

KENT FLOOD RISK MANAGEMENT COMMITTEE

Monday, 11th March, 2019

2.00 pm

Sessions House





AGENDA

KENT FLOOD RISK MANAGEMENT COMMITTEE

Monday, 11th March, 2019, at 2.00 pm

Ask for: **Andrew Tait**

Sessions House

Telephone **03000 416749**

Tea/Coffee will be available 15 before the start of the meeting in the meeting room

Membership (7)

Conservative (6): Mr A R Hills (Chairman), Mr A H T Bowles, Mrs L Hurst,
Mr P W A Lake, Mr K Pugh and Mr H Rayner

Liberal Democrat (1) Mr I S Chittenden

UNRESTRICTED ITEMS

(During these items the meeting is likely to be open to the public)

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1. Substitutes
2. Declarations of Members' Interest relating to items on today's agenda
3. Minutes of the meeting on 12 November 2018 (Pages 5 - 18)
4. Climate Change Impacts Forecast (UKCP 18) - Presentation by Mark Rogers, Met Office Advisor Civil Contingencies (Pages 19 - 40)

5. Environment Agency - Flood Risk Vision for the future of Kent - Presentation by Frank Heeley, Team Leader, Partnership and Strategic Overview - SE London and North Kent
6. Middle Medway Flood Resilience Project Update - Presentation by Peter Waring, Project Manager and E A Senior Flood Advisor, Kent and South London
7. Environment Agency and Met Office Alerts and Warnings and KCC severe weather response activity since the last meeting (Pages 41 - 44)
8. Other items which the Chairman decides are Urgent

EXEMPT ITEMS

(At the time of preparing the agenda there were no exempt items. During any such items which may arise the meeting is likely NOT to be open to the public)

Benjamin Watts
General Counsel
03000 416814

Friday, 1 March 2019

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KENT COUNTY COUNCIL

KENT FLOOD RISK MANAGEMENT COMMITTEE

MINUTES of a meeting of the Kent Flood Risk Management Committee held in the Council Chamber - Sessions House on Monday, 12 November 2018.

PRESENT: Mr A R Hills (Chairman), Mr M A C Balfour (Substitute for Mr A H T Bowles), Mr I S Chittenden, Mrs L Hurst, Mr P W A Lake, Mr K Pugh, Mr H Rayner, Mrs R Doyle (Canterbury CC), Mr L Laws (Folkestone and Hythe DC), Mr D Mortimer (Maidstone BC), Mr J Scholey (Sevenoaks DC), Mr G Lewin (Swale BC), Mr H Rogers (Tonbridge and Malling BC), Mrs C Mackonochie (Tunbridge Wells BC) and Mrs G Brown (KALC)

ALSO PRESENT: Mr M D Payne and Mrs P A V Stockell

IN ATTENDANCE: Mr M Tant (Flood and Water Manager), Mr T Harwood (Resilience and Emergency Planning Manager) and Mr A Tait (Democratic Services Officer)

UNRESTRICTED ITEMS

12. Membership
(Item 1)

The Committee noted the appointment of Mrs L Hurst, Mr P W A Lake and Mr H Rayner in place of Mrs C Bell and the two pre-existing vacancies.

13. Minutes of the meeting on 16 July 2018
(Item 4)

14. Dates of future meetings
(Item 5)

The Committee noted that its next meetings would be held on:-

Monday, 11 March 2019;
Monday, 22 July 2019;
Monday, 11 November 2019; and
Monday, 20 March 2020.

15. Meeting the Challenge of Highways Drainage - The programme of planned maintenance
(Item 7)

(1) The Committee agreed that the two presentations set out at items 5 and 6 on the agenda would be considered together. The presentation slides are contained within the electronic agenda papers on the KCC website.

(2) Mr Michael Payne (Deputy Cabinet Member for Planning, Highways, Transport and Waste) began his presentation by setting out some of the outcomes that KCC's programme of planned maintenance aimed to achieve. These were: fewer flooding incidents on Kent's highways; ensuring that the roads and footways were free from standing water; and building greater resilience against intense rainfall events. The difficulty of achieving this outcome could be gauged by noting that the rainwater goods at St Paul's Cathedral had overtopped ten times during the year, whereas this had only happened once in the previous ten. This, in turn, would assist in reducing disruption and increase customer satisfaction and confidence.

(3) Mr Payne moved on to consider KCC's assets. The most significant of these were the 250k roadside drains. Road Maintenance generally was undertaken to maintain road safety and to maximise the lifespan of the highway.

(4) Mr Payne said that the Drainage Team received over 7,000 enquiries a year, primarily in respect of blocked drains which presented a general risk. An analysis of drainage enquiries received over the previous four years (2014 – 18) showed that the peak periods had not always been during the winter months or, indeed, during the same months each year. For example, the annual peak during the previous three had occurred in June 2016, July and August 2017 and in May 2018.

(5) The budget allocation for drainage maintenance was £2.5m, enabling a response to flooding that posed an immediate risk to highway safety. Drainage hotspots were cleaned every six months and roadside drains on main roads every 12. Other assets were targeted within 2 hours or 90 days, depending on their severity. Other budget allocations were for ironwork repairs, pumping station servicing and repairs and drainage investigations, together with a £3.5 budget for capital work.

(6) Mr Payne then said that not all drains were cleaned every year, nor was it always necessary to do so. Another 4,000 jobs were issued to the contractors in response to customer enquiries to clean gullies, jet lines, cleanse soakaways and to generally carry out investigations to reduce surface water on the network.

(7) Mr Payne continued by setting out the significant factors that affected drainage maintenance. These included the age of infrastructure, the limited capacity of the drains to deal with flash flooding events, third party infrastructure such as ditches next to highways not being kept in good order by landowners, and reductions in street sweeping by some local authorities.

(8) Mr Payne asked the Committee to note that there were annual planned proactive inspections of all 5,400 miles of Kent's highway network as well as reactive inspections in response to customer enquiries.

(9) Mr Payne turned to the programme of capital drainage repairs and improvements. He explained that there were limitations on highway drainage in terms of coping with intense rainfall events. Funding priorities took into account the nature of the road, safety to highway users and flooding to private properties. Scheme priorities were set in order of risk. There were 200 major schemes on the programme

for the current financial year. The capital schemes were designed in line with a 1 in 100-year storm event.

(10) Mr Payne concluded with a quotation from a charter issued by King Wihtred of Kent in @ 700 in which he had described the Kentish climate as “evil in winter, grievous in summer and never good.”

(11) Mr Earl Bournier (Asset Manager, Drainage, Structures and Safety Barriers) gave a presentation on the prioritisation of investment. The criteria were road safety, disruption to the highway network and internal property flooding in the light of how much work was needed (repair or renewal), whether the existing asset worked (like for like or change) and whether it could be future-proofed.

(12) Once the roads, drainage and structures had been identified, they needed to be assessed as high risk or low risk, which would determine what would be delivered during the current year and what could be deferred, taking into account the authority’s legal obligations (Highways Act, Traffic Management Act and Climate Change Act) and KCC’s objectives (vision and strategic outcomes). The question of whether to reduce, sustain or enhance the service depended on the level of funding received.

(13) Mr Bournier said that KCC Highways was moving to an Asset Management approach in order to manage the drainage asset using a risk-based model. This was a necessary condition to gain increased funding. The Highway Assets section was led by Andrew Loosemoore and had overview of 7 sub-sections (including roads, drainage and bridges, tunnels & highway structures).

(14) Mr Bournier went on to explain the basic principles for the Asset Management approach for highway assets. This involved identifying the asset; assessing the asset’s condition; the prioritisation of investment and other significant factors, as well as the level of service, including funding for the next financial year.

(15) Mr Bournier then said that another aspect of asset management was known as “map16.” As the name implied, this involved digitally mapping the County’s drainage assets to improve the maintenance process. It involved mobile data collection where every gully was inspected and/or cleansed with the information being recorded on map16 tablets. This information included silt levels, defects such as broken or blocked gullies. The longer this information was processed, the easier it would become to identify those gullies that needed repair whilst avoiding returning to the same gullies every year. Live dashboards could monitor the number of gullies cleansed and those that had not been visited whilst also identifying their location and any additional significant information in respect of any problems associated with each of them. *Map6* also allowed data interrogation to identify hotspots within the drainage network, carry out silt level analysis and identify risk areas.

(16) Mr Pugh asked whether KCC had a comprehensive mapping system of where the low-lying potential flood areas were so that the public could be warned that their drains and gullies were at risk of blockage, or that alluvial water was coming off the land. Mr Bournier replied that this would be a mixture of responsibilities for the Highway Authority, the Flood and Water Management Team and the Environment Agency. The Highways Authority knew the hotspots which were in need of six-monthly cleansing and which areas were likely to flood. Tankers would be in place

to clear the flood water away and, if necessary, close the road. Mr Payne added that lists of hotspots had been made available at the various parish seminars. The mapping tool showing which drains were the most at risk was also available to each Parish.

(17) Mr Pugh then said that a wide variety of information needed to be made available to residents, who should also be encouraged to report any significant flooding conditions that arose. Mr Bourner confirmed that Kent Highways had a successful on-line reporting tool which the public was encouraged to use for this purpose.

(18) Mr Balfour said that there were two adjacent gullies on the south side of the A20 in his Tonbridge and Malling constituency which flooded whenever it rained. This state of affairs was still in existence after several years. This had been reported to KCC's contractor who had expressed surprise as it did not appear on their list. This demonstrated that on occasions there were gaps between KCC receiving a report from the public, informing the contractor, and the problem being rectified. The amount of money that KCC allocated for this work was very low (although the KCC Highways officers performed extremely well). There was, however in his view, a problem at the contractor's end of the process.

(19) Mr Bourner said that KCC Highways had its scheduled programme of maintenance on all the major roads in the County. They also aimed to return every call received from the public, although this was not always possible. Over 7,000 enquiries relating to flooding had been received up to this point in 2018. KCC Highways was still dealing with the backlog of work which had built up during the May storms when over 1,100 enquiries had been received. It was easy to simply clear a gully but any blockage in the system needed further investigation, possibly including a CCTV survey, which meant that it would take a greater length of time to fix it. This could include digging down to repair the pipe or installing a new soakaway. Such work could take up to 90 days to complete. Great efforts were made to keep the customer up-to-date at all times.

(20) Mr Laws said that one of his constituents in Lydd had received a very negative response by the Highways officer when he had reported that water lapped into his garden every time there was a deluge. Mr Laws had attended the recent Parish Seminar and had spoken to Simon Jones, the new Director of Highways, Transportation and Waste on his constituent's behalf. He was pleased to say that within a few days the contractors had arrived and begun work. He added that he found all the Area Highways Officers very helpful and approachable. He then said that whilst younger people were usually very capable of using the on-line reporting tool, some of the more senior citizens might find it less straight forward.

(21) Mrs Brown said that the maps were very comprehensive in terms of flooding. She had, however, needed to make a complaint in October about items disappearing from the portal, marked as completed when this was not the case. She had been advised that this occurred every time the work was passed to the contractor. This was particularly the case with blocked gullies. She asked for these items to be left on together with a status report. Mr Bourner replied that when the work was passed to the contractor, it was moved onto the contractor's queue which was also on-line. The enquiry would not simply disappear.

(22) Mr Mortimer said that he understood that the pumps on the underpasses on the gyratory system in Maidstone had not been working during the previous week resulting in some 2 ft of water. Mr Bourner replied that they had all been blocked and been cleaned out two weeks before the meeting. There was only a small gully which fed into a system that went into the river. This gully was prone to being blocked very easily but could not be deepened because of the way in which the structure had been built. It was therefore cleaned on a regular basis.

(23) The Chairman said that the evidence from the presentation and the questions asked indicated a problem of under-funding. This problem would grow due to the issues created by the changing climate.

(24) Mrs Hurst said that it appeared that contractors were coming out to an area, cleaning one or two drains and then departing to carry out work in another area, leaving behind other blockages that had been reported. She felt that this was a waste of resources and that it would be far more practical to carry out all the work in the area at the same time. Mr Payne replied that this could be a question of how the contractor approached the work allocated. Mr Bourner added that for scheduled cleansing, the contractor would carry out the necessary work on every single item in the road or area in question unless there were broken lids or parked cars in the way. The other gullies were cleansed reactively. On these occasions, the Highways Inspectors were encouraged to inspect the whole road and identify any other drains or gullies that could be attended to at the same time. The overall problem was the low level of funding which meant that they could only target those roads that were reported.

(25) Mrs Hurst said that she had reported a blocked drain in Birchington in 2016. By the time it had been rectified some two weeks before the meeting, there was grass growing out of the drain. On one occasion, the contractors had attended to another blocked drain in the same road. They had been asked to look at the drain in question while they were in the vicinity. They had done so and then driven away.

(25) The Committee agreed to invite Mr Payne and Mr Bourner to give a further presentation to the meeting in November 2019 to provide an update on work undertaken, particularly during the winter months.

(26) RESOLVED that Mr Payne and Mr Bourner be thanked for their presentation and that they be invited to update the Committee at its meeting in November 2019.

16. National Flood Forum - Presentation by Sanjay Johal, National Flood Forum Community Flood Resilience Project Officer
(Item 8)

(1) Mr Sanjay Johal (National Flood Forum Flood Resilience Officer) gave a presentation. The accompanying slides are contained within the electronic agenda papers on the KCC website.

(2) Mr Johal said that the National Flood Forum (NFF) was a national charity helping to support communities at risk flooding across the country. It had 250 active Flood Action Groups made up of community representatives. It helped communities

to recover when they had been flooded, and also worked to ensure that flood risk communities were at the centre of policy making and operational delivery. This meant that there were three strands to its work. The management worked on operational delivery and policy making whilst the Resilience Officers worked with the communities.

(3) Mr Johal continued by saying that the four key tenements of the NFF's work were to facilitate, support, provide and train. They supported the communities to recover from flooding, they provided information on flood insurance and products as well as other flooding issues that were pertinent to people within their community. They also trained local authorities, agencies and volunteers to support people affected by floods.

(4) Mr Johal then set out the NFF's objectives of working with flood risk communities in Kent. One of the key objectives was improving understanding of local flood risk within local communities. This enabled them to support local communities to lead on and actively manage flood risk. They helped improve communication between communities and the appropriate risk management authorities in order to ensure an effective partnership approach. Another key objective was to improve the resilience of flood-vulnerable communities. It was also important for the NFF to be able to identify best practice which could be followed in other areas. This also applied to local communities who were able to discuss their experiences with others.

(5) The risk management authorities which worked with the NFF in Kent were Kent County Council and its Highways Department, the Environment Agency, Southern Water, Local Councils, Internal Drainage Boards and the Kent Resilience Team. The NFF worked to ensure that local communities understood each of these agencies' roles and how they worked.

(6) Mr Johal explained the positive ways in which flood action groups worked. His role was to support local communities and identify which of them would like to form a flood action group. The benefits that the NFF saw arising from their creation were that it enabled communities to come together in partnership with those who managed flood risk. They could also prepare to reduce the impact of flooding on their own homes and communities by ensuring that they were empowered to do so. They also needed to understand what was outside their remit. They could also work with other voluntary groups to instigate and support community emergency flood plans.

(7) Mr Johal said that there were a large number of Flood Wardens in Kent, recruited and trained by the Environment Agency. Flood Wardens were a key part of their communities and proactively helped them deal with flood risk. It was therefore important to ensure that they worked in partnership and maintained good relations with the local community and the Environment Agency. The Flood Action Groups in Kent that Mr Johal was involved with aimed to work with and through the local flood wardens, not just during floods but in the intervening periods as well. Working with flood wardens in the area empowered them to work with the community and in partnership with local authorities on issues identified as key factors.

(8) Mr Johal then set out the areas in Kent that he was working in. These were Hildenborough, Ightham, Headcorn, Tonbridge, Tunbridge Wells, Five Oak Green, East Peckham and Iwade. Each of these areas had set up a Flood Action Group or was in the process of doing so. Each of them had its own issues and was giving

consideration to how to manage its flood risk and were engaged in a multi-agency approach.

(9) Mr Johal said that Ightham was one of the areas he was working in. A Flood Action Group had been set up in 2017. It had met on a number of occasions with the risk management authorities to discuss flood risk in the community. The Group itself was made up of a mixture of flooded residents and local Parish Council Members. One of the main areas of concern was riparian ownership responsibility issues on the Busty river course. The Group had discussed how to inform riparian owners of their responsibilities without having to resort to strongly-worded letters. It had organised a riparian owner evening event in the local pub to discuss the issues. The event had been supported by KCC and the Environment Agency. The event was supported by KCC and the Environment Agency and had been a success. The Flood Action Group was able to put together a list of riparian owners so that they could use them to contact one another or a Flood Action Group member to ask for advice.

(10) Ightham Flood Action Group also decided to carry out a walkover of key areas of concern with the watercourse. They identified a number of tasks that they could undertake to clear away the debris and organised a clean-up day in spring 2018 with the help of Tonbridge and Malling BC who had provided the necessary equipment. One of the great successes of this operation was that it involved a number of other members of the community who were willing to help. A second clean up day had already taken place and a third one was being arranged to take place after winter.

(11) Mr Johal said that Ightham Flood Action Group was liaising with KCC who were delivering a Property Flood Resilience Project to individually protect each flood risk property.

(12) The Headcorn Flood Action Group was set up in 2017. They had met with the Risk Management Authorities on several occasions to discuss flood risk in the community. Their main concerns were surface water issues and housing development in the area. They had discussed upgrades and work on the sewerage networks with Southern Water. As a result, they received weekly progress updates from the SW Development Team which they disseminated to the community on a weekly basis. The Flood Action Group also produced a regular newsletter, which publicised upcoming events including a public engagement stand at Southern Water's drop-in event in May.

(13) Mr Johal added that the Headcorn Flood Action Group had played a very significant role during the flooding event in April. Their communication network had informed the discussions at the next multi-agency meeting. They were also setting up regular community activities such as the clearance of litter and debris from the watercourses. Another activity was support for the development of the local Emergency Flood Plan in liaison with the Environment Agency and the Kent Resilience Team.

(14) Mr Johal said that the Tunbridge Wells Flood Action Group had been established in Spring 2018 and was working in partnership with all the Risk Management Authorities. It was made up of local residents and businesses with support from their MP. As a result of support from the NFF and others, it was holding regular meetings and had also organised walk-overs to identify and highlight

risks in Tunbridge Wells. They were currently considering splitting into two sub-groups because of the large area covered.

(15) Mr Johal concluded his presentation by setting out the NFF's programme of future working in Kent. They would continue to arrange meetings with other Flood Risk communities in Kent, including multi-agency meetings. They also intended to work with KCC to identify other communities who would benefit from this type of activity. Meanwhile, they would aim to get the established Flood Action Groups to start thinking about their community resilience plans.

(16) Mr Chittenden asked whether the NFF had experienced any difficulties in keeping the Flood Action Groups going after they had been set up. Mr Johal replied that some of the communities where Flood Action Groups had been set up had not recently experienced a significant flooding event. Flood Wardens had to be drawn from those areas which were not at risk of flooding. They had to be in a position to concentrate on their tasks without needing to worry about their own properties. They supported the Flood Action Groups whose main work was driven by those who were at risk. It was the NFF's experience that people who had been flooded never forgot what had happened and consequently never lost their drive and enthusiasm. They were also supported by KCC. He added that, in Tonbridge, Flood Wardens were working hard to recruit to their ranks in order to ensure that the function continued to be filled if they had to give the role up for any reason. He offered to discuss the situation in Tovil with Mr Chittenden once he had familiarised himself with it.

(17) Mrs Doyle said that the main problem in the Canterbury area was the winterbournes which often caused significant flooding problems during the winter months. She asked whether there was any way of forecasting when such an event was likely to happen. Mr Tant replied that it was certainly possible to forecast these events by monitoring groundwater levels, but impossible to stop them. On the last occasion that a flooding event had arisen due to the winterbournes, the forecast had enabled the Flood Risk Authorities to gather 20,000 sandbags in preparation. This had been very difficult to accomplish, and the early forecast had given them the necessary time to do so.

(18) Mrs Mackonochie referred to Mr Johal's slide *Risk Management Agencies Involved* and asked whether Network Rail was included. Mr Johal said in reply that the slide in question referred to the agencies which were always involved. If there were specific issues where Network Rail or other agencies could help, the NFF would seek to involve them as part of the partnership approach developed with the Flood Action Groups. An example of this had occurred in Tunbridge Wells where local land management company had been invited to the meetings to discuss specific issues. The NFF had involved Network Rail in such activities in other parts of the country.

(19) Mr Lake said that he lived at the junction between the Rivers Medway and Eden. He said that there was great concern in Leigh and Penshurst (who he represented as a District Councillor) about the barrier. He asked for an update which he could share with the two Parish Councils, which was particularly important in the light of development taking place in the area. He added that Edenbridge suffered from terrible flooding problems and that its inhabitants were extremely keen to do something about it. Yet there did not appear to be much support in this regard from the risk management agencies. He then said that the Environment Agency and Southern Water had visited Fordcombe in 2018 and had stated that they wished to

remove the weirs above Penshurst because they could not afford to maintain them. He believed that this would lead to terrible problems further down river.

(20) Mr Johal said that the Environment Agency was holding drop-in events for the works at Leigh at places along the Upper Medway. He was aware of the weir at Hildenborough because of his work with the community. There, the Flood Action Group had welcomed the drop-in sessions for giving the initial information which informed further discussions between the Flood Action Group, the Environment Agency and the other risk management agencies.

(21) Mr Tant said that the flood risk at Edenbridge arose from the main rivers, and that any plans to deal with it would be the responsibility of the Environment Agency. One of the main issues was the bridge at Edenbridge which impacted upon the capacity of the river. He offered to provide Mr Lake with the contact details of the Environment Agency.

(22) The Chairman said that he would be very keen to invite the Environment Agency to a meeting of the Committee to give an overview of their plans and their rationale.

(23) Mrs Mackonochie asked whether preparatory work was being undertaken to identify the risks and mitigatory measures that would be needed if the Leigh Barrier were to fail and the water were to be released. Mr Tant replied that the Leigh Barrier storage area was already classified as a reservoir under the Reservoirs Act. It was therefore subject to all the provisions of that Act, including the eventualities mentioned.

(24) Mr Harwood said that the Leigh Barrier could currently store 5.5 million m³ of water. This would increase to 9 million m³ once the new embankments were in place. KCC had a legal obligation under the Reservoir Act to undertake off-site planning. This had been done and was very detailed as it was essential to understand where the footprint of the water would go and the velocity with which it would do so if there were a dam failure. It also identified Emergency Planning muster points.

(25) Mrs Brown said that in Yalding, contrary to what was normally the case, all the Flood Wardens actually lived in at-risk areas. She added that in her experience, people did forget flooding events. Residents had moved out of Yalding and been replaced by new ones who often had to be given an explanation of what could happen to their properties. The introduction of *Flood Re* meant that insurance was now available at an affordable cost. In respect of the structures and weirs, Yalding PC had received a letter from South East Rivers Trust requesting a meeting. She suggested that those Parish Councils where weirs were should be identified and also invited. She added that she was also concerned about Tovil because its Parish Council was no longer a member of KALC and did not appear to have support from anywhere. She was aware that two of the Parish Chairmen in Maidstone had stated that their parishes did not need any help because they did not suffer from flooding.

(26) Mr Mortimer said that in Maidstone in the immediate aftermath of the flood of 2013 there had been a lot of interest and volunteering at various parish council meetings. This had dissipated to the point where there were no Flood Wardens in Maidstone Town, Tovil, Farleigh, or Barming. The parish councils were not aware of

the need for Flood Wardens, sandbags had become obsolete and nobody seemed to know how to replace them.

(27) The Chairman said that since the flooding and storms of 2013/14 there had been a decrease in interest which had reflected itself in a reduction in preventative work, even though flooding would certainly occur at some stage in the short to medium term future. He thanked the members of the Committee for the way in which they were taking information from these meetings and disseminating them within their communities.

(28) Mr Rayner said that Hildenborough PC had at one time not been a member of KALC. It had only joined in 2015. The reason they had done so was that he as the Chairman of Tonbridge and Malling KALC and some of his officers had visited and persuaded them to join. He suggested that this approach could be replicated in Tovil.

(29) Mr Pugh suggested that when the Environment Agency gave its presentation they should also be asked to explain how they were planning for flooding on Kent's shoreline.

(30) The Chairman said that in 2019, the Environment Agency was intending to do a light refresh of shoreline management plans. He personally did not think they were fit for purpose. The Met Office was intending to publish its projections for climate change in December 2018. This would enable the Committee to ask the Environment Agency what it was going to do about the coastal strips amongst other things.

(31) Mr Balfour said that it would be far too detailed an exercise for the Environment Agency to explain its plans on a county-wide basis. It was far better to do it at District level, with input from Local County Members. He then said that every County and District Councillor attended the Parish Council meetings in their constituencies. This was the opportunity to remind them about the need to finalise their flood plans and ensure that Flood Wardens were recruited and organised.

(32) Mr Laws said that a shoreline map had been produced. This included an explanation of what was planned in Kent. They indicated what works were planned and where it was intended that nature would take its course. The latest map indicated an intention to lose 2 metres in Folkestone and Hythe. His biggest concern was the Galloways Road area in Lydd where the sea could break through quite easily.

(33) The Chairman said that the local Shoreline Management Plan indicated that Lydd Ranges and Denge Marshes were not going to be protected in the long term. This Plan was out of date and it would be very interesting to see what revisions were made in respect of that area when the new one came out in 2019.

(34) Mr Pugh said that the plan for the North Kent coast had not had any map for the past five years. It was essential that people knew what was intended there. There was a responsibility to maintain the shoreline rather than leave it unprotected.

(35) RESOLVED that:-

(a) Mr Sanjay Johal be thanked for his presentation; and

- (b) the Environment Agency be invited to attend the next meeting of the Committee in order to discuss the aspects of its flood management plans and other matters raised during the meeting in the light of the Climate Change projections from the Met Office which are due to be published before the end of 2018.

17. Environment Agency and Met Office Alerts and Warnings and KCC flood response activity since the last meeting
(Item 9)

(1) Mr Harwood introduced the report. He informed the Committee that since its publication there had been an additional 2 flood alerts issued by the Environment Agency (paragraph 2.4) and an additional Met Office severe weather warning for wind and rain (paragraph 2.5).

(2) Mr Harwood said that a number of highway flooding incidents had been notified to the Duty Emergency Planning Officer on the day before the meeting (Sunday, 11 November). Kent Fire and Rescue had needed to perform a rescue of a motorist caught in floodwater under the M20 Bridge at Boarley Lane in Maidstone shortly before Junction 6. The root cause had been the significant rainfall that had fallen in a very short period of time. There had also been highway flooding in Sandling Lane in north Maidstone as well as in Chartway Street near The Ridge Golf Club. Flooding at the Tonbridge Road/Terrace Road junction in Maidstone had impacted preparations for the Centenary Armistice Day celebrations. He was gathering information on all significant surface water and highway flooding events experienced across the county in order to be able to discuss possible interventions to prevent a repeat with his Highways Drainage colleagues.

(3) Mr Harwood then said that there had been meetings of the Severe Weather Advisory Group (SWAG) in September when high winds had been forecast. These had initially been chaired by Kent Highways as the key risk had been trees falling onto the highway. The winds were northerly which posed greater danger to trees than the usual south westerlies because their roots defended them better against the latter. Later on, coastal flood risk had become the key issue as the northerly winds could force a surge down the North Sea to the pinch point at North Kent. The Environment Agency had taken over the lead role in the SWAG at that stage. This had taken place at the same time as the Emergency Services were dealing with the warehouse fire at Enterprise Way in Margate. SWAG had played an important role, as its identification of wind patterns enabled an understanding of whether the greatest risk from the smoke plume was to the QEQM Hospital schools or residential communities.

(4) Mr Harwood then said that high peak spring tides were predicted between 23 and 26 December 2018 which could potentially pose risks to coastal areas, particularly if accompanied by strong winds.

(5) Mr Chittenden asked for a progress update on the work undertaken following the £4m allocation to flood defence work in Yalding. He also asked for an update on the £189m which the Environment Agency had informed the Committee during its

previous meeting had been allocated to Kent over the next five years in grants to deliver capital projects to reduce flood risk.

(6) The Chairman said that a large proportion of the £189m would be spent in Romney Marsh, mainly on a large project for coastal flood defence at the Ranges. He agreed that this would be one of the items that the Environment Agency would be asked to cover when they were invited to the next Committee meeting in March 2019.

(7) Mr Tant said that KCC had agreed an investment of £4m split across the Medway catchment area including works at the Leigh Flood Storage area and Hildenborough (£2.5m) and Yalding (£1.5m). The Yalding project was split into a number of phases. Phase 1A to provide property-level resilience had already been delivered by the Environment Agency. This included flood barriers across doors and non-return valves on plumbing at 28 properties. This work had been carried out by a firm named *UK Flood Barriers* which had gone out of business during the summer, preventing them from carrying out Phase 1B to a further 230 properties or so. The Environment Agency was preparing a national framework for property-level flood resilience, which would identify the contractors who could carry out this work. Once the framework was launched, Phase 1B would be able to commence in Yalding. He understood that the launch of the framework was imminent and would enable the identification of a contractor for Phase 1B. The EA was currently working on Phase 2 which involved consideration of what could be done to support those properties which were not eligible under Phase 1. It was possible that KCC's contribution as well as any money that Maidstone BC was able to provide would be used for this Phase, although this might not be the case as the nature of these works meant that they would be more expensive and therefore less cost-beneficial. The results of the EA's assessment would be available in the New Year.

(8) Mrs Brown said that Yalding PC had been advised that it would be 12 months before Phase 1B would be completed. This Phase would be carried out in stages. The order in which the works would be carried out was not yet known. The Parish Council was therefore expecting that work would not start until Easter 2019 due to the practicalities described. The surveys for Phase 2 had been carried out by Jacobs. She had in her role as Chair of the Parish Council contacted the EA to ensure that all the eligible properties were included in the scheme.

(9) Mr Lewin asked what the impact of rainwater run-off during the dry period had been for the high way network. He said that he had personally water up to the axle of his car. Mr Payne replied that this depended on the dryness of the land, the water compaction and the farming practices adopted on agricultural land. Discussions with the RPA and DEFRA were aimed to alleviate water run-off. There was the potential for fines or the withholding of funding if certain criteria were not met. Much also depended on the maintenance of the drainage network, the responsibility for which might rest with the adjacent landowner rather than the Highways Authority.

(10) Mr Harwood said that data on the changing climate and rainfall totals should not just be examined by referring to the average. It needed to be considered on the basis of a developing trend for an increased frequency of short but intense rainfall. Very dry weather was being followed by periods of very intense precipitation leading to significant run-off on the public highways and hard ground which could overwhelm surface water drainage systems. Work was being undertaken by KCC's Landscape Team to identify verges where additional planting would be most effective in

maximising infiltration of run-off and uptake by vegetation. There was further reassurance on this matter as the Emergency Planning Team was also routinely commenting on landscape resilience issues involved in major planning applications and spatial plans. The NPPF indicated that development, including new housing was considered holistically, including enabling enhanced flood and other severe weather resilience through such details as materials, layout and design.

(11) Mrs Brown said that many communities including Yalding were developing an empirical understanding of the changing nature of flood risk, including the dangers posed by extensive dry periods.

(12) The Chairman informed the Committee of the report published in October 2018 by the Committee on Climate Change. He recommended that all Members should read it, particularly those who represented areas on the coast. It covered the remainder of the 21st Century. The conclusion he had drawn from this document was that there was an urgent need to adapt and survive and to improve resilience. The Committee had an important role to play in this regard.

(13) Mrs Brown said that the recent Medway Flood Partnership meeting had been attended by representatives from Kent Highways who had discussed the potential problems posed by Brexit. She asked what contingencies there were for dealing with heavy rain and flooding during the immediate aftermath in the light of the significant problems that they had advised might occur in the immediate aftermath.

(14) Mr Harwood replied that KCC had identified the potential for simultaneous connected or unconnected events to cause major problems at this time. KCC and District Councils had developed an Emergency Planning exercise named *Brexercise Loki*. This had tested various scenarios in order to determine the ability to respond to combinations of events. This included the ability to respond to the problems caused by heavy traffic congestion during a flooding event or other emergency, which would make it difficult to move the necessary resources around the county. The recent Budget had allocated a further £ 500m for Brexit planning. Kent's partners had submitted a bid for potential funding against that stream. It was stated that the planning, assets and staff resources would all be in place to deal with any emergency impacts and consequences arising from Brexit.

(15) Mr Balfour said that the public needed to know the reality of what the planning actually entailed. They were currently assuming that there would be congestion and flooding with no food in the shops and hospitals being closed. The M26 would be a complete disaster. Highways England were digging up the A20 and the A2. People were worried that they were in the eye of a perfect storm. It was essential that KCC informed everyone of the measures that were planned to be in place. Otherwise there would be a huge reputational risk.

(16) Mr Harwood said that the KRF had employed a Brexit Co-ordinator to closely look at all the issues involved. KCC was working closely with the Government and local partners to raise any concerns. KCC's role was to foresee any potential impacts and consequences and to plan contingencies to manage them. It was a case of planning for the worst whilst hoping for the best and Kent resilience partners were liaising with the Government to seek all the reassurances that people needed.

(17) Mr Pugh referred to the deep-water port in Sheerness that could take a lot of ferries. There was also land around Sheerness which would be able to stack a lot of lorries. It was urgent for the public to be briefed immediately on what the planning entailed.

(18) Mr Harwood replied that Sheerness featured within Kent's planning as did the container port on the River Thames at Dartford.

(19) Mr Payne said that there was a difference between an Emergency Response and a Planned Response. The latter required a detailed examination in relation to all the foreseeable possible outcomes of the Brexit process currently being considered by Parliament. Operation Stack in 2015 had required an emergency response and this experience would inform the planned response if Brexit were to lead to the same stacking and congestion problems. Likewise, there were responses to emergencies (such as extreme weather conditions) which could be planned in advance. These emergencies were by their nature unpredictable and would need to be addressed by Kent's emergency planning.

(20) RESOLVED that the report and content of the ensuing discussion be noted.

UKCP18

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Agenda Item 4

What is UKCP18?

The UKCP (UK Climate projections) were launched in 2018. First update since 2009.

The UK's most comprehensive picture of how the climate could change by the end of this century, using the most recent scientific evidence.

Who's involved?

Led by DEFRA with the Environment Agency and the Met Office as delivery partners.

Page 27



Why were they produced?

“These climate change projections for the UK help to inform decision-making so adaptations can be made and resilience built.” (UKCP18)

What are they based on?

Page 23

Latest Developments in climate science



State-of-the-art
global climate
models



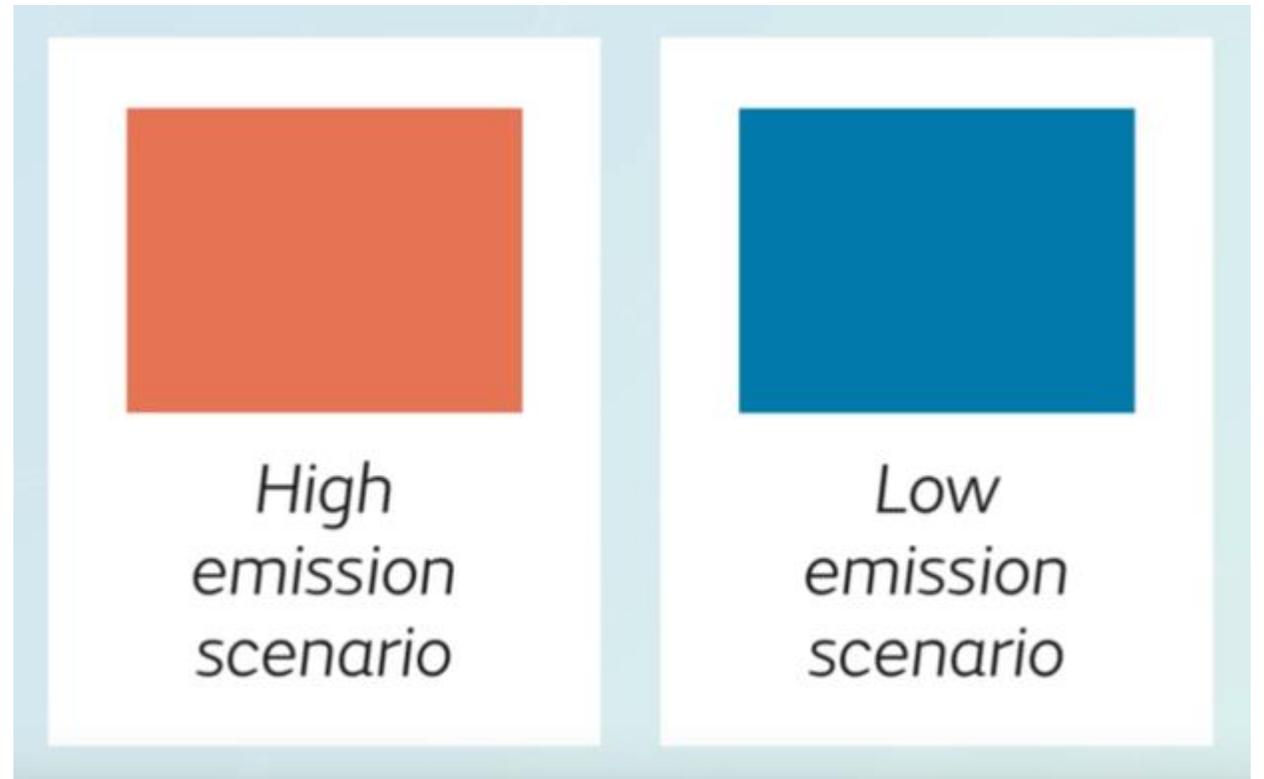
Innovative
regional climate
models



Up to date
observational
data

What are they based on?

Page 24
Different emission scenarios to analyse the climate risk.



Representative Concentration Pathway

A Representative Concentration Pathways (RCP) is a greenhouse gas concentration and UKCP18 uses four RCP levels as scenarios:

Page 25

RCP2.6 – Compatible with aims to limit global warming since pre-industrial levels to below 2°C

RCP4.5

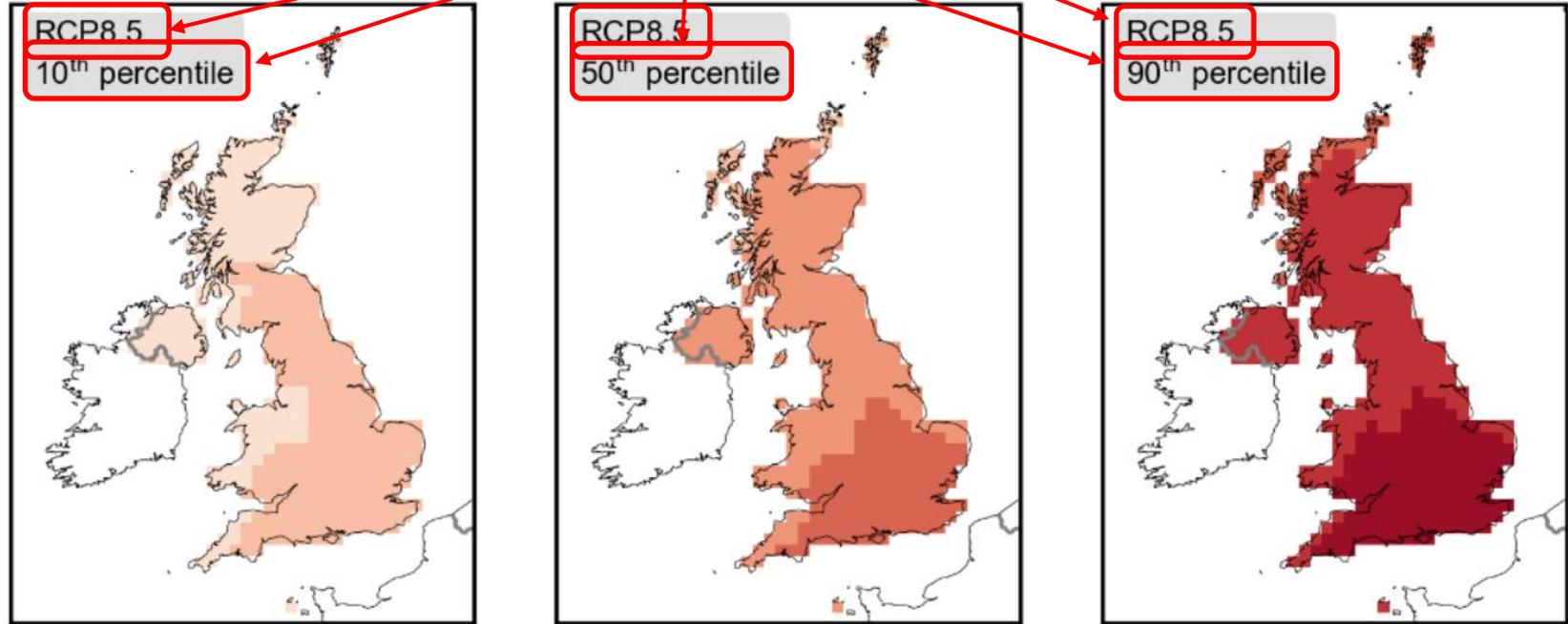
RCP6.0

RCP8.5 – Reasonable worst case scenario

Output and results

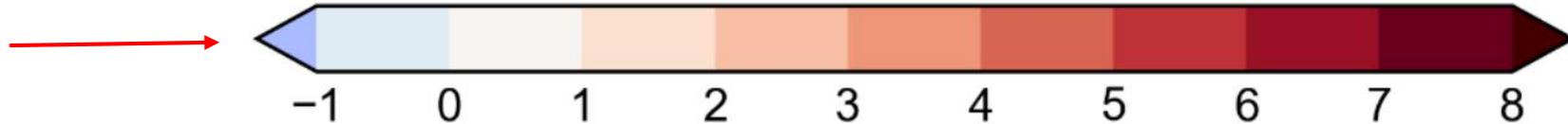
Maps explained

The RCP scenario Percentile



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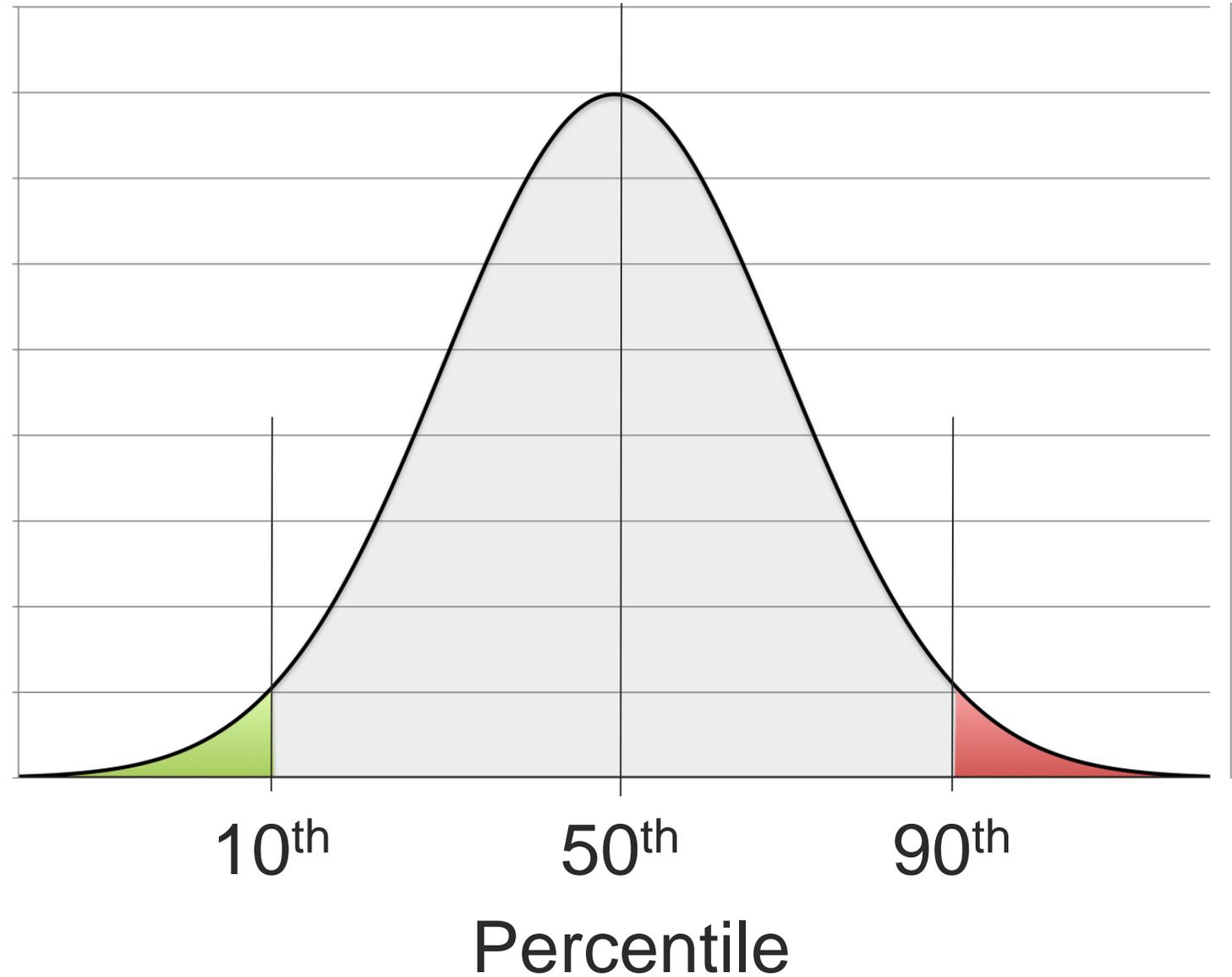
Legend



Output shown for each RCP scenario and 10th, 50th & 90th percentile.

Page 28

- 10th percentile means 10% of solutions fall below the lowest provided figure.
- 50th percentile means that half the solutions are lower and half are higher than the figure given.
- 90th percentile means 10% of solutions fall above the highest provided figure.



In 20 year periods

2020-2039

2040-2059

2060-2079

2080-2099

 Results for these 2 periods will be shown later

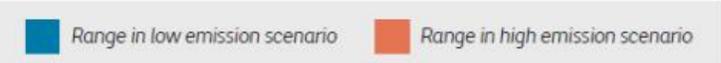
UK-wide

UK Headlines

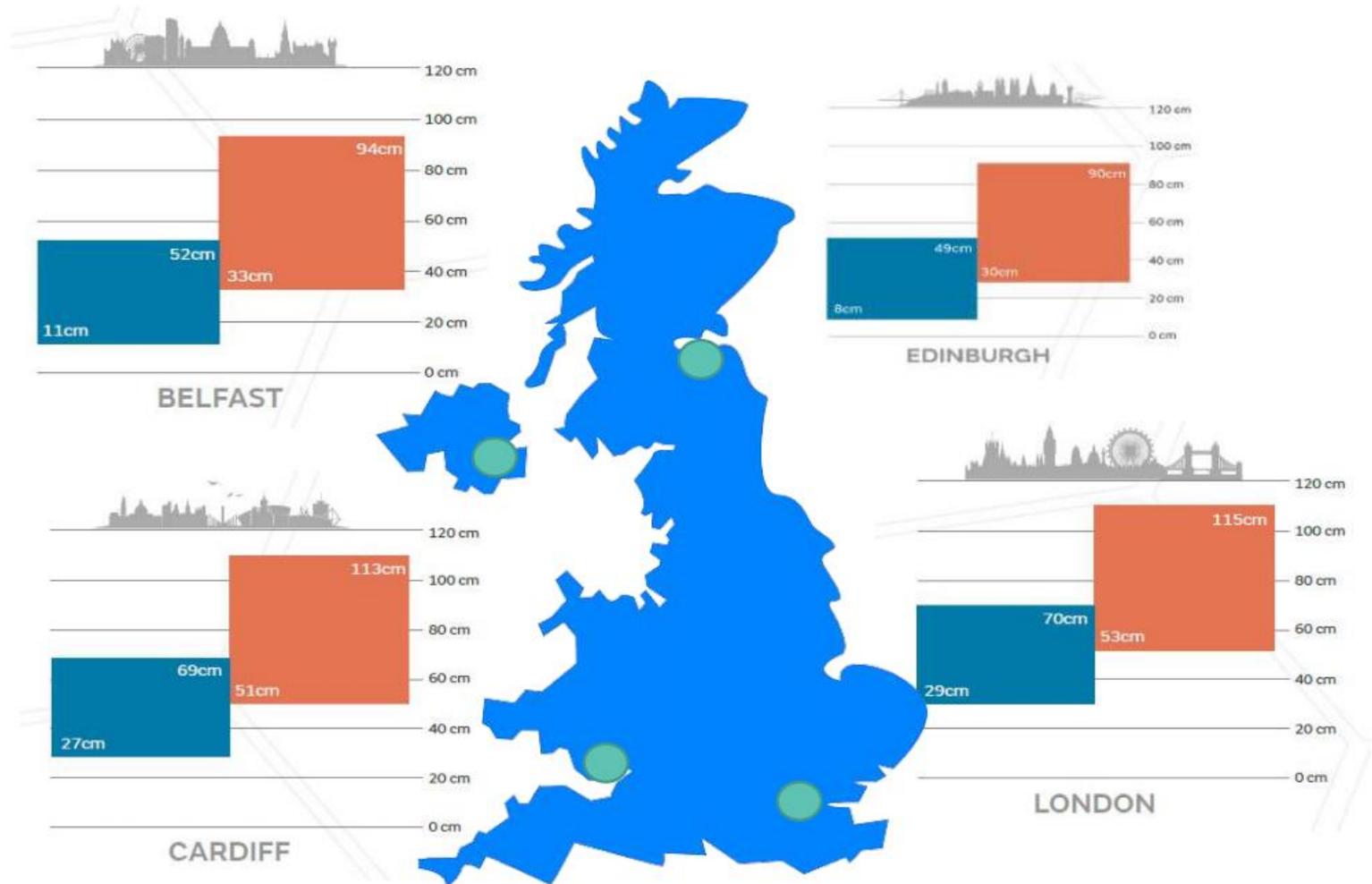
- Greater frequency of hotter, drier summers across the UK.
- Greater frequency of milder, wetter winters across the UK.
- Further rises in sea level around the UK coastline.

Sea-level rise

Increase will generally be greater in the south than in the north



(by 2100 relative to 1981-2000)



SE England Results

(compared to 1981-2000 Long Term Averages)

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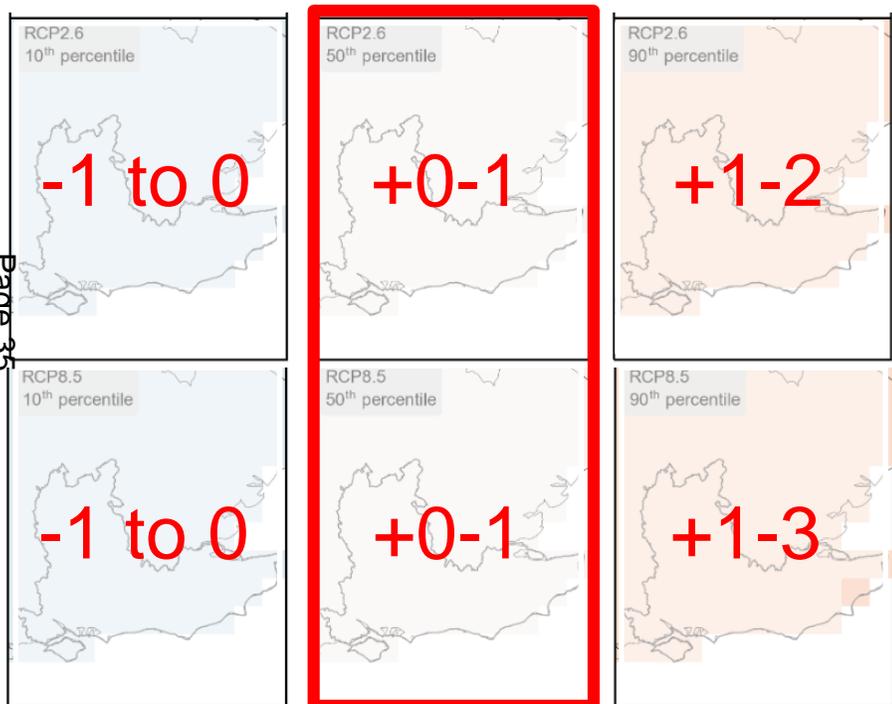
Winter

Temperatures

2020-2039

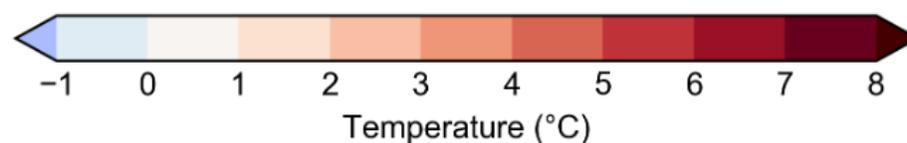
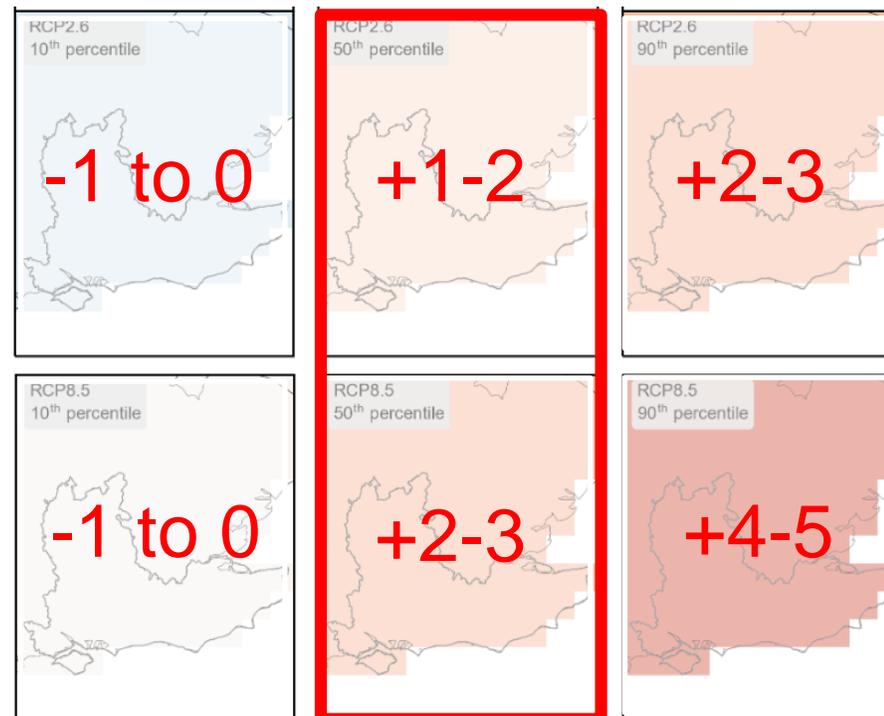
2060-2079

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RCP2.6
Best Case

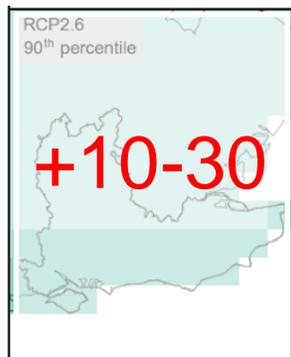
RCP8.5
Worst Case



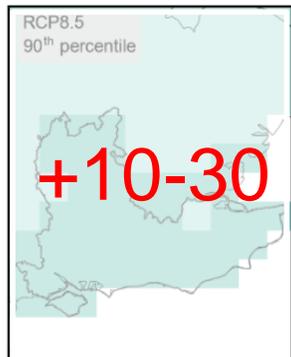
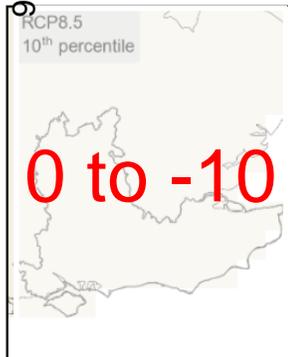
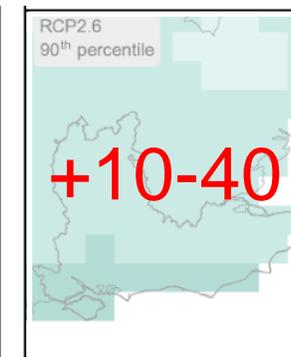
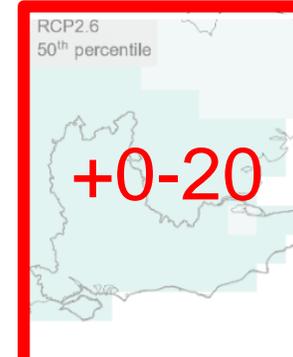
Precipitation

2020-2039

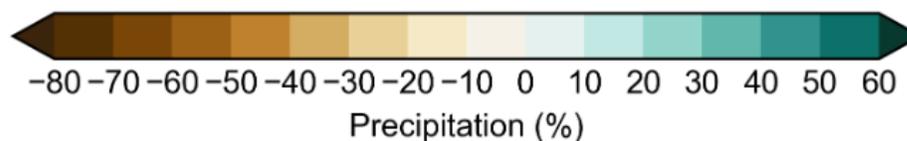
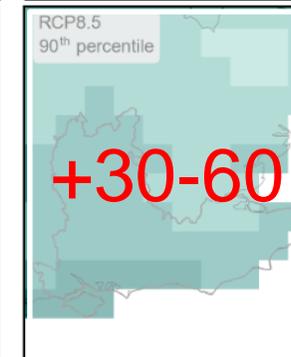
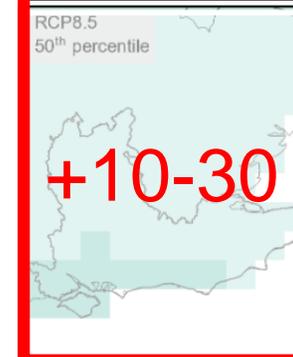
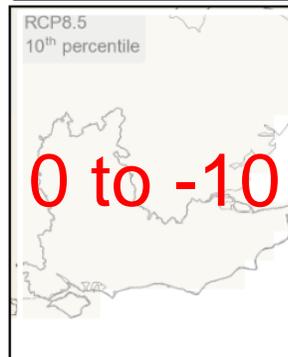
2060-2079



RCP2.6
Best Case



RCP8.5
Worst Case

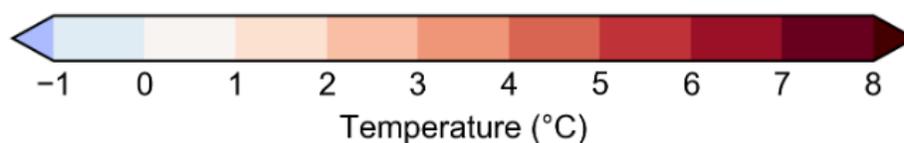
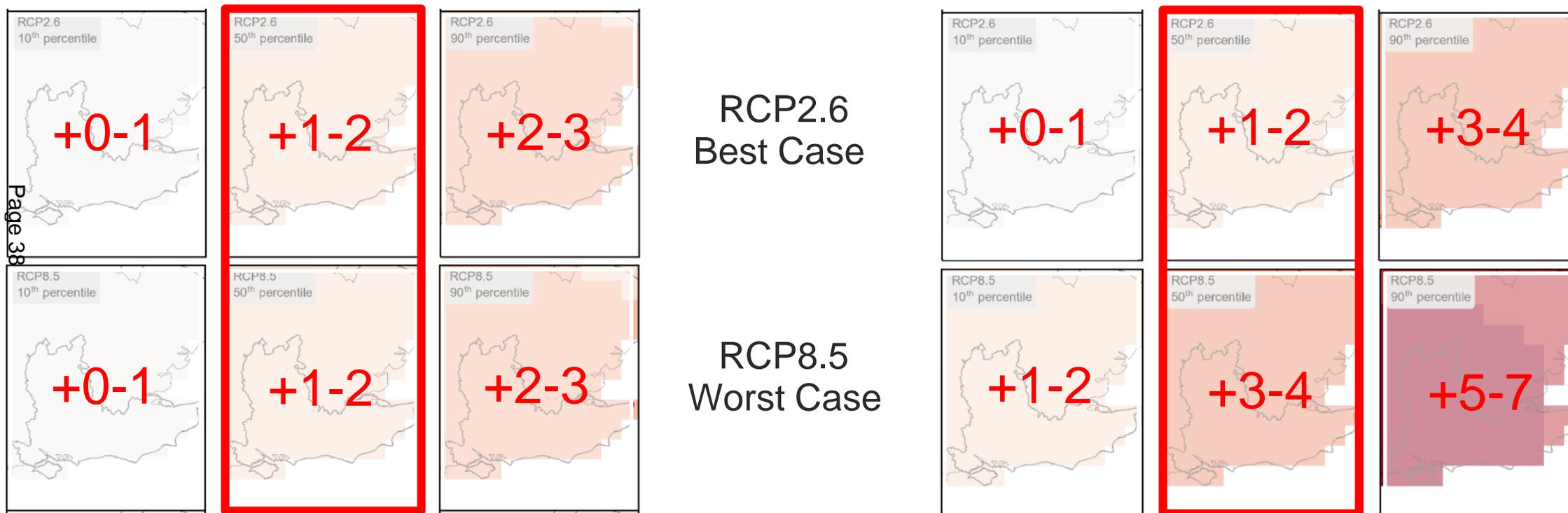


Summer

Temperatures

2020-2039

2060-2079

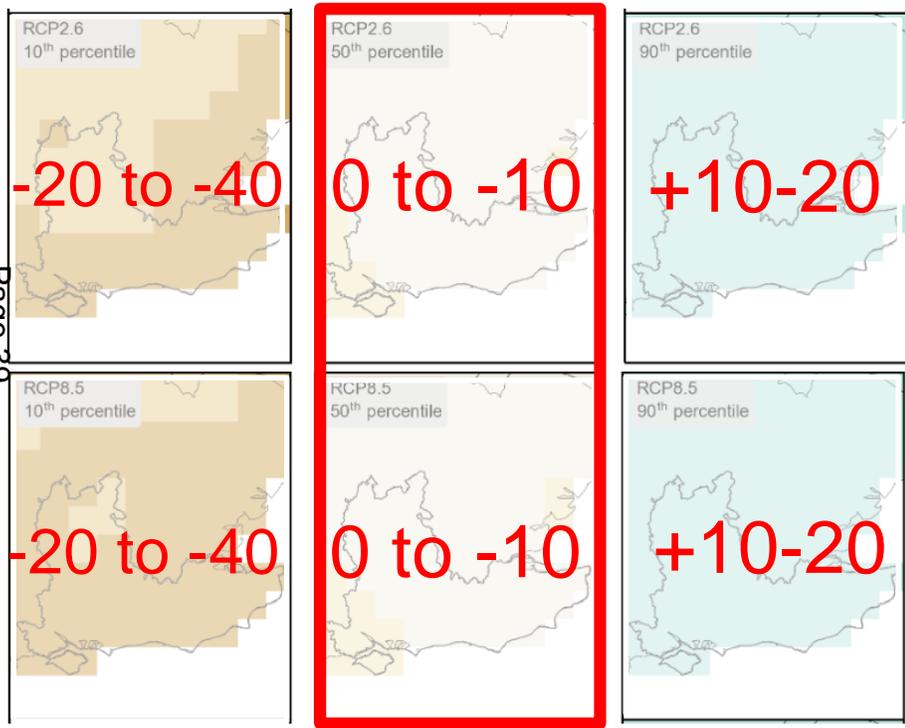


Precipitation

2020-2039

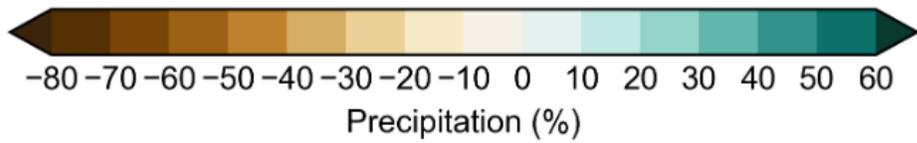
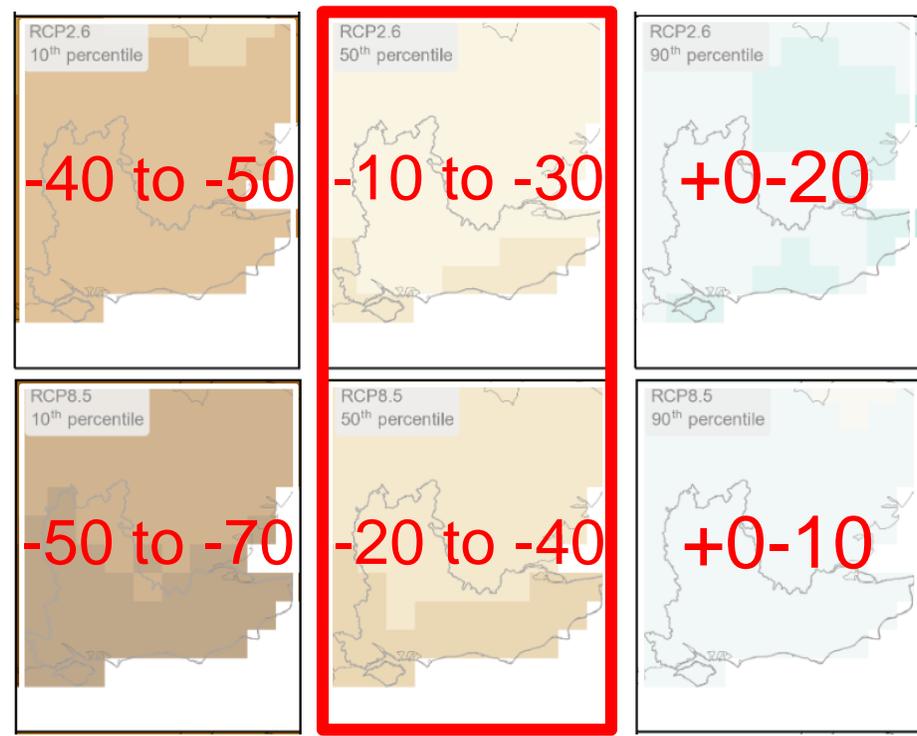
2060-2079

Page 39



RCP2.6
Best Case

RCP8.5
Worst Case



Questions

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To: Kent Flood Risk Management Committee – 11th March 2019

From: Stephanie Holt-Castle, Interim Director of Environment, Planning and Enforcement

Subject: Environment Agency and Met Office Alerts and Warnings and KCC severe weather response activity.

Classification: Unrestricted

Summary: To update Kent Flood Risk Management Committee on the water resources situation, Environment Agency and Met Office Warnings, and flood response activity since the last meeting of the Committee on 12th November 2018.

1. Background

1.1 KCC Resilience and Emergency Planning Service Duty Emergency Planning Officer (DEPO) and Contact Point receive Environment Agency and Met Office alerts and warnings on a 24/7 basis. Site specific severe weather impacts are notified to the DEPO by the emergency services and other resilience partners, with reports from the public received by Contact Point and passed to the DEPO and/or Kent Highways as appropriate.

1.2 Some 85,500 properties across Kent are located within areas identified as at risk from fluvial (river) or tidal flooding. Where possible, these properties are offered a Flood Warning Service by the Environment Agency. However, other parts of the County are also potentially vulnerable to surface and ground water flooding. Early warning of flood risk to communities (including areas outside floodplains) is delivered through Flood Guidance Statements, Severe Weather Warnings and mobilisation of Severe Weather Advisory Group (SWAG).

2. Latest situation

2.1 Kent received 153% of long-term average rainfall in November, 110% in December, 44% in January and 75% in February. All river catchments in Kent are currently at 'below normal' to 'notably low' ranges.

2.2 Soil moisture deficits developed in early January, before falling back to near zero by the end of the month as they responded positively rainfall events, except in north west Kent where a deficit persisted.

2.3 Consecutive dry weeks in January slowed groundwater recharge considerably from the rates observed in November and December. In the North Downs chalk aquifer groundwater levels reached the bottom of their normal range at the end of January. Detailed data was not available for February at the time this report was completed, but dry and warm conditions experienced in the latter part of the month are likely to have negatively impacted groundwater recharge.

2.3 Reservoir levels were boosted by the wet November and December and all remain within their normal ranges for the time of year.

2.5 25 flood alerts were issued by the Environment Agency since the last meeting in November (15 fluvial and 10 coastal)¹. This contrasts with 35 flood alerts (12 fluvial and 23 coastal) in the corresponding period last year.

2.6 15 Met Office severe weather warnings were issued (1 for wind, 1 for ice and fog, 5 for fog, 4 for ice and 4 for snow and ice)². This compares with 11 for the same period last year (5 for ice, 1 for snow and ice, 1 for snow, 1 for rain and 3 for wind).

2.7 The Thames Barrier was closed on 4 occasions since the last meeting (3 for test and 1 for operational purposes)³. The figure for the corresponding period last year was 7 (2 for test and 5 for operational purposes).

2.8 A small number of severe weather incidents were reported to DEPO since the last meeting. Notably including wintery weather in northern France, which led to disruption to cross Channel transport on 23rd January, and sheet ice affecting the A249 between Sittingbourne and Maidstone on 1st February.

2.9 SWAG teleconferences took place on 22nd and 23rd January, ahead of snow and ice forecast for east Kent, and on 2nd February following localised but severe winter weather impacts - including a collapse of many trees onto the highway at Walderslade. All SWAGs were chaired by KCC, as the main risk related to transport.

3. Looking forward

3.1 The Met Office forecast for the next 3 months indicates a continuation of the prevailing warmer than average trend but does not provide a strong signal for either wetter or drier than average conditions. The evolving groundwater situation will continue to be closely monitored and will inform multi-agency drought planning.

3.2 The Environment Agency continuously runs surge forecasts, informed by astronomical tide calculations. If a risk of coastal flooding is forecast this information is communicated to partners. Elevated tides with a corresponding higher risk of coastal flooding in combination with high winds are forecast between 20th and 25th March, 18th and 23rd April and 17th and 21st May.

3.2 Kent Flood Risk Management Committee will continue to receive regular updates on water resources, flood alerts, severe weather warnings and operational response. It is worthy of note that additional duty officer capacity has now been rostered while command and control facilities have been expanded as a contingency against any adverse local impacts arising from Brexit. The potential combination of severe weather with congestion informs contingency planning.

4. Recommendations

4.1 That Members:

- Note the current water resources situation and warnings received since the last meeting of the Committee; and
- Contribute to planning through oversight and debate.

Tony Harwood, Resilience and Emergency Planning Manager, Growth Environment and Transport tel. 03000 413 386 e-mail tony.harwood@kent.gov.uk

¹ Please see appendix 1

² Please see appendix 2

³ Please see appendix 3

Appendix 1: Environment Agency Flood Alerts issued since 12th November 2018*

Date issued	Flood alert area	Event leading to flooding
28/11/2018	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	1. Frontal Rain
02/12/2018	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	
08/12/2018	Coast from Whitstable to Margate	2. Tidal Surge combining with spring tides
08/12/2018	Isle of Sheppey and coast from Kemsley to Seasalter	
08/12/2018	Tidal Medway, Medway estuary and Isle of Grain	
08/12/2018	Coast from Dartford to Allhallows	
20/12/2018	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	3. Scattered heavy showers and frontal rain in the preceding days
20/12/2018	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	
20/12/2018	Upper River Stour	
20/12/2018	Lower River Medway	
20/12/2018	River Bourne from Hadlow to East Peckham	
22/12/2018	Tidal Stour area from Fordwich to Stonar Cut	
08/01/2019	Coast from Pegwell Bay to Deal including the Tidal Stour	4. Large tidal surge combined with small spring tides
08/01/2019	Isle of Sheppey and coast from Kemsley to Seasalter	
08/01/2019	Coast from Whitstable to Margate	
08/01/2019	Tidal Medway, Medway estuary and Isle of Grain	
08/01/2019	Coast from Dartford to Allhallows	
01/02/2019	Upper River Stour	5. Persistent frontal rain including heavy showers
02/02/2019	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	
08/02/2019	River Bourne from Hadlow to East Peckham	6. Heavy frontal rain
08/02/2019	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	
08/02/2019	Lower River Medway	
09/02/2019	Upper River Medway	
09/02/2019	Rivers Eden and Eden Brook	
09/02/2019	Middle River Medway	

Appendix 2: Kent Severe Weather Warnings issued since 12th November 2018

	November	December	January	February
Wind	0	0	0	1
Fog	0	1	0	4
Ice	0	0	2	2
Ice & Fog	0	0	1	0
Snow & Ice	0	0	3	1

Appendix 3: Environment Agency Thames Barrier closures since 12th November 2018

Thames Barrier closures	Date	Status
Thames Barrier closed	13/11/2018	Test
Thames Barrier closed	08/12/2018	Operational
Thames Barrier closed	10/01/2018	Test
Thames Barrier closed	11/02/2018	Test