KENT FLOOD RISK MANAGEMENT COMMITTEE

Monday, 15th March, 2021

2.00 pm

Online

Kent County Council
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AGENDA

KENT FLOOD RISK MANAGEMENT COMMITTEE

Monday, 15th March, 2021, at 2.00 pm Ask for: **Andrew Tait**

Online Telephone **03000 416749**

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

In response to COVID-19, the Government has legislated to permit remote attendance by Elected Members at formal meetings. This is conditional on other Elected Members and the public being able to hear those participating in the meeting. This meeting of the Committee will be streamed live and can be watched via the Media link on the Webpage for this meeting.

UNRESTRICTED ITEMS

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

1. Substitutes
2. Declarations of Members' Interest relating to items on today's agenda
3. Minutes of the meeting on 23 November 2020 (Pages 1 - 8)
4. Dates of future meetings

   Monday, 5 July 2021
   Monday, 22 November 2021
   Monday, 14 March 2022

5. Update from the Environment Agency - Presentation by Sally Harvey

6. Environment Agency and Met Office Alerts and Warnings and KCC severe weather response activity (Pages 9 - 16)

7. 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, 5 March 2021

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KENT COUNTY COUNCIL

KENT FLOOD RISK MANAGEMENT COMMITTEE

MINUTES of a meeting of the Kent Flood Risk Management Committee held Online on Monday, 23 November 2020.

PRESENT: Mr A R Hills (Chairman), Mr A H T Bowles, Mr I S Chittenden, Mrs L Hurst, Mr K Pugh, Mr H Rayner, Mrs J Blanford (Ashford BC), Mr D Mortimer (Maidstone BC), Mr H Rogers (Tonbridge and Malling BC), Mrs C Mackonochie (Tunbridge Wells (BC), Mrs G Brown (KALC), Mr D Brown (Kent Fire and Rescue) and Mr C Mackonochie (KALC)

ALSO PRESENT: Mr Jonathan Alawo (Environment Agency).

IN ATTENDANCE: Mr M Tant (Flood and Water Manager), Mr T Harwood (Resilience and Emergency Planning Manager), Mr E Bourner (Asset Manager Drainage, Structures and Safety Barriers) and Mr A Tait (Democratic Services Officer)

UNRESTRICTED ITEMS

7. Minutes of the meeting on 9 March 2020
(Item 3)

RESOLVED that the Minutes of the meeting held on 9 March 2020 are correctly recorded and that they be signed by the Chairman.

8. Mitigating Surface Water Flood Risk on the Highway
(Item 4)

(1) Mr Bourner introduced the report which had previously been considered by Cabinet on 12 October 2020. He said that Kent was experiencing intense rainfall events on an increasingly frequent basis, with recent rainstorms generating a volume and intensity of rain well beyond that of the design capability of highway drainage systems. Summer 'flash flooding was also becoming an increasingly significant risk to the highway authority. For example, over 40 mm of rain had fallen in the Sittingbourne area on 15 August 2020 in the space of just 45 minutes. A perspective on the extraordinary nature of the event could be gained when noting that the average amount of rainfall in this region was just 56.3 mm for the entire month of August.

(2) Mr Bourner then said that the burden on Kent's highway drainage systems could be exacerbated by many other factors. These included the age and condition of highway drainage systems (some systems were more than 100 years old and be operating beyond their original design life); operational issues arising from budget limitations for ongoing routine maintenance; capacity issues of drainage systems which were not under the control of the Highway Authority, including public sewers or

private ditches and watercourses which they connected into; structural damage to drainage systems by third parties or site environs that could remain unnoticed until significant rainfall occurred; poor maintenance of drainage features in land adjacent to the highway; “Urban Creep” effects such as additional run-off onto highways from the paving of front gardens; and increases in the peak intensity of rainfall brought about by climate change.

(3) Mr Bourner said that KCC’s highway drainage systems were designed to drain water from the highway surface only and were not generally intended to be flood defences. They, nevertheless, still played a key role in managing local flood risk. They were usually designed to cope with a 1 in 5 - year event, such as a storm producing approximately 20 mm of rainfall in a one-hour period. In recent years, however, many occurrences had exceeded that design standard.

(4) When such events occurred, run-off often used the highway as a conduit to escape to lower ground, either as “overland flows” which following the topography or as “exceedance flows” where a drainage system was unable to cope. This could lead to highway flooding or property damage in a location that was remote from the original source of the flood water.

(5) Mr Bourner added that this often gave the impression that the run-off had originated solely from the highway and should therefore have been dealt with by the drainage system in that location. As a result, the Highway Authority was often blamed for flooding that may have been outside of its reasonable control.

(6) Mr Bourner then addressed KCC’s role as the Lead Local Flood Authority for Kent. A range of Surface Water Management Plans (SWMPs) had been produced with the aim of increasing the understanding of local flood risks and providing a high-level action plan to identify measures to mitigate local flooding risks. The majority of these plans had been produced in 2012 and 2013 which meant that they predated some notable surface water flooding events that had occurred in recent years.

(7) Mr Bourner said that the current one and two-year programme of works for capital drainage improvements known as the “Well Managed Highways” approach was based upon a Geographic Information System (GIS) analysis of customer enquiries involving highway flooding and properties damaged by flood. This had allowed an initial focus on areas with existing reported issues rather than reliance on the SWMP action plans, which were considered to be out of date and did not cover the entire county.

(8) In the last two years, schemes had also been jointly funded or delivered by the Highway Drainage Asset Management Team and the Flood and Water Management Team which piloted the use of Blue-Green Infrastructure as described in the Appendix to the report.

(9) Mr Bourner then said that it was essential to manage KCC’s existing assets appropriately in order to reduce the risk of flooding occurring. It was also important for KCC to protect its investment in areas where capital funded repairs and drainage improvements were carried out. This was likely to require additional future revenue funding and smarter use of existing funding.

(10) The Highway Drainage Asset Management Team had been exploring better drainage management through the “Live Labs” project in order to seek a more encompassing software platform, dedicated to the complexities of drainage, which had the function of supporting KCC’s maintenance activities while communicating as much data as required to the Pitney Bowes Confirm system (WAMS) already in operation.

(11) Mr Bourner said that research had highlighted several areas where there was a significant financial opportunity for better management of the drainage network. In comparison to similar county councils, KCC’s average cyclical/scheduled crew productivity was 65 gullies per day, as opposed to their 99, which represented a 52% opportunity for improvement.

(11) Mr Bourner added that *Kaarbontech* had been identified as the appropriate platform for KCC and their trial included several stages and options as part of an approach to manage drainage differently in Kent. The Borough of Maidstone had been chosen as the trial area. The broad goals of the project included collecting an inventory of drainage assets; attributing historic information from other council systems to these assets; defining and prioritising zones of interest; Risk profiling maintenance based on prioritised assets; assessing if and how handheld devices could play a part in future maintenance; allowing ongoing data collection to automatically feed into risk profiling; investment in the asset management software platform to map all KCC’s drainage assets, including the final outfalls (this would reduce cost as future investigations would not be required as the asset would have already been plotted, including all CCTV surveys.

(12) Mr Bourner said that several smart gully sensors from different manufacturers had been installed across the County as part of the ongoing Live Lab works, to record data which would also be factored into future proactive cleansing. The sensors judged to be the most effective in performance and costs would be installed across the County as future funding became available.

(13) Mr Bourner then turned to the question of future capital investments. He said that KCC intended to develop a map of the locations where the risk of surface water flooding was high and/or where climate change impacts might affect the risk of flooding in future. This would allow KCC to take a more proactive asset management approach instead of focusing solely on customer enquiries.

(14) Mr Bourner explained that a GIS analysis had been undertaken to identify and score “flood cells” across Kent. This ensured that multiple factors were taken into consideration when assessing a site. He referred to an example in the report of a flood cell at Swanscombe which illustrated the area which might contribute to a flooding issue.

(15) Mr Bourner said that the GIS analysis provided a high-level overview of the risk as well as the area where surface water run-off might contribute to it. Each flood cell location would require a more detailed review in the future. This would inform KCC’s 3 to 5-year capital works programme as not every site identified would require drainage improvement works to reduce the risk of flooding. There might be instances where minor repairs or an enhanced maintenance regime sufficed. In other circumstances, there might not be a viable solution or one that was not within KCC’s control to deliver.

(16) Mr Bourner then gave examples of opportunities for mitigation such as:-

(a) enhanced maintenance regimes where the existing drainage system was in sound operational order but liable to blockage from leaves or silt. These areas could potentially be linked into future trials following the "Live Labs" project;

(b) a like-for-like replacement of existing assets where operational or structural issues were found but where existing reports of flooding were minimal;

(c) use of modern techniques to extend the life of existing drainage assets, such as trenchless and no-dig cast in place pipe and culvert lining and stabilisation;

(d) the retrofit of Sustainable Drainage (SuDS) features and Blue-Green Infrastructure such as permeable paving, rain gardens, open attenuation for exceedance flows;

(e) the replacement or supplementing of existing assets with new or upsized assets (for example larger or additional soakaways) where greater resilience was required;

(f) the attenuation of surface water to accommodate additional run-off volume with a controlled discharge back into the network in order to avoid increasing flood risk elsewhere; and

(g) the separation of surface water from existing sewers and its redirection to an alternative outfall to ease sewer capacity issues.

(17) Mr Bourner added that future improvements would need to be cost-beneficial and that any improvements made were unlikely to completely eliminate the risk of surface water flooding, as all measures could be overwhelmed by a rainfall event of sufficient extremity. It was also necessary for KCC to work closely with the various water and utility organisations in order to develop co-operative programmes which aligned KCC's operational needs to their ongoing asset modernisation and water management obligations. For this reason, areas of interest would be included in the next update of the Local Flood Risk Management Strategy.

(18) Mr Bourner informed the Committee that the Highway Drainage Asset Management Team now benefitted from an increased capital budget of £15m over a 3-year period between 2019/20 and 2021/22. He said that this was likely to be sufficient to deliver the current highway works and two capital programmes. He warned, however, that this was subject to the current significant uncertainties on future funding allocations.

(19) Mr Bourner said that the government had announced in April 2020 that it would double its investment in flood and coastal defences in England to £5.2 billion over the next six years. This gave KCC an opportunity to seek external funding for some drainage schemes which offered a good cost benefit ratio and/or be match funded by KCC. The previous scheme had been changed by the introduction pf a new risk category which enabled schemes that *prevented* surface water flooding to qualify for more funding.

(20) Mr Bourner concluded his presentation by saying that KCC needed to continue to seek investment in its highway drainage infrastructure to support the delivery of improvements. Match funding was usually required to enable delivery. Potentially significant investment was required to support the investigation and design of drainage schemes before any bids for external funding could be made.

(21) In response to a question from Mr Chittenden, Mr Bourner said that there were 36,000 gullies in Maidstone Borough which had been plotted on the GIS system by *Carbondata* on KCC's behalf. Information such as siltage levels and flood zones had also been entered. As a result, 17,000 gullies in the Borough had been cleansed to date at a cost of £8 per gully. The normal result for Maidstone had previously been 6,000 gullies at £35 per gully.

(22) Mr Bourner replied to a question from Mr David Brown by saying that he would be interested in receiving data from Kent Fire and Rescue on areas of flood.

(23) In response to a question from Mr Bowles on flooding in Linsted, Mr Bourner said that the £15.2m allocated to the Highways Drainage Team would enable the smarter working project to be extended over most of the rest of Kent in the next three years. Additionally, multi-agency work with the water companies would be developed to overcome the problem that KCC could install modern drainage systems only to find that the water company had not done the same in respect of its sewage drainage, resulting in continued flooding of the highway.

(24) The Chairman commented that recent meetings of the Southern Regional Flood and Coastal Committee had seen greater willingness from the water companies to undertake improvements to its assets than had previously been the case.

(25) Mr Tant said that the issue in Linsted was not one where highway run-off ended up in the sewer. Both the highway and the sewer were affected by overland flow and the pumping station, which had originally catered for less than half as many properties as now existed, was often unable to cope with it.

(26) Mrs Hurst referred to a pilot scheme at George Park in Margate, where a green grass area had been naturally developed, including a sequence of ponds to facilitate good drainage. She asked whether it was intended to roll out more projects of this nature across the County.

(27) Mr Tant replied that the George Park scheme had been the third such project. One of the areas shown to be prone to flooding in the report was likely to see a similar scheme. It was not clear whether it would be possible to roll out such schemes across the entire County for a number of reasons, including cost. It was often difficult to identify an area of sufficient size to produce significant benefits. Even when the potential site was large enough, other factors could prevent its development. An example of this was one large site which could not be naturally developed because of a high voltage cable running below it.

(28) RESOLVED that the report be noted.

9. Environment Agency and Met Office Alerts and Warnings and KCC severe weather response activity since the last meeting
(Item 5)

(1) Mr Harwood informed the Committee that, since publication of the agenda papers, the number of Flood Alerts in paragraph 2.6 of the report had risen to 27 (16 fluvial and 11 coastal). The figure for Met Office Warnings in paragraph 2.7 had risen to 49. The Thames Flood Barrier (paragraph 2.8) had been raised for operational reasons on one more occasion, giving a total of three.

(2) Mr Harwood said that the long-term weather forecast suggested that Kent was likely to experience a quieter weather period until after Christmas. The risk of stormy weather was projected to rise significantly during the Winter period from Christmas onwards. Some elevated spring tides were also expected, particularly through January and February. The greatest concerns would arise if stormy weather were to occur during these high tides.

(3) Mr Harwood ended his introduction by saying that In terms of Emergency Planning's ability to respond to severe weather in the New Year, the main concern was that such events could coincide with other challenges such as those arising from the pandemic (where the figures were continuing to rise in Kent) as well as the end of the transition period when the UK departed from the EU institutions.

(4) The Chairman said that he had been surprised that the EA had not sent out a Warning in response to the 4m waves which had occurred on the Romney Marsh coastline during the previous week. He asked whether this represented a change of approach by the EA to a more focussed Warning system.

(5) Mr Alawo said that the EA's modelling in South Kent had improved over the past year, leading to a corresponding improvement in the Warning system. This enabled the EA to avoid warning the public unnecessarily.

(6) Mr Bowles said that he had farmed extensively on Seasalter Marshes, he had been receiving Alerts on virtually every occasion that the tide came in. He had eventually decided not to receive these Alerts as if he had reacted to each one, he would have needed to move his livestock on almost a daily basis.

(7) Mr Chittenden referred to paragraph 2.5 of the report which set out that the Bewl reservoir had finished the month of October at 59% of capacity, while Bough Beech had reached 54% of capacity. He asked whether these reservoirs ever reached maximum capacity.

(8) Mr Harwood replied that the figures given were normal for the time of year. The reservoirs usually re-charged during the Winter months.

(9) Mr Alawo said that Summer 2020 had seen periods of drought, mitigated by above-average rainfall in August. This had led to reservoir capacity reaching average levels in October. The EA would continue to monitor both rainfall and groundwater levels. The increased rainfall in the new year was likely to have an effect.

(10) RESOLVED that the report be noted.

10. Virtual Site Visit to Little Venice
(Item 6)

(1) The Chairman introduced this item by referring to the March meeting of the Committee where concerns had been raised about the risks associated with flooding at Little Venice in Yalding. Following this meeting, he had arranged a Virtual Site Visit. This visit had been attended by representatives from KCC, Maidstone BC, Yalding PC, Kent Fire and Rescue and the Environment Agency. The report on this visit was contained in the agenda papers.

(2) The Chairman replied to a question from Mr Rayner by explaining the purpose of the meeting had been to hold a focussed discussion on the site in question with representatives from the various agencies responsible for its Health and Safety in the event of a flooding event and to report back to the Committee on the outcome. For this reason, he had not sent out a general invitation to all Members of the Committee.

(3) The Chairman agreed that the legal advice given to KCC would be shared with all KCC Members of the Committee.

(4) Mr Mortimer informed the Committee that he had spoken to James Bailey (Maidstone BC Planning Manager) prior to the meeting. Mr Bailey had informed him that the legal advice on the Lawful Development Certificate (paragraph 15 of the report) was still awaited. He asked the Committee to be aware of the need for sensitivity when discussing this matter as experience at another site in Maidstone, where a similar situation had arisen, had distressed many of its residents.

(5) Mr Chittenden said that he had been the local Borough Councillor some 10 years before when a major flooding event had occurred in Yalding, with its impact extending downstream as far as Tovil. Following discussions between Maidstone BC, the EA and KCC, £17m had initially been earmarked for improvements. The feasibility study had concluded that no major improvements could be undertaken, leading to the allocation being reduced to £4m for improvements to individual properties rather than to the area as a whole. He urged KCC and the Environment Agency review this matter once the pandemic was over and the financial situation became clearer as the risk of flooding would not reduce until a holistic solution was funded and implemented.

(6) Mr Rayner referred to paragraphs 2.9, 2.11 and 2.12 of the report. He said that it was clear that people were being moved into Little Venice without being informed of the potential consequences. This meant that elderly and vulnerable people were effectively moving into an unsustainable location. It was the role of elected Members to continue to shine a light on the problem.

(7) The Committee agreed to a proposal, seconded by Mr Bowles that the update report would be presented by 26 July 2021 rather than within the next calendar year.

(8) In response to a question from Mrs Hurst, Mrs Brown explained that the residents of Little Venice did not purchase the land (although they could buy the

caravan) but payed rent for living in temporary accommodation on the site. Conveyancing did not take place.

(9) Mrs Brown then said that the following the flooding event of 2013/14, Government had provided £17.5m, which KCC had agreed to match fund, for flood defences in Yalding. The proposal that had been modelled had been for two sub-storage areas (one on the River Beult, the other on the River Teise). The modelling had shown that the catchment area was too shallow, so the overall expenditure of £35m would only have resulted in the protection of 32 properties. As the cost-benefit was not justified and the proposed defence was logistically impractical, the Leader of the Council had reduced the KCC allocation to £4m in order to enable the protection of individual properties. This meant that flood defence at Little Venice needed to be considered discreetly rather than as part of a general programme.

(10) Mrs Brown then informed the Committee that the Medway Flood Partnership had learned that the EA's proposal to increase the Leigh Barrier flood storage area had stalled because the required amendments to the Act of Parliament had attracted 11 objections, necessitating a Public Inquiry.

(11) Mr Rayner commented that if the Leigh Flood Barrier expansion were to be delayed, it was likely to come under increased pressure it would put Tonbridge, East Packham and, above all, Little Venice at greater risk. An increasing number of elderly and vulnerable people would therefore be moving onto a site that was inherently risky to them. He therefore asked that the meeting in July 2021 would address the questions of how the authorities were warning these people of the risk attached to moving onto the site from homes that they owned elsewhere as well as the arrangements that were being made to ensure that they could be safely evacuated to appropriate temporary accommodation at short notice.

(12) Mrs Brown said that she urged all Parish Councils to update their Flood Management Plans to ensure that their Flood Wardens knew how to operate safely and effectively during the Covid-19 pandemic and that they had the appropriate personal protective equipment to be able to do so.

(13) Mr Harwood confirmed that the guidance for evacuation and shelter had been updated to assimilate "social distancing" and PPE lessons learned from the pandemic. Welfare Centre training sessions had also taken place open to Kent Resilience Forum partners.

(14) RESOLVED that :-

(a) the report and the report be noted, including the three areas set out in paragraph 3.1 of the report which will continue to be explored to a point of resolution; and

(b) an update report be presented to the Committee by Monday, 26 July 2021 at the latest.

To: Kent Flood Risk Management Committee – 15th March 2021

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 current water situation, weather statistics, Environment Agency and Met Office Warnings, and flood response activity since the last meeting of the Committee on 23rd November 2020.

1. Background

1.1 This report is the latest of the regular updates to the Committee addressing the current water situation, weather statistics and severe weather and flood response activity, covering the period from November 2020 to March 2021.

1.2 The KCC Resilience and Emergency Planning Service Duty Emergency Planning Officer (DEPO) and Contact Point receive Environment Agency (EA) and Met Office alerts and warnings regarding severe weather 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 on to the DEPO and/or Kent Highways. DEPO further initiates multi-agency reporting using the innovative Severe Weather Impacts System (SWIMS) to capture resources and costs arising from severe weather incidents.

1.3 Some 85,500 residential and commercial addresses across Kent are located within areas identified as at risk from fluvial (river) or tidal (coastal) flooding. Where possible, flood vulnerable properties are offered a Flood Warning Service by the EA. Early warning of flood risk to communities (including areas outside of floodplains) is delivered through Flood Guidance Statements, Severe Weather Warnings and mobilisation of the Kent Resilience Forum (KRF) Severe Weather Advisory Group (SWAG).

2. Kent water situation and weather statistics

2.1 November was drier and warmer than average, recording just 67% of long-term average rainfall and a mean temperature +1.8 C above average. December was wetter, with rainfall at 164% of long-term average, but remained a little warmer than usual at +0.6 C. However, January was significantly wetter and colder than average, at 196% and -1.0 C respectively. February was a more

average month, seeing 91% of expected rainfall and a mean temperature +0.8% above the long-term average.

2.2 Monthly mean river flows across Kent are currently overwhelmingly in the above normal to notably high categories, with the River Stour catchment, in the Ashford area, finishing January as exceptionally high. The drier conditions observed in February and March are resulting in steady reductions in flows across all catchments.

2.3 Soil moisture deficits and groundwater recharge benefited from the sustained rainfall recorded through December and January. Recharge was sufficient for groundwater to attain notably high status by the end of January.

2.4 All Kent's reservoirs, except the largest at Bewl, ended January 100% full. Bewl filled to 86% of its total capacity.

2.5 91 Flood Alerts and 26 Warnings were issued by the EA since the last meeting of the Committee in November (107 fluvial and 10 coastal)[1]. This contrasts with 147 Flood Alerts and 44 Warnings (138 fluvial and 53 coastal) for the same period last year.

2.6 The Met Office issues 45 Weather Warnings covering Kent between November and February[2]. This contrasts with 49 in the corresponding period last year.

2.7 The Thames Barrier was closed on eight occasions since the Committee's last meeting in November (seven for flood defence and one for test purposes)[3]. The figure for the corresponding period in 2019/2020 was seven (five for flood defence and two for test purposes).

3. Severe weather impacts during autumn and winter

3.1 After a drier than average autumn, the wetter conditions experienced in December resulted in localised surface water and highway flooding events. The morning commute was particularly challenging on 4th December, when several vehicles drove into and broke-down on flooded sections of the local highway network, including at Boarley Lane, Sandling where two vehicles and their drivers became trapped.

3.2 Storm Bella brought gusts of more than 100 mph and heavy rain to large parts of the UK, including Kent, over the festive period, with a maximum sustained wind speed of 63 mph recorded at Langdon Bay, near Dover. Before the clear-up from Storm Bella was even complete, Storm Christoph struck on 20th January.

[1] Please see appendix 1
[2] Please see appendix 2
[3] Please see appendix 3

3.3 KCC Resilience and Emergency Planning Service convened their initial multi-agency SWAG on 23rd December, and these continued to meet regularly right through January. Both Storms Bella and Christoph inflicted localised structural damage, with landslips, wind-thrown trees, damaged power lines and other debris resulting in some disruption and closures on the transport network, with linked power outages recorded. Isolated surface water and highway flooding also occurred across many parts of the county. Notably, a precautionary evacuation of residents from Little Venice Country Park residential caravan site was mobilised on 27th December. Several road closures were implemented by Kent Highways because of the flooding in the Yalding and Collier Street area, which were very effectively supported by SE 4x4 volunteers. The Medway Confluence Partners Group supported these enterprises, and also co-ordinated local sandbag deployment, clean-up and recovery interventions.

3.3 The most significant property flooding seen in Kent this winter resulted from the intense, but very localised, rainfall events experienced overnight on 27th and 28th January. Residential and commercial addresses in Edenbridge, Paddock Wood, Thurnham, Sheerness and Smarden were most affected. Groundwater emergence impacts also began to be felt at around this time, including along the course of winterbournes such as the Drellingore at Alkham, and Nailbourne at Barham. Groundwater saturation also contributed to highway flooding at Quarry Road, Boughton Monchelsea, where KCC undertook pro-active community liaison, site assessment and deployed pumps and tankers from 1st February.

3.4 Storm Darcey brought persistent and occasionally heavy snow to the county on 7th and 8th February, with a maximum snow depth of 16 cm recorded at Manston in Thanet. Widespread disruption to both the strategic and local transport networks resulted, notably including the A229 at Bluebell Hill, A249 at Detling and Medway Valley Line.

3. Looking forward

3.1 The Met Office three-month outlook (March to May) indicates an increased likelihood of above average temperatures (2.0 x) and a slight increase in likelihood of drier than average conditions (1.3 x).

3.2 With the arrival of spring the risk of severe weather events recedes. However, summer brings a heightened risk of convection storms, with their associated potential for intense and localised rainfall. It is also worthy of note that the influence of the La Niña climate phenomenon, where warmer waters are pushed further west than is usual across the Pacific Ocean by strong easterly

winds, is waning, thus further reducing the risk of stormy conditions across the British Isles.

3.3 The EA continuously runs surge forecasts, informed by astronomical tide calculations. If a risk of coastal flooding is forecast, then this information is communicated to partners. Elevated spring tides with a corresponding higher risk of coastal flooding, if in combination with high winds, are forecast for 30th March.

3.4 Kent Flood Risk Management Committee will continue to receive regular updates on water resources, flood alerts, weather warnings and response.

4. Recommendations

4.1 That Members note the warnings received since the last meeting of the Committee; and contribute to emergency planning and response policy and practice through their oversight and debate.

5. Contact Details

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

Service Head: Mike Overbeke (Group Head - Public Protection) Growth, Environment and Transport, tel. 03000 413 427, email mike.overbeke@kent.gov.uk

Relevant Director: Stephanie Holt-Castle (Interim Director of Environment, Planning & Enforcement), Growth, Environment and Transport, tel. 03000 412 064, email stephanie.holt-castle@kent.gov.uk

Appendix 1: EA Flood Alerts and Warnings issued since 24th November 2020		
Date issued	**Flood Zone**	**Status**
30/11/20	Isle of Sheppey and Coast from Kemsley to Seasalter	Alert
03/12/20	River Rother and its tributaries	Alert
03/12/20	Upper River Medway Area	Alert
03/12/20	River Teise area from Lamberhurst to Goudhurst	Alert
03/12/20	Lower River Medway Area	Alert
03/12/20	Upper River Stour	Alert
03/12/20	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	Alert
03/12/20	Rivers Eden and Eden Brook Area	Alert
03/12/20	River Bourne from Hadlow to East Peckham	Alert
03/12/20	River Darent from Westerham to Dartford	Alert
03/12/20	River Teise and Lesser Teise area from Horsmonden to Yalding	Alert
03/12/20	Lower River Stour	Alert
04/12/20	Hamstreet Arm area	Warning
04/12/20	Rivers on the Isle of Sheppey Area	Alert
15/12/20	Isle of Sheppey and Coast from Kemsley to Seasalter	Alert
21/12/20	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	Alert
21/12/20	Upper River Medway Area	Alert
24/12/20	Lower River Medway Area	Alert
24/12/20	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	Alert
26/12/20	Plenty, Swalecliffe and West Brooks	Alert
26/12/20	River Bourne from Hadlow to East Peckham	Alert
26/12/20	River Teise area from Lamberhurst to Goudhurst	Alert
26/12/20	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	Alert
26/12/20	Rivers Eden and Eden Brook Area	Alert
26/12/20	River Darent from Westerham to Dartford	Alert
27/12/20	Upper River Stour	Alert
27/12/20	Hamstreet Arm area	Alert
27/12/20	Lower River Stour	Warning
27/12/20	River Teise and Lesser Teise area from Horsmonden to Yalding	Warning
27/12/20	River Teise area from Lamberhurst to Goudhurst	Warning
27/12/20	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	Alert
27/12/20	Rivers on the Isle of Sheppey Area	Alert
27/12/20	Middle River Medway Area	Alert
27/12/20	West Brook at Hampton	Warning
27/12/20	Swalecliffe Brook	Warning
27/12/20	Paddock Wood and Laddingford	Warning
27/12/20	Whitewater and Ruckinge Dykes	Warning
27/12/20	Little Venice Country Park	Warning
27/12/20	River Beult and Lesser Teise at Collier Street	Warning
27/12/20	River Medway, River Teise and River Beult at Yalding	Warning
27/12/20	River Medway between Yalding and Maidstone	Warning

28/12/20	Plucks Gutter and Grove Ferry	Warning
28/12/20	Tidal Stour Area from Fordwich to Stonar Cut	Alert
28/12/20	Plucks Gutter and Grove Ferry UPDATE	Warning
28/12/20	Little Venice Country Park UPDATE	Warning
05/01/21	Upper River Stour	Alert
05/01/21	Lower River Medway Area	Alert
05/01/21	Lower River Stour	Alert
05/01/21	Isle of Sheppey and Coast from Kemsley to Seasalter	Alert
05/01/21	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	Alert
05/01/21	Plenty, Swalecliffe and West Brooks	Alert
06/01/21	Isle of Sheppey and Coast from Kemsley to Seasalter	Warning
06/01/21	River Bourne from Hadlow to East Peckham	Alert
13/01/21	Plenty, Swalecliffe and West Brooks	Alert
13/01/21	River Bourne from Hadlow to East Peckham	Alert
13/01/21	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	Alert
13/01/21	Upper River Stour	Alert
13/01/21	Shuttle and Cray	Alert
13/01/21	River Darent from Westerham to Dartford	Alert
13/01/21	Rivers on the Isle of Sheppey Area	Alert
14/01/21	Plenty, Swalecliffe and West Brooks	Warning
14/01/21	Isle of Sheppey and Coast from Kemsley to Seasalter	Warning
14/01/21	Rivers Eden and Eden Brook Area	Alert
14/01/21	Tidal Stour Area from Fordwich to Stonar Cut	Alert
14/01/21	Lower River Stour	Alert
14/01/21	Lower River Medway Area	Alert
14/01/21	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	Warning
14/01/21	Middle River Medway Area	Alert
17/01/21	Tidal Stour Area from Fordwich to Stonar Cut	Alert
19/01/21	Upper River Stour	Alert
20/01/21	Upper River Medway Area	Alert
20/01/21	Middle River Medway Area	Alert
20/01/21	Plenty, Swalecliffe and West Brooks	Alert
20/01/21	River Bourne from Hadlow to East Peckham	Alert
20/01/21	Rivers Eden and Eden Brook Area	Alert
20/01/21	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	Alert
20/01/21	Lower River Medway Area	Alert
21/01/21	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	Alert
28/01/21	Rivers Eden and Eden Brook Area	Warning
28/01/21	West Brook at Hampton	Warning
28/01/21	Swalecliffe Brook	Warning
28/01/21	River Bourne from Hadlow to East Peckham	Alert
28/01/21	Upper River Stour	Alert
28/01/21	Rivers on the Isle of Sheppey Area	Alert
28/01/21	River Darent from Westerham to Dartford	Alert
28/01/21	Plenty, Swalecliffe and West Brooks	Alert
28/01/21	Upper River Medway Area	Alert
28/01/21	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	Alert
28/01/21	Lower River Medway Area	Alert

28/01/21	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	Alert
28/01/21	Lower River Stour	Alert
28/01/21	Middle River Medway Area	Alert
29/01/21	River Bourne from Hadlow to East Peckham	Alert
29/01/21	Rivers on the Isle of Sheppey Area	Alert
29/01/21	Tidal Stour Area from Fordwich to Stonar Cu	Alert
29/01/21	Rivers Eden and Eden Brook Area	Alert
30/01/21	Plenty, Swalecliffe and West Brooks	Alert
30/01/21	Tidal Thames from Dartford Creek and Mar Dyke to the Thames Barrier	Alert
30/01/21	Scrapsgate Drain and Warden Bay Drain	Warning
30/01/21	Scrapsgate Drain and Warden Bay Drain UPDATE	Warning
30/01/21	Rivers on the Isle of Sheppey Area	Alert
30/01/21	River Darent from Westerham to Dartford	Alert
30/01/21	New Romney Sewage Arm Area	Alert
30/01/21	Grove Ferry and Plucks Gutter	Warning
30/01/21	Rivers on the Isle of Sheppey Area UPDATE	Alert
31/01/21	Tidal River Thames from Dartford Creek and Mar Dyke to Thames Barrier	Alert
01/02/21	Tidal Thames from Dartford Creek and Mar Dyke to the Thames Barrier UPDATE	Alert
01/02/21	Grove Ferry and Plucks Gutter	Warning
01/02/21	Nailbourne and Little River Stour	Alert
03/02/21	Lower River Stour	Alert
03/02/21	Lower River Medway Area	Alert
03/02/21	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	Alert
07/02/21	Lower River Stour	Alert
07/02/21	Lower River Medway Area	Alert
07/02/21	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	Alert
16/02/21	Upper River Stour	Alert
17/02/21	Tidal Stour Area from Fordwich to Stonar Cut	Alert

Appendix 2: Met Office Severe Weather Warnings – November 2020 to February 2021

Weather Element	Number of Warnings	No of Different Events	Dates of Events
Fog	5	4	6-9 Dec
Rain	8	4	15 Nov. 23-24 & 27 Dec. 20-21 Jan
Rain & Snow	1	1	4 Dec
Snow	7	4	16 Jan, 6-10 Feb
Snow & Ice	10	8	28 & 31 Dec, 22-24 Jan, 6-11 Feb
Wind	6	4	15 Nov, 26-27 Dec, 20-21 Jan
Ice	8	7	4-5 & 31 Dec. 6-7, 9, 13-15, 25 & 31 Jan

Appendix 3: Environment Agency Thames Barrier closures since 24th November 2020		
Thames Barrier closures	**Date**	**Status**
Thames Barrier closed	30/11/20	Flood defence
Thames Barrier closed	17/12/20	Flood defence
Thames Barrier closed	29/01/21	Flood defence
Thames Barrier closed	30/01/21	Flood defence
Thames Barrier closed	31/01/21	Flood defence
Thames Barrier closed	01/02/21	Flood defence
Thames Barrier closed UPDATE	01/02/21	Flood defence
Thames Barrier closed	16/02/21	Test