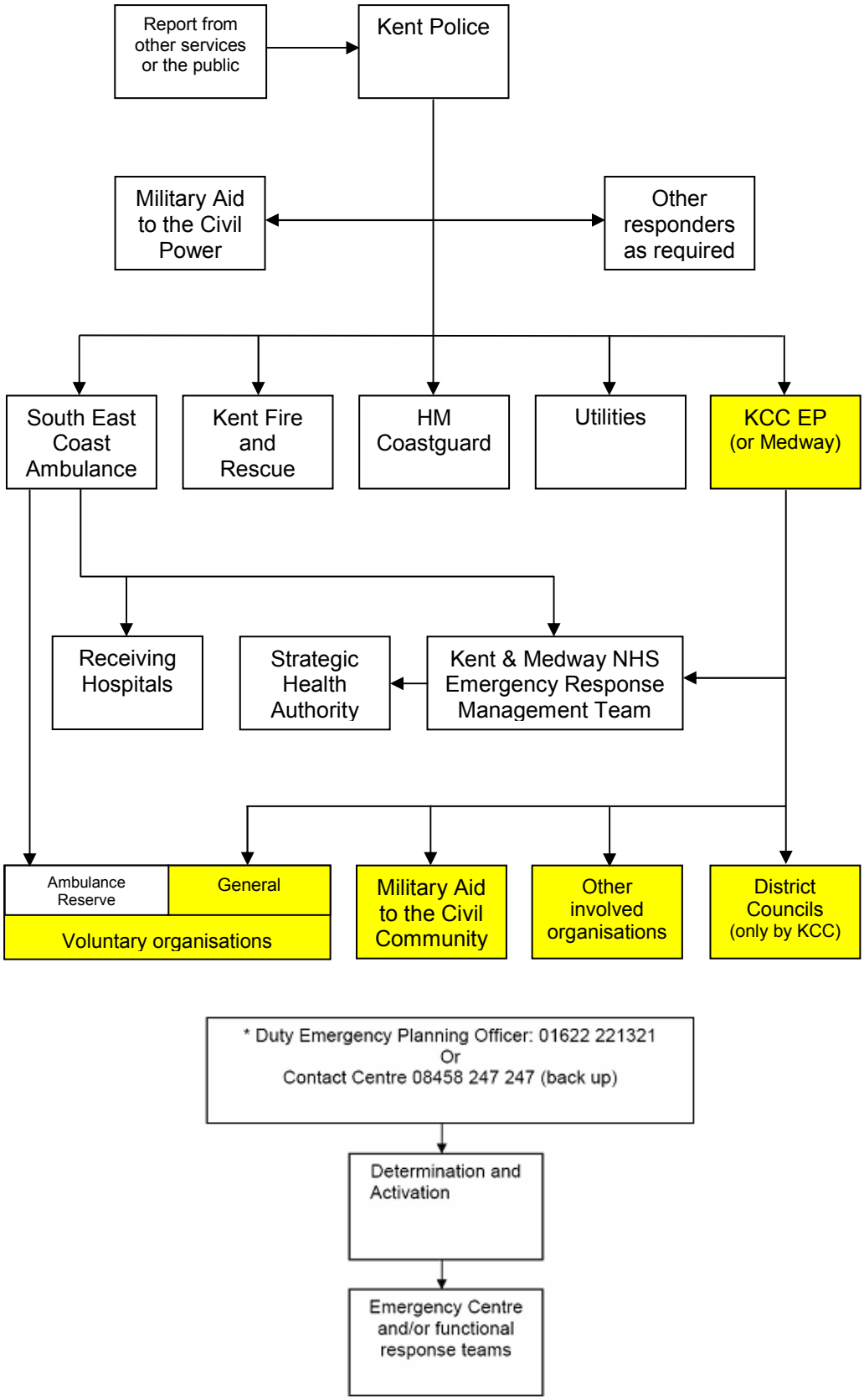
The KCC Community Warden Service can be activated through the KCC Duty Emergency Planning Officer.

7.3 Communicating with the public document

The Kent Resilience Forum has a communications strategy document titled; **Kent Resilience Forum Public Warning and Informing Strategy**; currently in draft. It is due for publication shortly and covers all major incidents in Kent. Within that document there are appendices relating to the specific information and advice needing to be communicated in a flood incident and the way in which this information will be communicated.

In **Section 8.3.1.4** of this document is an internet link to the Environment Agency website providing messages and advice that should be used during a flood incident. These should be used by all organisations as an agreed set of advice and guidance.

Figure 7.1 The Pan Kent Strategic Emergency Framework document major incident alerting principles:



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8. Actions, Roles and Responsibilities

8.1.1 Flood Specific Roles and Responsibilities

Figure 8.1

KCC Directorate	Pre-planning Roles and Responsibilities	Emergency Roles and Responsibilities	Recovery Roles and Responsibilities
Communities Directorate	Ensure that all personnel are trained in and aware of emergency planning roles (all Heads of Service) Maintain KCC Flood Response Plan and KRF Recovery Plan (Emergency Planning Group) Assist in preparation of partner flood response and emergency plans (Emergency Planning Group) Provide 24 hour Emergency Planning Duty Officer role (Emergency Planning Group) Maintain "Identifying Vulnerable People in an Emergency" guidance document (Emergency Planning Group) Contribute to spatial plans, strategic flood risk assessment and other relevant planning documents (Emergency Planning Group) Maintain KCC Rest Centre Guidelines (Emergency Planning Group)	Receive Environment Agency Flood Warning alert and cascade alert to internal and external partners (Emergency Planning Group) Receive flooding alert from any other source and cascade alert to internal and external partners (Emergency Planning Group) Provide co-ordination, co-operation, advice and liaison role for duration of incident (Emergency Planning Group) Maintain emergency log for duration of incident (Emergency Planning Group) (If required) mobilise County Emergency Centre (Emergency Planning Group) Attend and/or facilitate relevant KCC officer attendance of Severe Weather Advisory Group (Emergency Planning Group)	Provide support and advice in framing the recovery strategy (Emergency Planning Group) Mobilise senior management representation to County Emergency Centre recovery group and liaison personnel to partner recovery groups as required (all Heads of Service) Ensure that key data is maintained to assist debrief, recovery and any subsequent inquiry (all Heads of Service)

KCC Directorate	Pre-planning Roles and Responsibilities	Emergency Roles and Responsibilities	Recovery Roles and Responsibilities
Communities Directorate (cont)	Deliver training and awareness events to KCC personnel and partner agency personnel incorporating specific flood and generic emergency planning response elements (Emergency Planning Group) Maintain registration with Environment Agency Flood Warning alert system (Emergency Planning Group) Maintain County Emergency Centre (Emergency Planning Group). Ensure that KCC Communities Major Emergency Plan is maintained (All Heads of Service) Ensure KCC Community Wardens are fully trained and briefed to enable delivery of agreed emergency planning roles (Community Safety) KCC Community Wardens can supply information and provide guidance to local communities to enhance their resilience to flooding events (Community Safety) Preparation of publicity campaigns to promote certified traders (Trading Standards) Libraries and other cultural outlets to host publicity and display material and events to raise public awareness of flood risk (Community Cultural Services)	Community Wardens can deliver: a uniformed presence at scene, assistance to police with cordon control, assist the police with evacuation, provide local knowledge, supply public information to communities, provide on-the-ground intelligence, provide assistance in operation and security of rest centres. Liaise with partner agencies to ensure that care is provided to vulnerable individuals and communities affected by flooding	Publicity regarding doorstep and other rogue traders, including promotion of "BWC" traders (Trading standards) Send Trading Standards Alert messages as appropriate on doorstep and rogue traders (Trading Standards)

KCC Directorate	Pre-planning Roles and Responsibilities	Emergency Roles and Responsibilities	Recovery Roles and Responsibilities
Communities Directorate (cont)		Liaise with DEFRA and RSPCA and district councils on welfare of livestock, domestic and wild animals affected by flooding Liaise with partner agencies to ensure protection and amelioration of adverse impacts upon critical infra-structure and the wider environment during flooding Provide information and support within rest centres (Community Cultural Services)	Enhance intelligence focus and collection appropriate on doorstep and rogue traders (Trading Standards) Prepare FAQs and briefings for CC/CDSE (Trading Standards) Deploy rapid response teams to intervene in live incidents involving doorstep and rogue traders exploiting flooding event (Trading Standards) Libraries and other cultural outlets to host publicity and display material and events to assist community recovery from flood event (Community Cultural Services)
Children Families and Education	Ensure that all personnel are trained in and aware of emergency planning roles, including children's social care and the provision and support to rest centres (all Heads of Service) Ensure that school meals contracts incorporate emergency feeding clause Ensure that schools maintain up-to-date emergency and business continuity plans to address flooding and other emergencies To ensure that robust plans are in place to support individuals and schools affected by flooding and other emergencies (Educational Psychology Service)	Provide premises, feeding, specialist teams and logistical support for the rest centre response to flood and other incidents Provide senior manager representation within County Emergency Centre and liaison personnel to partner agency emergency centres as required (all Heads of Service)	Ensure cleaning and repair of education premises affected by flooding or emergency use as rest centres Provide support to schools and pupils emotionally affected by flood events (Educational Psychology Service) Accommodate and manage increased demand for services following flooding event (all Heads of Service) Mobilise senior management representation to County Emergency Centre recovery group and liaison personnel to partner recovery groups as required (all Heads of Service) Ensure that key data is maintained to assist debrief, recovery and any subsequent inquiry (all Heads of Service)

KCC Directorate	Pre-planning Roles and Responsibilities	Emergency Roles and Responsibilities	Recovery Roles and Responsibilities
Children Families and Education (cont)	Ensure that Business Continuity Management principles are embedded within Directorate planning and training programmes		
Adult Social Services	Ensure that all personnel are trained in and aware of emergency planning role in relation to adult social care and support of rest centres (all Heads of Service) Ensure that Business Continuity Management principles are embedded within Directorate planning and training programmes (all Heads of Service) Ensure emergency communication and alerting strategy is in place for internal and external service provision (Heads of Service: for internal provision) (Contracting: for external provision) Ensure that KCC Adult Social Service Major Emergency Plan is maintained (All Heads of Service) Maintain registration with Environment Agency Flood Warning alert system (KASS Emergency Planning Officer)	Mobilise personnel for operational response including specialist teams and rest centre response (all Heads of Service) Ensure that critical services are maintained in compliance with business continuity plans (all Heads of Service) Mobilise senior management representation to County Emergency Centre and liaison personnel to partner agency emergency centres as required (all Heads of Service)	Facilitation of practical and emotional support for affected individuals and communities (all Heads of Service) Accommodate and manage increased demand for services following flooding event (all Heads of Service) Mobilise senior management representation to County Emergency Centre recovery group and liaison personnel to partner recovery groups as required (all Heads of Service)
Environment, Highways and Waste	Ensure that all personnel are trained in and aware of emergency planning roles and responsibilities (all Heads of Service) Ensure that spatial plans, strategies, guidance and	Ensure that critical infra-structure is maintained during flooding incidents (Kent Highways Services) Deploy personnel and internal and external contractor resources and assets to assist the practical emergency	Accommodate and manage increased demand for services following flooding event (all Heads of Service) Deploy personnel and internal and external contractor resources and assets to assist the recovery (Kent Highway

KCC Directorate	Pre-planning Roles and Responsibilities	Emergency Roles and Responsibilities	Recovery Roles and Responsibilities
Environment, Highways and Waste (cont)	day-to-day working practices incorporate a philosophy of "making space for water" and acknowledge and address surface water, ground water, fluvial and coastal flood risk (all Heads of Service) Ensure that Business Continuity Management principles are embedded within Directorate planning and training programmes (all Heads of Service) Ensure emergency communication and alerting strategy is in place for internal and external service provision (all Heads of Service) Ensure that KCC Environment, Highways and Waste Major Emergency Plan is maintained (All Heads of Service) Identify vulnerability of critical transport infra-structure (Kent Highway Services) Ensure that KCC Environment, Highways and Waste Major Emergency Plan is maintained (All Heads of Service) Maintain registration with Environment Agency Flood Warning alert system (Kent Highway Services)	response to flooding (Kent Highway Services) Provide intelligence on condition and viability of transport infra-structure – including Flood Depth Indication System data (Kent Highway Services) Provide intelligence on condition and viability of waste disposal infra-structure during flood event (Environment and Waste) Provide intelligence on impacts upon the built and natural environment during flood event (Environment and Waste) Mobilise personnel for operational response including specialist teams (all Heads of Service) Ensure that critical services are maintained in compliance with business continuity plans (all Heads of Service) Mobilise senior management representation to County Emergency Centre and liaison personnel to partner agency emergency centres as required (all Heads of Service)	Services) Mobilise senior management representation to County Emergency Centre recovery group and liaison personnel to partner recovery groups as required (all Heads of Service) Ensure that key data is maintained to assist debrief, recovery and any subsequent inquiry (all Heads of Service)

Chief Executives Department	Ensure that all personnel are trained in and aware of emergency planning roles and responsibilities (all Heads of Service) Ensure that plans, strategies, guidance and day-to-day working practices incorporate a philosophy of "making space for water" and acknowledge and address surface water, ground water, fluvial and coastal flood risk (all Heads of Service) Ensure that Business Continuity Management principles are embedded within Directorate planning and training programmes (all Heads of Service) Ensure emergency communication and alerting strategy is in place for internal and external service provision (all Heads of Service) Ensure Strategy, Economic Development and ICT Major Emergency Plan is maintained (All Heads of Service) Ensure that corporate ICT systems incorporate capacity to label and record emergency response data including communications and resources mobilised (ISG) Ensure that Geographical Information Systems (GIS) are corporately available providing mapping and address details (ISG)	Ensure that critical information communication technology (ICT) infra-structure is maintained during flooding incidents(ISG) Provide intelligence on condition and viability of ICT infra-structure during flood event (ISG) Ensure that Geographical Information Systems (GIS) are corporately available providing mapping and address details to facilitate response(ISG) Mobilise personnel for operational response including specialist teams (all Heads of Service) Ensure that critical services are maintained in compliance with business continuity plans (all Heads of Service) Mobilise senior management representation to County Emergency Centre and liaison personnel to partner agency emergency centres as required (all Heads of Service) Provide Geographical Information Systems support to corporate response to flooding (ISG) Ensure that critical KCC premises are maintained during flooding incidents (Property)	Mobilise senior management representation to County Emergency Centre recovery group and liaison personnel to partner recovery groups as required (all Heads of Service) Ensure that key data is maintained to assist debrief, recovery and any subsequent inquiry (ISG and all Heads of Service)

Chief Executives Department (cont)	Ensure that all personnel and Members are trained in and aware of emergency planning roles and responsibilities (all Heads of Service) Ensure that Business Continuity Management principles are embedded within Directorate planning and training programmes (all Heads of Service) Ensure that plans, strategies, guidance and day-to-day working practices incorporate a philosophy of "making space for water" and acknowledge and address surface water, ground water, fluvial and coastal flood risk (all Heads of Service) Ensure Chief Executives Department Major Emergency Plan is maintained (All Heads of Service) Ensure that systems are in place to facilitate and record financial support of emergency response (Finance) To maintain General Funds for use in the event of serious flooding or other unforeseen eventualities (Finance) Ensure resilience of KCC property portfolio against flood risk (Property) Ensure access to assets and material for emergency Ensure Contact Centre personnel are aware of alerting protocols in the event of a flooding incident	Deploy personnel and internal and external contractor resources and assets to assist the emergency response to flooding (all Heads of Service) Ensure that financial resources are available and spending logged during emergency response (Finance) Where required provide public health information (Director of Public Health) Deploy assets and materiel as required to assist in emergency response (Commercial Services) Ensure that critical services are maintained in compliance with business continuity plans (all Heads of Service) Work with Leader, Cabinet and Members to ensure that they are briefed and supported within their community leadership and advocacy roles (Chief Executive) Provide intelligence on staff deployment and work base selection using Kent View software (HR)	To bear the cost of recovery for all but the most exceptional flooding events using General Funds. (Finance).

Chief Executives Department (cont)	(SDU) Kent TV to be utilised for public information to assist public (Kent TV) To make sure that that the public are warned and informed through the media, KCC website and other means of communications(Communications and Media Centre) of the incident. Liaise with partner agencies to agree messages and broadcast of relevant public information (Communications and Media Centre).	Contact Centre personnel relay key flood related information from public and partner agencies to relevant teams and individuals (SDU)	

8.1.2 Partner Agencies - Flood Specific Roles and Responsibilities

Figure 8.2

Organisation	Risk	Preplanning	Emergency response			Recovery
			Minor flood (Medium consequence)	Major flood (High consequence)	Notes	
District & Borough Council	Tidal, Fluvial, Surface Water flooding Published in the local risk assessment guidance	Up to date vulnerable persons and sites shared database arrangements. Pre-determined rest, reception and media centres. Multi-agency pre-planning re RVPs, transport routes etc Riparian/Coastal Districts to issue directions to and maintain contact details of flood gate owners/land occupiers (Section 30 County of Kent Act 1981). EA, riparian district councils and flood gate owners to ensure closure mechanisms function properly. National Flood Defences Database (NFCDD) is maintained by EA	Activation of Emergency Centre and Strategic Group and advise leader and ward members. Liaison with Parish Councils. Representation at Silver Control(s) and Strategic Co-ordinating Group as necessary. Co-operation with emergency services and EA to co-ordinate the response. Flood warning and gate closure notification dissemination in conjunction with EA Where appropriate Riparian/Coastal Districts to ensure Tidal flood gates and sluices are closed in accordance with closure notifications (Section 30 County	Activation of Emergency Centre and Strategic Group and advise leader and ward members. Liaison with Parish Councils. Establish various LA forward controls as necessary. Representation at Silver Control(s) and Strategic Co-ordinating Group as necessary. Co-operation with emergency services and EA to co-ordinate the response. Flood warning and gate closure notification dissemination, warning and informing the public in conjunction with EA. Riparian/Coastal Districts to ensure Thames Tidal flood gates are closed in accordance		

Organisation	Risk	Preplanning	Emergency response			Recovery
			Minor flood (Medium consequence)	Major flood (High consequence)	Notes	
District & Borough Council (cont)		Pre-arranged communication strategy – what should members of the public do/where should they go? Updated information on Council web site Pre-arranged information help line and trained staff. Pre-arranged help line for staff – (should they come in to work or note – is it safe?) Review of council properties at risk Incorporate this risk into the Business Continuity planning process. Advise on development proposals, flood risk assessments, maintain flood management structures.	of Kent Act 1981). Liaison with utility and transport companies especially water company to ensure provision of clean drinking water to residents. Provision and staffing of rest/reception centres and associated services. Flood mitigation measures (e.g. sandbags, where appropriate). Advice on clearance of blocked water courses and mitigation measures.	with closure notifications (Section 30 County of Kent Act 1981). Activation of information help-line for public In conjunction with other responders provide information to the public. Activation of business continuity plans as appropriate. Liaison with utility and transport companies especially water company to ensure provision of clean drinking water to residents. In conjunction with Police, provision of information centre/media centre Co-ordinate response from faith and voluntary groups.		

Organisation	Risk	Preplanning	Emergency response			Recovery
			Minor flood (Medium consequence)	Major flood (High consequence)	Notes	
District & Borough Councils/ (cont)				Provision and staffing of rest/reception centres and associated services. Flood mitigation measures (e.g. sandbags). Advice on clearance of blocked watercourses and mitigating measures. *It should be noted that not all local authorities provide sandbags, (each council should be contact for further information).* Where resources allow assisting EA in repairing river and coastal defences (between high tides) Provision of emergency lighting/generators		

Organisation	Risk	Preplanning	Emergency response			Recovery
			Minor flood (Medium consequence)	Major flood (High consequence)	Notes	
Environment Agency	Tidal, Fluvial, Surface Water flooding Published in the local risk assessment guidance	Prepare and maintain Kent Local Flood Warning Plan; Advise on development proposals; Update flood risk maps; Support Kent Resilience Forum (KRF). CCR flood risk assessments; Maintain watercourse capacity; Maintain flood management structures	Issue warnings; Monitor catchment; Operate defences; Support LAs and emergency services	[as for minor flood]		Support LAs and community as resources allow; Repair any damaged defences
Kent Police	Tidal, Fluvial, Surface Water flooding Published in the local risk assessment guidance	Statutory responsibility under the Civil Contingencies Act 2004 to: Prepare and maintain emergency plans; maintain business continuity plans; engage with KRF Severe Weather Group Partners particularly around risk assessment, planning and public warning and informing; training and awareness; the testing and exercising of emergency plans. Identifying, with Cat 1 and 2 partners, areas of critical	Save and prevent loss, or further loss, of life in conjunction with the other emergency services and any other relevant organisation Consideration of health and safety and ensure the safety of personnel deployed at the incident Co-ordinate the overall response In so far as saving of life	As for minor flood (scaleable response)	The establishment of the Strategic Co-ordination Group and function for providing command and control through levels of Gold, Silver and Bronze.	Recovery is inbuilt to the response phase of the incident as part of the Strategic Co-ordination Group. The appropriate 'handover' to the responsible LA will be supported as appropriate.

Organisation	Risk	Preplanning	Emergency response			Recovery
			Minor flood (Medium consequence)	Major flood (High consequence)	Notes	
Kent Police (Cont)		infrastructure at risk. Mobilisation planning within the Police National Mobilisation Plan (internal and external resources). Engagement with Kent Resilience Forum (KRF) Communications Group on the forming of communication strategy to warn and inform the public.	permits, secure, preserve and protect the scene Investigate the incident, obtaining and securing all available evidence in conjunction with other investigative bodies where applicable Recover the deceased in a dignified manner, which ensures the integrity of their identification. Without undue delay, assist the Coroner to identify victims and inform the next of kin as soon as possible Reassure survivors and their families, assist in establishing appropriate support systems Establish an effective and appropriate family liaison strategy			

Organisation	Risk	Preplanning	Emergency response			Recovery
			Minor flood (Medium consequence)	Major flood (High consequence)	Notes	
Kent Police (Cont)			Ensure an appropriate response to the media, which is open, factual, accurate and seeks to reassure those directly involved and the public in general. Provision of warnings, advice and information to the public. Strive to minimise the impact on the whole community, working with all relevant agencies to return to normality as soon as possible			

Kent Police (Cont)					*Early consideration will need to be given to the following:-* • Provision of temporary sanitary facilities. • Provision of catering. Co-ordination of voluntary organisations. • Provide emergency clothing and welfare items. • Liaise with Central and Regional Govt. • Arrange for Military Aid. *Local authority would be able to seek mutual aid from other local authorities to help fulfil these functions.*	Provision of temporary or longer-term accommodation or rehousing for residents made homeless by the flooding Structural and condition surveying of council properties damaged by the flooding; remedial action to repair such properties. Invoking council's business recovery plan if council premises are affected Consultation with health authorities on hygiene and environmental health issues in affected areas. Assisting residents in removal of damaged furniture and household goods. Removal of mud/debris from council owned land.

Kent Police (Cont)					*Directorate Business Continuity Management plans may require invocation as many staff will have been diverted to other duties to respond to the incident.*	
Kent Fire & Rescue Service	Tidal, Fluvial, Surface Water flooding Published in the Local Risk Assessment Guidance	Standard operational response to a special service Maintain business continuity plans KFRS Premises at risk to flooding identified Mutual aid agreements between bordering F&RS in place National Mutual Aid Protocol in place KFRS holds copies of EA Flood Maps Participation in flood exercises with other agencies	Liaise with other agencies and prioritise response and resources Provide assistance with pumping water	Follow major incident response procedures Assisting with evacuation in the event of widescale flooding Attend SCG and any provide liaison officers to other Control rooms as appropriate i.e. Environmental Agency Activate National Mutual Aid Agreement for additional resources Activate Station BC Plans where KFRS premises are at risk to flooding		Assist with other agencies to minimise impact on community

Kent Fire & Rescue Service (cont)		Arrangements for pre-mobilising resources in place Recall to duty for officers in place				
South East Coast Ambulance Service (SECAmb)	Tidal, Fluvial, Surface Water flooding Published in the local risk assessment guidance	Met. Office Weather Warning system in place Major Incident Plan Contingency Plan for Extreme Weather Business Continuity Plans Emergency Preparedness Status Board (includes flooding) in place across SECAmb. SECAmb premises at risk of flooding identified EA Mapping Information available Health On Call system in place	Attendance as required upon assessment	Attendance as required upon assessment		
Balfour Beatty Mott MacDonald	Low	Reviewing procedures with Highways Agency.	Activate Contingency Plan	Activate Contingency Plan		

NHS		Ensure staff training is carried out Ensure Emergency Plans are up to date and exercise tested Distribute flood warnings	Provide support for vulnerable people who are known to the NHS Business Continuity of NHS services Provide support to Rest Centres	Provide support for vulnerable people known to the NHS in their own homes Business Continuity of the NHS Provide Support to Rest Centres and Evacuation Points Provide Support in the event of evacuation of vulnerable persons Ensure representation at Multi Agency Command & Control Public Health Advice in conjunction with the Health Protection Agency.		
Port of London Authority		Promulgation of Flood Response Plans Internal briefings & awareness for possible resource provision	None	Issue appropriate warnings to river users Deploy afloat resources and other assets as appropriate Impose exclusion zones or river closures where necessary Supply detailed local tidal & hydrographic information on request	Navigation Authority for tidal Thames	Promote restoration of navigation and shipping activity

National Grid. Gas and electricity distribution/transmission.	Low pressure gas distribution network. Electrical transmission systems.	Identify plant and assets in predicted flood zone e.g. sub-stations, cable tunnels, joint bays, regulators – medium to low pressure. High pressure gas installations COMAH sites – storage. Vulnerable Persons Database – use system to pull off all addresses in a predicted area by post code. Contact local authorities use agreements for mutual aid.	Set up Bronze Command at site. Work with blue lights to isolate supplies. Make safe. Wait for water to recede. Re-establish supplies.	As previous with additional Silver and Gold level Command within company. Possible reconfiguration of supplies where possible. Possible lock-out of regulators to maintain pressures in gas mains. Invoke mutual aid and resource plans. Prepare for recovery.		
Scotia Gas Networks	Gas distribution systems operating at high, intermediate, medium and low pressure.	Receive detailed flood assessment information for all at-risk MAJOR sites (supplying >50,000 consumers) from EA / SEPA. Review annually. Receive 48 hours warning from EA / SEPA for MAJOR sites. Identify other plant and assets in predicted flood zone using EA flood data and Flood Outlook Statements. Consider all offtakes from the national transmission system (including odourisation and gas quality equipment), pressure reduction stations, other gas governing equipment, high	Instigate E/3 procedures for incident response. Set up Bronze Command / Site Main Controller at site. Work with Category 1 Responders to isolate supplies if required. Make safe. Identify location of siphon tankers, water pumps and other equipment. Prepare resource plans and mobilise as necessary.	As previous with additional Silver and Gold level Command within company. Possible reconfiguration of supplies where possible. Possible lock-out of regulators to maintain pressures in gas mains. Invoke mutual aid and resource plans. Prepare for recovery.		

Scotia Gas Networks (cont)		and low pressure storage installations (including top and lower tier COMAH sites). Review sectorisation plans for isolation of specific areas. Locate sectorisation valves and confirm operation. Identify consumers at risk from 'Vulnerable Persons Database' – extract all relevant addresses in the predicted flood risk area. Contact local authorities, use agreements for mutual aid.	Extract and copy asset records and plans for on-site use identifying siphons, low points etc. Wait for water to recede. Re-establish supplies.			
EDF Energy Networks	Tidal, Fluvial, Surface Water flooding Published in the local risk assessment guidance	EDF Energy Networks Flood Plan. Environment Agency indicative flood plains mapped into Company GIS system.	Monitor EDF Energy Networks substations and plant and equipment. Protect substations by temporary works if practicable. Disconnect electricity supplies if the public are at risk or if substations or plant and equipment cannot be protected from inundation.	Monitor EDF Energy Networks substations and plant and equipment. Protect substations by temporary works if practicable. Disconnect electricity supplies if the public are at risk or if substations or plant and equipment cannot be protected from inundation.		Restore electricity supplies.

8.3 Operational Response Activities

8.3.1 Response – supplementary information.

8.3.1.1 Voluntary Sector

Emergency Preparedness, the Civil Contingencies Act Guidance, refers to the generic support that the Voluntary Sector can provide. The nature, range and scale of services offered by the Voluntary Sector may alter depending upon the context of the emergency situation but would be provided in both emergency response and recovery related activities. They will be activated under normal existing activation protocols with Kent County Council Emergency Planning Group and will be directed by the relevant activating organisation but work to their own organisational structure. Organisations have access to mutual aid on a cross-border basis. In a flooding incident the Voluntary Sector can provide support to both responders and those affected by the incident.

8.3.1.2 Mutual Aid

KCC have a Mutual Aid arrangement with all local authorities in Kent and Essex. Mutual Aid may be mobilised through Kent County Council Emergency Planning Group.

8.3.1.3 Military Aid

KCC have a Military Aid arrangement with all local authorities in Kent and Essex. Military Aid may be mobilised through Kent County Council Emergency Planning Group.

8.3.1.4 Public Health

Floodwater Public Health Risks

The following section deals with the following public health risks arising from floodwater inundation:

- Chemical Contamination
- Sewage/ Waste Water Contamination
- Electrical/ Fire Hazards

Chemical Contamination

Flooding can lead to disruption of water purification and sewage disposal systems, inundation of waste disposal sites, and contamination from chemicals stored in commercial, industrial, agricultural and domestic settings. This can be hazardous to human health and the wider environment. Contact with flood water should therefore be avoided and where unavoidable protective clothing should be worn. While different chemicals cause different health effects, the signs and symptoms most frequently associated with chemical poisoning are headaches, skin rashes, dizziness, nausea, excitability, weakness, and fatigue.

Sewage/ Waste Water Contamination

Flooding can cause the disruption of water purification and sewage and other waste water disposal systems. A key risk arising from contamination of floodwater with sewage is risk to human and animal health from harmful microbes. Water-borne infections associated with flood events include Gastroentiritis, Escherichia Coli (E. Coli), Botulism, Salmonella, Cryptosporidiosis, Hepatitis and Tetanus.

It may be assumed that any floodwater affecting property and land could contain sewage. Contact with flood water should therefore be avoided and where unavoidable protective clothing should be worn.
Contamination of the aquatic environment with sewage and other organic pollutants, including milk and other foodstuffs, may lead to de-oxygenation through microbial blooms and requisite adverse impacts upon aquatic wildlife.

Electrical / Fire Hazards
Areas affected by floodwater inundation may contain electrical or fire hazards connected with power lines, sub-stations and other electrical infra-structure. The following precautions should be taken where electricity infra-structure is affected by floodwater:

- Never enter flooded areas containing electrical equipment unless you are certain that the power supply is off.
- If water has been present anywhere near electrical circuits and electrical equipment, turn off the power at the mains.
- Don't assume that any part of a flooded electrical installation or appliance is safe, do not turn on their power supply.

More guidance can be found in the KRF Public Warning and Informing Strategy Document and from the following Environment Agency link:

www.environment-agency.gov.uk/homeandleisure/floods

8.3.1.5 Welfare of livestock and other animals
Kent Fire and Rescue Service have a dedicated animal rescue unit based at Faversham Fire Station. The unit has specially trained personnel and dedicated equipment such as a crane and cradle with lifting capacity to move trapped livestock.

KCC Emergency Planning Group will liaise with the RSPCA and DEFRA on the welfare of livestock and other animals that may require rescue or feeding on site.

Section 7 of the Rest Centre Guidelines, entitled Care of Animals at Centres, states that “Animal owners bringing pets or livestock to a centre should be met by an RSPCA Officer / local authority Dog / Civic Warden”. The plan also covers holding of the animals, vaccination and feeding in situ as well as owners counselling.

The RSPCA also offer advice on preparedness and looking after pets in an emergency; this can be found from the following RSPCA link:

http://www.rspca.org.uk/in-action/issuesindepth/floods

8.3.1.6 Water Rescue
In addition to its wider statutory duties, Kent Fire and Rescue Services provides strategic leadership for water rescue and pumping operations and acts as specialist operations adviser during the flood response stage.

Kent Fire and Rescue Services use High Volume Pumps (HVPs), which are 150mm in diameter and can pump water upto 3km in distance, assuming there is a suitable discharge point.

8.3.1.7 Guidance for Working Near Flood Water

The following is offered as a supplement to normal practice, it is not necessarily exhaustive and individuals must make their own risk assessments on the situation facing them.

Dangers:

- Shallow ponded water can cover ditches, manholes, access to hatches to basements etc. Covers to manholes and access hatches are frequently lifted off by the power of the water, leaving a deep hole into which the unsuspecting can fall or drive into.
- Flowing water can exert strong, lateral forces and will typically build up on the upper stream side to a height half as high again as the flowing depth.
- Flood water may be contaminated. There may be overflows from Sewage Treatment Plants, or the water may have been contaminated with chemicals from industrial or agricultural premises.
- Water will conduct electricity. If the power has not been turned off there is a possibility of electric shock. One indication of the presence of live electricity flood water is the sense of vibration. If you experience this you should withdraw.

Considerations:

Pre-existing organisations rules and qualifications needed
Having the necessary equipment to enter
Other alternatives to entering water and what purpose would be served
Whether the visit could wait till the flood water recedes
Depth of the water, whether the tide is rising, speed of flow and pull of the water
Whether you should inform someone of your actions or be accompanied
Proceeding with caution, to avoid ditches, manholes and access hatches as well as electricity
Avoiding driving into flood water without a suitable vehicle (and proceed with caution, ensuring the vehicle is not submerged and minimise bow waves flooding properties or submerging other vehicles).

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9. Vulnerable People

Identifying, planning for and providing for the needs of vulnerable groups involves a large number of partners and compiling a large amount of changing information. For this reason it is unrealistic to expect a central list of potentially vulnerable individuals to be maintained. Rather the approach is to maintain a list of partners and contact telephone numbers that can be used to gather relevant information in the event of an emergency.

Records of vulnerable people are held and kept up to date by Kent Adult Social Services, Children, Families and Education, NHS and some other utilities companies and organisations, each organisation will hold records of its own clients. During a flood incident this information will be supplied to the SCG (Strategic Coordinating Group) and other partner organisations as required.

We are currently awaiting further guidance from the Humanitarian Welfare Group of the Local Resilience Forum with regard to the classification of group of vulnerable people types.

Due to the nature of the changing situation during a flooding event the status of any persons' vulnerability can change at any time, this is a fact to be aware of in all situations.

Those who may be considered potentially vulnerable are:-

- Children
- Older People
- Mobility Impaired
- Mental/cognitive impaired
- Sensory Impaired
- Individuals supported by Health or local authorities
- Temporarily or permanently ill
- Individuals cared for by relatives
- Homeless
- Pregnant women
- Minority language speakers
- Tourists
- Travelling community
- Static and holiday caravan parks

Please see Kent Resilience Forum Identifying Vulnerable People in an Emergency Plan.

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10. Key Infrastructure

Information regarding key infrastructure can sometimes be sensitive information, this information can be obtained from the utility provider or the Police for use by the multi-agency SCG (Strategic Coordinating Group) – which will set overall policy for the response to a major flooding event.

Details of contacts can be found in **Appendix A** of this document.

Locations for key infrastructure within flood vulnerable areas are listed within District Local Multi-agency Flood Plans, Pan Kent and Medway Flood Plan and identified on the GIS system.

11. Evacuation and Shelter

11.1 Statutory legislation informs roles and responsibilities in relation to evacuation, shelter and homelessness. The National Assistance Act 1948 places duties upon county councils to provide services for vulnerable individuals, including children under 16, people with a disability, frail elderly and refugees. In addition Chapter 52, paragraph 189, Part VII of the Housing Act 1996 imposes a statutory duty upon district and unitary councils to give a priority need for accommodation to "a person who is homeless or threatened with homelessness as a result of an emergency such as flood, fire or other disaster". Significantly, the Children Act 2004 informs all caring services for children under 16. It must further be remembered that legislation and regulation covering day-to-day operation of residential and public premises also applies to survivor reception and rest centres - including health and safety, food hygiene and licensing.

11.2 Non statutory Evacuation and Shelter Guidance has also been produced by the Civil Contingencies Secretariat of the Cabinet Office. This guidance states at paragraph 1.5. "The Purpose of Evacuation and Shelter" that: "The purpose of evacuation is to move people, and where appropriate other living creatures, away from an actual or potential danger to a safer place. For this to happen safely there need to be plans not just for alerting people and moving them, but also plans to shelter and support them through to their eventual return and recovery. "The need to provide humanitarian and other assistance, particularly to those with special requirements, requires careful consideration and planning. The diagram below shows the stages of evacuation and includes "dispersal - a form of evacuation in which people are simply directed to move away from a particular location without the need for temporary accommodation. The activity of warning and informing the public should also run throughout the process."

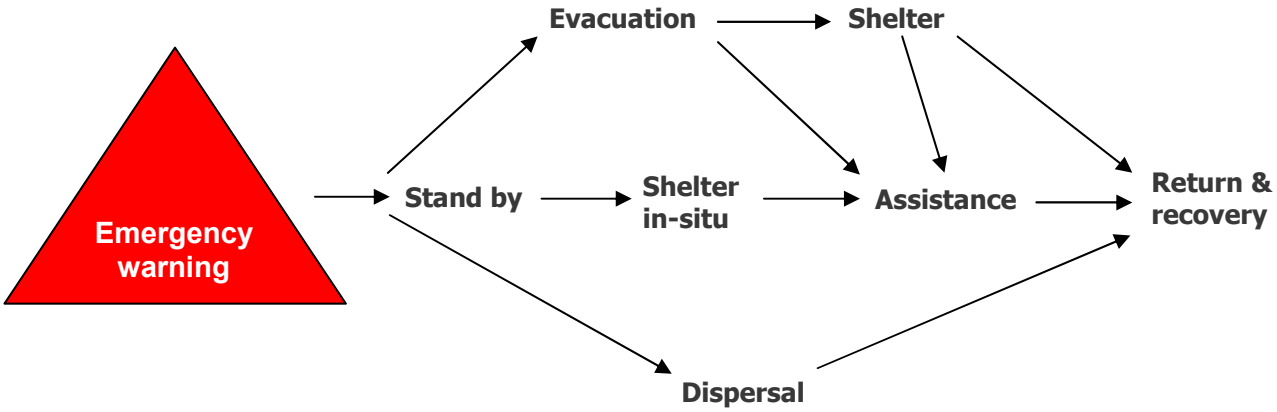

Figure 11.1 Evacuation and Shelter Methodology

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12. Rescue

12.1 Nobody currently has a statutory duty for rescue during a flood emergency.

12.2 Kent Fire and Rescue Service has recently (2008) carried out a review of the rescue capabilities within the Kent Resilience Forum Area, a copy of this report can be obtained from the Business Management Support Unit (BSMU) for the Kent Resilience Forum or from Kent Fire and Rescue Service.

12.3 Information regarding the equipment available within Kent County Council administrative area is detailed in **Appendix B.**

12.4 Information regarding equipment available within Kent can be found in Appendix B of the Pan Kent Flood Plan.

13. Recovery

13.1 Kent County Council Emergency Planning Group maintains the Pan Kent Emergency Recovery Framework, on behalf of the Kent Resilience Forum, which will inform recovery and clean-up interventions by relevant agencies following a major flooding event.

13.2 Recommendation 83 of the Pitt Review states that "Local authorities should continue to make arrangements to bear the cost of recovery for all but the most exceptional emergencies". KCC maintains General Funds for such unforeseeable eventualities.

14. Training and Exercising

14.1.1 The Civil Contingencies Act 2004 Regulations require Kent County Council as a “Category 1 Responder” to include provision for training and exercises in their emergency plans. A requirement for training and exercising also applies to business continuity plans and arrangements to warn, inform and advise the public.

14.1.2 The corporate nature of the council’s emergency response requires that all personnel should have an understanding of emergency planning and business continuity principles. Regular training and exercise events will raise staff awareness of potential risks and provide an understanding and confidence in the council and their partners’ emergency response procedures.

14.2 Training

14.2.1 Emergency planning and business continuity training events are invaluable tools to raise awareness, pass on best practice and instill confidence in emergency response plans and procedures. Major emergency response can be very different from day-to-day activity in terms of management principles, pressures upon the organisation (and individual members of staff) and levels of public and media interest. It is therefore vital that all staff with a potential role in the emergency response have an understanding of emergency planning and business continuity principles. A rolling training programme will be needed to account for staff turn-over, and also to ensure all staff are regularly refreshed and practiced in emergency response.

14.3 Exercising

14.3.1 Exercises perform a distinct training role and enhance emergency preparedness. Exercises have three main purposes: to validate plans; to develop staff competencies and provide practice in carrying out roles in emergency plans. It is important that personnel taking part in exercises should be trained beforehand. Participants should have an awareness of the council's emergency response and that of their key partners their own role within it, before they are subject to the stresses of an exercise.

14.3.2 There are three main exercise types comprising: seminar, table top and live exercises.

14.4 Training and Exercising Programme

Figure 14.4

Organiser	Title of training / exercise	Type	Date	Relevant lessons or link
Ashford Borough Council	Exercise Nutmeg – Local Multi-agency Flood Plan validation	Table-top	3rd February 2010	
Kent Resilience Forum	Exercise Decem flooding exercise	Table-top	25th March 2010	
KCC Emergency Planning / Tunbridge Wells Borough Council	Exercise Frey - Local Multi-agency Flood Plan validation	Live / Table-top	26th March 2010	
KCC Emergency Planning / Shepway District Council	Exercise Wade – Local Multi-agency Flood Plan validation	Live / Table-top	15th June 2010	
KCC Emergency Planning / Dartford and Gravesham Borough Council	Exercise Welund	Live / Table top	7th July 2010	

Appendix A - Resources [assets]

Resource	Who / Where	Contact Number
Sandbags	**KCC Approx. 10k filled bags at Emergency Response Depots in Kent.** ***Some District and Borough Councils may hold stocks of sandbags, contact the council concerned for more information.***	**08458 247247**
Boats	Boats – Non tidal • **2 x 4 metre rigid inflatable craft (powered), capable of carrying a crew of 3, and rescuing up to 5 people. These boats are based at Larkfield and Whitstable Fire Stations (1 at each).** • **2 x 3.8 metre fully inflatable craft, (non-powered) capable of carrying a crew of three and rescuing up to 5 people. These boats are based at Strood and Sheppey Fire Stations (1 at each).** Boats – Tidal • **1 x 8.5 metre (tidal) rigid inflatable craft (powered), capable of carrying a crew of 2, and rescuing up to 16 people. This boat is based at Sheppey Fire Station.** • Kent Police: **2 inflatable crafts and an aluminium flood boat on wheels; 2 crew all trained to advanced power boat/rescue boat** • Environment Agency: **2 aquapeche (1 large 1 small), 2 Dory's, 2 Avon inflatable. All these craft are powered and although the EA have no trained personnel at present these resources could be made available for use by trained personnel from other organisations.** • Port of London Police: **1 x 6.5 metre delta rigid inflatable boat, with road going trailer, fitted with 150bhp outboard engine. (10 crew trained to RYA power boat level 2) 10 Crew all trained to RYA level 2.**	**Via KCC Duty Emergency Planning Officer** **01622 221321**
Pumps	• **86 front line appliances capable of pumping in flooding situations.** • **1 High Volume Pump (HVP) capable of pumping between 7-8000 litres per minute. This is located at Whitstable Fire Station;** • **2 water management units which have 1.8km of hose each, for pumping water. These can be used alone and/or in conjunction with the HVP. These units are based at Tonbridge and Faversham Fire Stations.**	**Via KCC Duty Emergency Planning Officer** **01622 221321**

Transport	**KCC Passenger Transport West Malling, Aylesford and other locations county wide** ***Some District and Borough Councils may have access to transport vehicles, contact the council concerned for more information.***	**Via KCC Duty Emergency Planning Officer** **01622 221321**
Plant and Vehicles	**Kent Highway Services / Ringway. Emergency Response Depots** ***Some District and Borough Councils may have access to plant and vehicles, contact the council concerned for more information.***	**08458 247247**
Temporary Defences	**Some temporary defence is held by the Environment Agency in Kent.**	**Via KCC Duty Emergency Planning Officer** **01622 221321**
Catering	**KCC School Meals Contractors. School Kitchens.**	**Via KCC Duty Emergency Planning Officer** **01622 221321**
Waste	**KCC Management. Waste Management**	**08458 247247**
Specialist Advice on Structures	**KCC Kent Highway Services** **District / Borough Council Building Control**	**08458 247247**
Civil Air support	**Via KCC Emergency Planning Group**	**Via KCC Duty Emergency Planning Officer** **01622 221321**
Voluntary Sector Involvement	**Various Organisations County wide**	**Via KCC Duty Emergency Planning Officer** **01622 221321**
Military Support	**Assets and personnel: Military Aid to the Civil Community**	**Via KCC Duty Emergency Planning Officer** **01622 221321**

Personal Protective Equipment (PPE), Bedding and Other Resources	**45 life jackets, 45 pairs of waders and other ancillary PPE as a non-mobile special. These are based at Maidstone, Canterbury and Medway Fire Stations** **10 x 5 metre air track paths capable of being towed by a rescue boat, these have a capacity of rescuing 10 members of the public, these are based at Strood, Sheppey, Whitstable and Larkfield Fire Stations** **Some councils hold supplies of bedding and other supplies on behalf of KCC Emergency Planning Group**	**Via KCC Duty Emergency Planning Officer** **01622 221321**
Rescue and Feeding of Livestock and other Animals	**Animal Rescue Unit based at Faversham Fire Station. RSPCA and DEFRA resources.**	**Via KCC Duty Emergency Planning Officer** **01622 221321**
KCC Emergency Contact Directory	**Refer to this**	**Via KCC Duty Emergency Planning Officer** **01622 221321**

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Appendix B – Business Continuity Management

Under the Civil Contingencies Act 2004, Kent County Council, as a Category 1 Responder, have a duty to put in place Business Continuity Management arrangements.

Business Continuity Management (BCM) provides a framework for building in resilience to an organisation and delivering a capability for an effective response to events that might threaten its business operations.

Kent County Council Directorate Business Continuity Plans include the following documents:

- Business Continuity Management Policy
- Business Continuity Programme Management
- Business Impact Analysis (BIA)
- Plan Scope
- Activation Plan
- Response Plan or Action Plan
- Alternative Response Strategies
- Recovery Requirements for critical services

Appendix C – Health and Safety

It is crucial that managers and staff prioritise health and safety when mobilised as part of an emergency response and do not place themselves or colleagues in potentially dangerous situations. Indeed, the Health and Safety at Work Act 1974 applies to all elements of the local authority response to a major incident and covers:

- safety of staff and contractors;
- safe systems of work;
- safe equipment;
- manual handling; and
- electricity at work.

Managers should ensure that a risk assessment, in compliance with current Health and Safety Executive guidance (Five Steps to Risk Assessment), is undertaken for the various elements of the Council's emergency response and that findings and actions are recorded and acted upon. Expert advice from the Council's Professional Health and Safety Officer should be sought as a matter of urgency. Health and Safety Executive Risk Assessment Guidance is held by all KCC Health and Safety Officers.

At an Operational level responding personnel should considered risks and undertake dynamic risk assessments. Potential hazards arising from major incidents could include:

- slips, trips, falls;
- debris on roads and footways and severe weather implications on all travel modes;
- extremes of temperature arising from weather emergencies;
- floodwaters and concealed risks;
- risk from fumes and noxious substances;
- explosion risk and / or unstable structures;
- acts of violence, working or travelling alone; and
- injury from traffic.

Access to safety equipment

A range of professional officers routinely carry generic protective equipment on day-to-day business including hard hats, steel toe cap boots, high visibility clothing, throw-lines, rigid and self-inflating life-jackets.

Stocks of water safety equipment, comprising throw-lines, rigid and self-inflating life-jackets, are held at District Council offices for issue to personnel working on or close to water or mud. Lone working is discouraged when working close to water and mud and all personnel likely to be involved in the operational response to flooding or aquatic pollution incidents should have attended Kent County Council / Kent Fire and Rescue water safety awareness training session.