Christmas & New Year 2013-14 Storms & Floods Final Report
Appendix 1

A1. Numbers of Properties Flooded

A1.1 As of 15th May 2014, the following are the latest figures provided by the EA and Districts / Boroughs to the Department of Communities & Local Government (DCLG).

County	Residential	Commercial	Total
Surrey	1,971	342	2,313
Thames Valley	635	295	930
Kent	**731**	**198**	**929**
Lincolnshire	662	106	768
Wiltshire	484	56	540
Cornwall (incl. the Isles of Scilly)	267	144	411
North Lincolnshire	339	70	409
Dorset	252	81	333
Norfolk	215	69	284
Devon	121	85	206
West Sussex	112	18	130
East Sussex	81	16	97

A1.2 Detailed breakdown of properties flooded in Kent.

Authority Area	Residential	Commercial	Total
Ashford	-	1	1
Canterbury	40	4	44
Dartford	10	3	13
Dover	30	6	36
Gravesham	2	-	2
Maidstone	207	55	262
Medway	3	2	5
Sevenoaks	30	6	36
Shepway	8	1	9
Swale	36	17	53
Thanet	-	-	0
Tonbridge & Malling	335	101	436
Tunbridge Wells	30	2	32
Total	**731**	**198**	**929**

Important Note: These figures presented are likely to be an underestimate as they mainly consist of properties known to have been flooded by rivers, groundwater or groundwater-fed rivers. Information on numbers of properties flooded by surface water or sewage is less certain. Additionally, many hundreds

more properties were indirectly affected by flooding (loss of utilities, access etc.) e.g. Tonbridge & Malling Borough Council (TMBC) estimate 720 businesses indirectly affected in their area.

A2. Key Facts & Statistics

A2.1 The following is a snapshot of key facts & statistics from Operation Vivaldi and Operations Sunrise 2, 3 & 4.

A2.2 A comprehensive report into the key facts & statistics, costs & demands (collated using the Severe Weather Impact Monitoring System - SWIMS) from all the severe weather events experienced over Winter 2013-14, will be tabled by KCC Sustainability & Climate Change Team later in the coming months.

- **4.7m** – peak sea levels in Dover on 5th & 6th December, the highest recorded since 1905. The Environment Agency (EA) estimates that the tidal impacts in Sandwich were equal to a 1 in 200 year event and the biggest tidal event to impact Kent since the devastating event of 1953.
- **120mm** of rainfall falling between 19th to 25th December on already saturated ground on the Upper Medway catchment. December 2013 was the wettest December for 79 years.
- **342m^3 / second** – the highest ever peak flows upstream of Leigh Barrier Flood Storage Area (FSA) were recorded on Christmas Eve.
- **91** x Flood Alerts, **73** x Flood Warnings and **5** x Severe Flood Warnings issued by the EA for Kent since December.
- **28,500** properties without power in Kent on Christmas Eve.
- **929** properties flooded in Kent since Christmas Eve. In the 2000 floods, approximately 1000 properties were flooded in Kent.
- **50,000** sandbags provided by KCC, District / Borough Councils and the EA to help protect at risk communities.
- **6,400** hours worked by KCC Emergency Planning staff since 20th December in response to the storms & floods, including 1,300 out-of-hours and sustained periods where the County Emergency Centre (CEC) was operating 24 hours a day.
- **88** flood victims supported by Kent Support & Assistance Service (KSAS) with essential cash, goods and services.
- **32,000** calls received by KCC Highways & Transportation in January, a 150% increase in normal call volumes.
- **6km** of public rights of way in need of repair.
- **£8.6m** central government grant received by KCC under the 'Severe Weather Recovery Scheme' to help repair damaged highways infrastructure[1].
- **£3m** new investment by KCC Highways & Transportation into significant drainage schemes to improve existing infrastructure that was impacted by the floods.

[1] KCC Finance is exploring the potential for additional central funding being progressed by KCC Finance, under the Bellwin Scheme and the 'Pothole Challenge Fund'.

A3. Key Meeting & Event Dates

A3.1 The following is a summary of key debriefs, public consultation meetings and flood fairs, feedback from which has been used to inform this report.

Date	Details	Location
3rd December 2013	Kent Resilience Forum (KRF) multi-agency debrief for Op. Sunrise 1	Kent Police HQ
4th February 2014	Public consultation meeting	Hildenborough
	Public consultation meeting	Faversham
5th February 2014	Public consultation meeting	Danvers Road, Tonbridge
12th February 2014	Public consultation meeting	East Peckham
17th February 2014	Public consultation meeting	Tonbridge Forum
19th March 2014	Public consultation meeting	Collier Street
21st March 2014	KRF multi-agency debrief for Op. Vivaldi and Ops. Sunrise 2, 3 & 4	Kent Police HQ
28th March 2014	KCC internal debrief for Op. Vivaldi and Ops. Sunrise 2, 3 & 4	KCC
5th April 2014	Flood fair	East Peckham
12th April 2014	Flood fair	Hildenborough
8th, 13th & 19th April 2014	Flood fair	Yalding
26th April 2014	Flood fair	Little Venice Caravan Park & Tovil
27th April 2014	Flood fair	Maidstone
3rd May 2014	Flood fair	Tovil & East Farleigh
4th May 2014	Flood fair	Clifford Way, Maidstone
10th May 2014	Flood fair	Yalding
11th May 2014	Flood fair	Little Venice Caravan Park

A4. Summary of Emergency Response Operations

A4.1 Important Notes

- The sequence of severe weather events, which necessitated complex & protracted multi-agency emergency operations are summarised below.
- The date ranges and operational names outlined above refer specifically to the 'emergency phase' of these events, where the situation is deemed to present a risk to life. For several days and weeks preceding and superseding each event, a significant multi-agency effort in the pre-planning for, and recovery from, each incident was put in place throughout and beyond these periods.
- Indeed, to date the recovery operations are still ongoing for the Christmas / New Year events, some 4 months later.
- A range of additional complex and challenging events also occurred during this period, including:
  - Significant operations to prevent flooding from Brishing Dam at Boughton Monchelsea;
  - Widespread surface water flooding in Eynsford (17th to 19th January);
  - A 'mini tornado' on 27th January; and
  - A number of sink-holes causing disruption, including a 15ft deep hole on the M2 central reservation (11th February).

A4.2 'Operation Sunrise 1': 28th October 2013

- St Jude Storm – Winds speeds in excess of 90mph hit the County causing widespread disruption to travel & power supplies and, tragically, one fatality.

A4.3 'Operation Vivaldi': 5th & 6th December 2013

- Spring tides combined with a tidal surge caused flooding along the East and South UK coastline impacting much of Kent coastline. The EA issued 5 x Severe Flood Warnings, 3 x Flood Warnings & 6 x Flood Alerts to homes and businesses. 41,000 properties were protected by flood walls, banks and other flood risk management assets along the Kent coast and estuaries. 58 properties were flooded.

A4.4 'Operation Sunrise 2': 23rd to 27th December 2013

- Storm force winds (60-70mph) leave 28,500 properties without power. Heavy rainfall on already saturated catchments causes river, surface water and sewage flooding across Kent, particularly in the north and west of the county. Numerous communities suffered flooding, with hundreds of homes and many businesses affected. Edenbridge, Tonbridge and Hildenborough, East Peckham, Yalding, Collier Street and surrounding communities, Maidstone, and South Darenth, amongst other locations, were all significantly affected.

A4.5 'Operation Sunrise 3': 4th to 6th January 2014

- A sudden deterioration in weather conditions threatened to bring further flooding of severity akin to that experienced over Christmas to already affected communities, and elsewhere. A significant multi-agency operation was put in place (including Military assistance) to provide thousands of sandbags for communities at risk.

A4.6 'Operation Sunrise 4': 6th to 18th February 2014

- Heavy rainfall continued into February 2014. As the rainfall soaked into the ground we experienced extremely high groundwater levels. In some locations groundwater flooding exceeded previously recorded levels by over 1 metre. The peak of the event was experienced towards the end of February and communities were subject to both groundwater flooding and flooding from groundwater fed rivers. The impacts of groundwater flooding in Kent were widespread with particular concentration along the Elham Valley. A multi-agency response to the groundwater flooding and pre-planned measures were deployed to reduce the damage to communities vulnerable to groundwater flooding, including over-pumping of sewage by Southern Water and a significant sand-bagging operation.

A5. Kent Resilience Forum (KRF) Multi-Agency Debrief – Draft Lessons Learned

A5.1 Important Note

- The following are initial draft lessons identified through the KRF multi-agency debrief process hosted by Kent Police on 21st March 2014.
- At time of writing these have yet to be agreed with partners, but Kent Police will shortly be circulating a draft debrief report to all partners for consultation.

A5.2 Pre-Planning & Resilience

- Kent Resilience Team (KRT) to develop guidance for the public in a range of situations advising them of which agencies are responsible for which issues within their areas, and who will provide what information.
- Pan-Kent flood response plans to be reviewed to ensure they are cognisant of arrangements and contingencies across all levels, including Parish, District / Borough and County.
- Review of emergency plans to ensure use of social media for warning and informing purposes is included.
- A number of respondents cited the benefit of taking part in Training & Exercising programmes at National and Regional level which left us better placed than in previous flooding events.
- It was suggested that adoption a similar programme focussed at district level would have eased some of the more local issues and built working relationships. The KRT should work with local partners to deliver a number of District / Borough based exercises focussed on civil emergency type scenarios.
- KRF to maximise training & exercising opportunities for staff attending the multi-agency Tactical Co-ordination Centre (TCC) / Strategic Co-ordination Centre (SCC), including the College of Policing's Multi-Agency Gold Incident Command (MAGIC) training course.
- Resilience in a number of partner agencies was stretched, particularly Category 2 responders and those with regional responsibilities.
- This impacted on maintaining a physical presence at the TCC and participation in the TCG process.
- Some agencies not present on the ground outside normal working hours.
- Bank holiday staffing particularly over Christmas period was lacking.
- Sustained nature of the operation presented problems for maintaining staffing at TCC / SCC.

A5.3 Command, Control, Co-ordination & Communications

- The operation was acknowledged as being tactically led, those Districts / Boroughs which involved an Operational Coordination Group at Bronze level reported a higher level of multi-agency understanding and coordination at ground level.
- Commonly Recognised Information Picture (CRIP) template to include location maps in future.
- Teleconferencing facilities in the SCC have now been upgraded to allow a greater volume of dial-in from partner agencies.
- The multi-agency room within the TCC at Medway has also been upgraded to allow hardwiring of partners IT systems, to allow a quicker transfer of information.
- It was considered that Airwave radio interoperability was not used to full effect on ground.
- Single countywide Silver control was acknowledged as being fit for purpose, non-blue light agencies would not have been able to cope with multiple TCCs.
- Decision to locate the Scientific & Technical Advice Cell (STAC) at TCC was considered sound, in view of the operation being tactically driven.
- Confusion about who the key decision maker should be for ordering evacuation.
- Clearer command protocols need to be developed between responsibilities of County / District / Parish councils e.g. evacuation, sandbag distribution.
- KRT to develop clear guidance for partner agencies to understand decision making process and responsibilities of each agency in a range of civil emergency situations.

A5.4 Escalation, De-Escalation & Recovery

- Escalation from Severe Weather Advisory Group (SWAG) with a proportionate Silver Control, set-up to flex into a functional TCC was identified as good practice.
- Need to ensure understanding of status of incident to each agency.
- Clear and distinct lines of communication are needed to ensure dissemination of escalation / de-escalation of operations. It is not sufficient to only include this in CRIP or minutes from meetings.
- KRT to develop protocols for establishing tipping points at which point an event or situation escalates into an emergency and when the 'response' phase may be safely de-escalated into the 'recovery' phase.
- The relationship between the Recovery Working Group (RWG) and the SCG during the 'emergency' phase was unclear. However, recovery structures subsequently developed during Operation Sunrise 4 to be formalised and adopted by KRT as best practice.
- Menu of capabilities of agencies / organisations to be developed by KRT for assets available for on-going deployment during 'recovery' phase.

A6. Floodline Warnings Direct Service (FWD) – information supplied by the EA

- The EA will be working with affected communities, KCC and other partners, to learn the lessons of the flooding and how it can make its FWD service even more effective. This will include providing warnings to communities that were not able to receive a warning, making warnings more focussed on particular communities, and developing Flood Warden schemes in at risk communities.

- One of the challenges during the flooding was providing consistent and trusted information to communities prompting appropriate action. Where Flood Wardens or community leaders were able to be involved in this activity it proved effective. The EA is working with Parish Councils, District / Borough Councils and KCC to establish Flood Warden Schemes in communities, especially those with a complex flood risk where the benefit can be greatest. Amongst others, the communities of central Tonbridge and Hildenborough are communities where we are supporting flood wardens.
- Registering with FWD allows customers to register multiple contact details (mobile, e-mail etc) and manage which messages they receive e.g. Flood Alerts, Flood Warning no-longer in force etc. This increases our ability to get a message through, and provide a good level of service. In areas of relatively low take-up e.g. where fewer people have registered) the EA has automatically registered properties. This is a positive step because it allows the EA to provide a service and warning to those who wouldn't otherwise have received one. However, it only uses home landline contact details (provided by BT). This therefore has a higher message failure rate, and because people haven't chosen to register, there is a lower level of engagement with the service
- The importance of receiving Flood Warnings means that a partnership effort is needed to encourage people to:
    - Sign-up:

      In some parts of Kent, take-up is as low as 51% of those properties for whom the EA is able to alert via the FWD Service.
    - Keep their details up to date and provide multiple contact numbers:

      The most common reason for warning messages not being received is out of date contact details. 1 in 4 people have been automatically signed-up to receive Flood Warnings, meaning that only basic contact details are available e.g. landline telephone.
    - Act: When they receive a Flood Warning: we have received some feedback that people were waiting for a Severe Flood Warning to be issued before acting, when a Flood Warning indicates immediate action required.

Take-Up of the FWD Service Across Kent[2]

Percentage of 'at risk' properties offered the FWD Service	91%
Percentage of Flood Zone 2 properties registered	76%
Percentage of Flood Warning Area properties registered	84%

Take-up of the FWD Service by District / Borough Council Area

Authority Area	Nos. of Properties Offered FWD Service	Take-up of FWD Service (Fully Registered)	Take-up of FWD Service (Automatically Registered)	% Take-up of Properties (Fully or Automatically Registered)
Ashford	2,360	1,459	1,012	104.70%
Canterbury	7,770	4,728	1,850	84.66%

[2] Data correct as of 31/03/14

Authority Area	Nos. of Properties Offered FWD Service	Take-up of FWD Service (Fully Registered)	Take-up of FWD Service (Automatically Registered)	% Take-up of Properties (Fully or Automatically Registered)
Dartford	3,198	844	1,365	69.07%
Dover	7,591	5,424	1,241	87.80%
Gravesham	2,125	554	808	64.09%
Maidstone	2,966	1,440	917	79.47%
Sevenoaks	1,738	1487	467	112.43%
Shepway	133,80	8,741	3,092	88.44%
Swale	9,981	3,686	3,788	74.88%
Thanet	671	133	215	51.86%
Tonbridge & Malling	3,715	2,200	972	85.38%
Tunbridge Wells	542	276	149	78.41%

A7. Potential Future Flood Defence Schemes in Kent – information supplied by the EA

A7.1 Leigh Flood Storage Area (FSA)

- The EA is working hard to communicate better the purpose of the Leigh FSA and its operation[3]. On 24th December, 5.5million cubic metres of water were stored at the Leigh FSA. By operating the Leigh FSA the EA was able to reduce the 342m^3 / second of water entering the FSA reservoir down to 160m^3 / second flowing downstream and continued to moderate the persistently high water levels during 25th and 26th December.

A7.2 East Peckham

- The EA will use its analysis of the event to test the proposed River Medway and Bourne East Peckham Flood Alleviation Scheme (FAS). It discussed this proposed scheme with East Peckham Parish Council in summer 2012 and, if constructed, it would protect all developed areas of East Peckham and Little Mill. The EA hopes to start the scheme design in November 2014.
- The EA's review of the event will also cover the operation of its existing assets (including the Coult Stream FSA), to see if there is anything more can be done to maximise their performance.

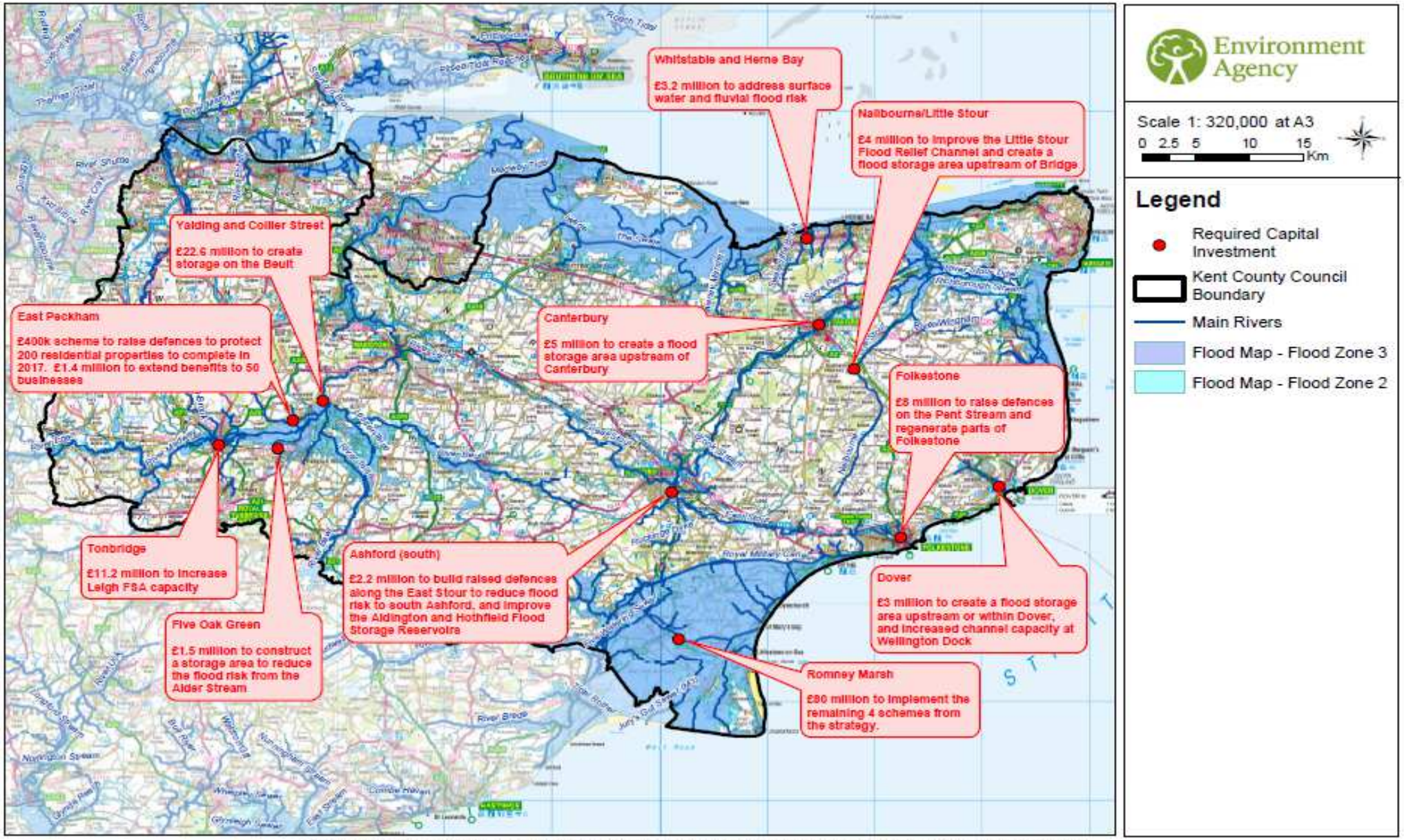
A7.3 Yalding

- Yalding is a particularly vulnerable location. 197 properties were flooded when river levels peaked on 24th December 2013. This flooding was comparable to the 1968 flood and worse than in 2000, when 119 properties flooded.

[3] http://m.youtube.com/watch?v=336-6IN-J2I

- The EA is urgently investigating whether it can accelerate projects to reduce the risk of flooding in Yalding. There is no single solution that will benefit the whole community because of the way the homes and businesses are spread out. It is using the data it has collected from the recent flooding to review our understanding of the way floods happen in the catchment. This will help present the best case to gain funding for future schemes.
- The EA is investigating if it can further localise the current Floodline Warnings Direct (FWD) Service for Yalding. The data it is currently collecting from a project to improve the flood risk modelling for the River Medway will help the EA to improve further its forecasting and flood warning.
- Future works to reduce the risk of flooding are set out in the Middle Medway Strategy which was developed in 2005 and updated in 2010. The EA has considered a number of potential schemes to reduce flooding in Yalding.
- An option that residents are keen to progress is to find a suitable location to store water on the lower reaches of the River Beult.
- The Middle Medway Strategy also recommended that the Leigh FSA be raised by 1m giving an additional 30 per cent storage capacity.
- However, under Government funding rules, most of the schemes will need substantial contributions from external partners in order to proceed – see A6.4 and A6.5 for details.
- The EA has secured funding to progress a feasibility study into both options. It is anticipated this work will be completed by summer 2015. KCC has offered to part fund an additional FSA on the River Beult at Stile Bridge and an increase in the capacity at the Leigh FSA. The EA has submitted its funding bid to secure the additional £17.6m needed to complete both schemes. If this is successful, the earliest construction could start would be in the financial year 2017-2018.
- The EA will continue to work with KCC, Maidstone Borough Council (MBC), Tonbridge & Malling Borough Council (TMBC) and other professional partners to identify partnership funding opportunities which will increase the likelihood of the above works going ahead.

A7.4 Future Capital Investment Requirements for Potential Future Flood Defence Schemes



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A7.5 Priority Schemes Currently Not Qualifying for FDGiA Without Partnership Contributions

Scheme	Estimated cost	Nos. of properties to which flood risk would be reduced	Raw partnership funding score	Required partnership contribution	Final partnership funding score (including contribution)	Planned completion
Lower Beult Storage	£22.6m	1,151	36%	£16m	125%	2020
Increased Storage at Leigh	£11.2m	2,151	74%	£5m	130%	2019
Five Oak Green Flood Alleviation Scheme	£1.5m	266	46%	£900k	100%	2018 (only achievable with contributions)
South Ashford Flood Alleviation Scheme	£2.2m	282	24%	£1.7m	100%	2019 (only achievable with contributions)
Canterbury	£5m	1364	144%	N/A	N/A	2020 (dependant on investigations and consultations)
Romney Marsh	£80m	14,500	119%	£3m	N/A	2022
Whitstable & Herne Bay	£3.2m	Projects in early stages of development				
Dover	£3m					
Folkestone	£8m					
East Peckham	£400k	200 domestic	165%	N/A		2017
	£1.4m	50 businesses	50%	£1m	100%	This scheme will currently only defend homes in East Peckham. Additional funding required for an extension of the protection to businesses.

A8. Other Flood Risk Management Options – information supplied by EA and KCC

A8.1 Summary of Ongoing EA Work

- The EA is keen to learn with communities, and gain a clearer understanding of the impacts of these events on people, its assets and the environment. Also to discuss how, collectively, it can improve its preparations for and response to future events.
- The EA has worked with partners to visit affected communities and attended public meetings across the County. These meetings were an opportunity for people to learn about the risks associated with flooding, to share their experiences and to find out what they can do to better prepare themselves for flooding.
- It was also an opportunity to discuss how flood protection assets, such as the Leigh Flood Storage Area (FSA), are operated to reduce the impact of flooding.
- Attending community events, including flood fairs, hosted by Parish and District / Borough Councils taking place in communities impacted by the recent flooding.
- Holding one-to-one meetings with residents.
- Planning to give residents the opportunity to visit the Leigh FSA.
- A review of the Flood Warnings issued will help the EA to understand if their warnings were timely, appropriate and relevant to those who were affected.
- Identify that new or improved warning areas are required in Hildenborough and Yalding and are investigate how the EA can localise the current Flood Warning Service.
- Work with partners to set up and support a number of Flood Warden schemes.
- Distribute questionnaires to affected communities to find out more about the extent and impact of the flooding to improve EA flood maps and Flood Warning areas.

A8.2 Spatial & Land-Use Planning & Drainage

- The EA's role as a statutory planning consultee is to provide advice to local planning authorities to manage flood and environmental risks and enable sustainable growth. We do not receive government funding to protect development built after 2012. It is therefore vital that flood risk is managed within the planning system. The EA works with partners to seek solutions to overcome these risks. Where risks cannot be overcome and development is contrary to the National Planning Policy Framework (NPFF), the EA recommends planning authorities refuse applications.
- In line with the NPFF we recommend that development is outside the flood plain. If this is not feasible the EA provides advice to Local Planning Authorities (LPAs) to ensure that people are not put at risk and that flood risk is not passed downstream.
- LPAs must ensure that Emergency Plans are fit for purpose to ensure that access and egress is still possible in flood conditions. In all circumstances where warning and emergency response is fundamental to managing flood risk, the EA advise LPAs to formally consider the emergency planning and search & rescue implications of new development in making their decisions.
- It is Local authority responsibility to ensure that flood resilience measures are incorporated into building design. The EA still advise on surface drainage at sites over 1 hectare. The future implementation of Sustainable Drainage Systems (SuDS) Approving Bodies (SABs) will mean that KCC and Local authorities will need to manage surface water risks, groundwater flooding and access and egress within the planning process.

A8.3 Personal Flood Resilience

- A 'Property-Level Protection Scheme' is already in place in Lamberhurst. In response to Flood Warnings these measures were deployed by residents, and greatly reduced the flood impact. Funding is also now in place to adopt similar measures in Aylesford.
- District / Borough Councils have been proactively promoting the Central Government 'Repair & Renew Grant'[4] but take-up across the County has been patchy. However, as at 10th April 2014, T&MBC had received 49 requests for further information, 20% from businesses.
- The EA and KCC have also been supporting flood fairs in various locations around the County (see **section A3 of this appendix** for further details) where residents have been investigating their personal flood resilience options.

A8.4 Investigating & Improving Support to Communities with High / Complex Flood Risk Profiles

- The EA has heard from affected communities that there are often multiple sources of flooding and that the appropriate flood risk management options required are complex to determine.
- The EA has therefore promoted the formation of Multi-Agency Flood Alleviation Technical Working Groups across the County to explore future options.
- Groups that have already met (including existing groups):
    - Tonbridge & Malling (Hildenborough, Tonbridge & East Peckham)
    - Five Oak Green
    - Aylesford
    - Edenbridge
    - Yalding
    - Collier Street
    - Canterbury – Nailbourne
    - Forest Row
    - Lamberhurst
    - Staplehurst
    - Headcorn
    - Faversham
    - Westerham
    - Sundridge & Brasted
- New groups still to meet:
    - Maidstone
    - Eynsford*
    - South Darent & Horton Kirby*

Key:

* Still to be established if wider group needed

A8.5 Surface Water Management Plans (SWMPs)

- In order to understand the risks from local flooding KCC has undertaken a number of studies across the county to collect and map data on these floods. These studies are known as Surface Water Management Plans (SWMPs). These documents vary in their nature, some are high-level assessments of the risks, while others are in-depth studies of the causes and potential solutions to local flooding. SWMPs can be found on the KCC website.

[4] A scheme providing up to £5,000 per flood-affected home or business to contribute to the costs of additional flood resilience or resistance measures.

- During 2014-15 KCC will continue to develop SWMPs, and will undertake studies in Marden, Staplehurst, Headcorn and Paddock Wood (all areas impacted by varying degrees of local flooding during the winter). KCC will also be exploring the opportunities to manage local flooding identified by the recently completed SWMPs in Folkestone, Margate and Dartford. SWMPs include an Action Plan of measures that can be used to manage local flooding identified by the study. However, many options require funding in order to be delivered, this funding is drawn from the same Defra fund, which is administered by the EA, as all other flood risk management investment, and each scheme must compete for funding.
- Additionally, KCC is currently co-ordinating the development of local flood risk documents that provide local communities with a simple overview of the range of flood risks in their area. KCC is working with the EA, Internal Drainage Boards (IDBs), Local authorities and water companies to prepare a pilot document. The document will show what the main flood risks are, where significant assets are, which authorities exercise risk management functions in the area, any plans or strategies they may have in hand to manage flood risks in the future and who to get in touch with for more information. Initially, the pilot will focus on the Canterbury City Council (CCC) area. If this proves successful it will be rolled out across the County, with TMBC and MBC areas likely to be considered next.

A8.6 Little Stour, Nailbourne & Petham Bourne Flood Management Group

- The EA, KCC, CCC, Shepway District Council, Southern Water, and representatives from key Parish Councils are investigating the causes and effects of the flooding experienced during the winter of 2013/14 in the Nailbourne, Little Stour and Petham Bourne valleys. These partners are working together to assess the options to manage this winter's flooding, and are seeking to reduce the potential for disruption in the future.
- The Nailbourne, Petham Bourne and parts of the Little Stour are groundwater fed watercourses. This means that they are dry for long periods of time. However, following periods of prolonged rainfall groundwater levels in the underlying aquifers rise to a point where water emerges through springs throughout the length of these valleys, and the streams begin to flow.
- The Nailbourne has been flowing since mid-January and has approached near-record levels. There has been extensive flooding of farmland, with internal property flooding reported in Bridge, Patrixbourne, Bishopsbourne and Barham. The Petham Bourne, which typically flows less frequently than the Nailbourne, has also been active over the winter causing flooding and disruption. The Little Stour has burst its banks in a number of locations, also flooding farmland properties and roads.
- Owing to the high flows experienced this winter, many culverts have been overwhelmed in these valleys. At its peak, portable pumps were used to help move water over the culverts in some places, and sandbags were used extensively to protect many properties.
- The group will be undertaking three main activities:
    1. Survey the measures put in place over the course of this winter to manage and reduce flooding. This will provide a blueprint for future events, and will help enable us to mobilise and deploy necessary equipment in time if the groundwater levels rise again.
    2. Identify any opportunities that can be delivered as quickly as possible to reduce the impact of flooding should these watercourses flow again next winter.
    3. Identify opportunities to reduce the impact of flooding that can be delivered over a longer timeframe. These measures will require further investigation, more detailed design work and an application for additional funding.