

To: Kent Flood Risk Management Committee – 9th March 2020

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, Environment Agency and Met Office Warnings, and flood response activity since the last meeting of the Committee on 11th November 2019.

1. Background

- 1.1 This report is the latest of the regular updates to the Committee addressing the current water situation and severe weather and flood response activity, covering the period from November 2019 through to March 2020.
- 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. Latest situation

- 2.1 The autumn and winter has seen a succession of wet months, with 169% of the long-term average rainfall falling in December for example, and overall rainfall totals ranging from 'Above average' in East Kent to 'Notably High' in West Kent.

The exception was January which witnessed 'Below Normal' rainfall at 86% of the long-term average. The latest monitoring data available (source: EA 11th February 2020) indicates that river flows within the County are all now within the 'Normal' range, except for groundwater-dominated catchments which are 'Above Normal'. This follows the 'Exceptionally High' levels reached following the heavy rainfall in December.

- 2.2 Groundwater aquifers across Kent are currently all within 'Above Normal' to 'Notably High' ranges. After December's substantial rainfall and resultant rapid recharge, groundwater levels have now stabilised. The Environment Agency states that the current ground conditions will continue to support further recharge assisted by the significant rainfall experienced across Kent during February. December's rainfall was sufficient to generate widespread winterbourne flow throughout January, however, none of these seasonal watercourses were flowing along their entire length by February.
- 2.3 All Kent drinking water reservoirs remain above their long-term average and are all at 100% with the exception of Bewl which is currently at 94% capacity.
- 2.4 As a result of the exceptional rainfall experienced in December and Storms Ciara and Dennis in February, there was a sextupling (x6) in the number of Flood Alerts received during this period when compared with last year. 131 Flood Alerts and 30 Flood Warnings were issued by the EA since the last meeting in November (133 fluvial and 28 coastal)¹. This contrasts with 25 Flood Alerts (15 fluvial and 10 coastal) in the corresponding period last year.
- 2.5 **December Flooding (19th – 22nd December)** - Significant surface water, highway and fluvial flood impacts were felt across the County resulting in property flooding across parts of the Low Weald and in North West Kent. The EA reported 65 properties flooded as a result of fluvial or surface water flows throughout this period (source: EA). Around 150 homes in Little Venice, Yalding were evacuated on Saturday 21st, with Adult Social Care colleagues proactively assessing and supporting vulnerable residents. Impacts arising from December's flooding was notable in terms of the demands upon Kent Highways in dealing with surface water impacts on the local road and footway network. Multi-agency co-ordination was achieved through regular SWAG meetings which were held throughout this period, whilst a number of individual agencies, including EA and KCC, mobilised their own command and control structures. Officers from the County Council's directorates and many Elected Members were involved in dealing with impacts arising from the flooding. A range of further interventions were triggered by the EA, KCC and partners, which included closing flood gates, public warning and informing, pumping of

¹ Please see appendix 1

floodwater from the highway to tankers, mobilisation and deployment of additional staff resources, supplying sandbags and other practical action in an effort to limit impacts upon residents, businesses, vulnerable property, livestock and infrastructure. Locations particularly affected by the flooding included the Culverstone Valley, M26 Junction 2A, Chart Corner at Chart Sutton, Fishers Road at Staplehurst, The Quarries, Boughton Monchelsea, East Peckham, Angel Lane, Tonbridge Sports Ground, Five Oak Green and Yalding/Collier Street.

- 2.6 **Storm Ciara (8th – 9th February)** – High winds of up to 73mph (recorded at Langdon Bay, Dover) followed by heavy rainfall impacted Kent through this weekend. A range of interventions were triggered by the EA, KCC and partners both in preparation for and in response to storm impacts. Multi-agency co-ordination was achieved through regular SWAG meetings. Interventions ranged from closing flood gates through to public warning and informing and mobilisation of voluntary sector partners including South East 4x4 and Kent Search and Rescue. Impacts arising from Storm Ciara were particularly significant in terms of Kent Highways, Highways England, energy and water utilities, Network Rail and Districts who dealt with surface water, fallen trees and other windblown debris. Fluvial flooding affected parts of West Kent, resulting in fluvial and surface water flood damage to approximately 68 properties (source: EA). Damage to coastal defences also occurred in the Lydd area, triggering significant recovery activity by the EA.
- 2.7 **Storm Dennis (15th – 16th February)** – Less than a week after Ciara, Storm Dennis struck the UK on 15th February bringing further strong winds (67 mph recorded at Manston) and heavy rainfall (53.3mm recorded at Eden Vale) exacerbating storm and flooding impacts and limiting partners' opportunity for recovery from Ciara. The EA chaired regular multi-agency SWAG meetings in the lead-up to the storm and key responding agencies mobilised their own command and control structures. Stretches of the local road network across the County were inundated, with surface water on the highway and fallen trees dealt with by round the clock Kent Highway interventions. Fallen trees and windblown debris were a particular problem for many infrastructure operators. Further interventions included closing flood gates, public warning and informing, pumping floodwater to tankers, road closures, mobilisation and deployment of additional staff resources, supplying sandbags and flood sacks and other practical action in an effort to limit impacts on communities. Around 150 mobile homes at Little Venice, Yalding were pre-emptively evacuated in response to Flood Warnings. A further four properties were affected by flooding in West Kent and approximately 1,000 properties were left without power. Seawater ingress impacts were recorded near Lydd, and flooding impacts resulted in road closures at Sheephurst Lane at Collier Street, Hampstead Lane, Mill Lane, Symonds Lane and Laddingford Road at Yalding and Lees Road in

Laddingford. Sadly, two fatalities occurred during Storm Dennis when an individual entered the sea at Herne Bay and a sailor fell overboard at Margate.

- 2.8 Following Storms Ciara and Dennis, the County Council is investigating the potential for a bid against the Bellwin Scheme of Emergency Financial Assistance to Local Authorities, which works to reimburse councils for costs incurred during the response phase of an incident. To be eligible for the grant, the County Council must submit an expression of interest within the prescribed timetable and have spent 0.2% of its calculated annual budget on works reported to MHCLG. For the current financial year, the Bellwin Scheme threshold for KCC is a further £1,764,324.
- 2.9 This period since 11th November 2019 saw an increase in the number of Met Office Severe Weather Warnings issued compared to the corresponding period. Since November, 47 Severe Weather Warnings were issued, with 43 Yellow and 4 Amber (21 for rain, 17 for wind, 8 for fog and 1 for ice)². The total for the same period in 2018/19 was 13 (1 for wind, 1 for ice and fog, 5 for fog, 4 for ice and 4 for snow and ice).
- 2.10 The Thames Barrier was closed on 4 occasions since the last meeting (2 for tests and 2 for operational purposes)³. The figure for the corresponding period last year was also 4 (3 tests and 1 operational)³.
- 2.11 A number of EA chaired KRF SWAG teleconferences have taken place since the last meeting comprising:
- 13th and 14th November in response to fluvial floods as a result of heavy rainfall (Yellow Rain Warning);
 - 20th December in response to fluvial, surface, highway and groundwater flooding (Yellow Rain Warning);
 - 17th January in response to groundwater flooding specifically in the Nailbourne, Canterbury area;
 - 5th and 7th February in response to Storm Ciara (Yellow and Amber Wind Warnings); and
 - 13th and 14th February in response to Storm Dennis (Yellow and Amber rain and wind warnings).
- 2.12 The EA's Area Incident Room operated from:
- 13th - 18th November, with a total of 213 personnel active throughout the response during this period;

² Please see appendix 2

³ Please see appendix 3

- 18th - 27th December, with 240 personnel active;
- 15th – 16th January, with 20 personnel active;
- 17th - 18th January, with 33 personnel active;
- 10th February, with 7 personnel active; and
- 15th – 17th February, with 140 personnel active

The KCC DEPO, County Emergency Centre, on-call Duty Directors and a range of other partners supported these EA operations.

2.13 EA Community Information Officers (CIOs) deployment took place between November 2019 and February 2020:

- 14 -18 November – 18 CIOs on standby, none deployed;
- 18 – 23 December - 28 CIOs deployed to Tonbridge, Yalding, East Peckham, Edenbridge, Penshurst, Forest Row, Hartfield, Canterbury (Westgate Gardens), Collier Street, Hunton, Laddingford, Otford, Westerham, Lamberhurst, Goudhurst, Marden, Little Venice, Smarden, Headcorn, Linton, Plucks Gutter, Grove Ferry, Ashford and Tovil;
- 8th-9th February (Storm Ciara) – 4 CIOs deployed to Forest Row, Vauxhall Lane (Tonbridge), Capel and Five Oak Green; and
- 15th-16th February (Storm Dennis) - 21 CIOs deployed during the event, with some volunteering for more than one shift. Locations visited included: Laddingford, Yalding, Five Oak Green, Collier Street, East Peckham, Capel, Tonbridge, Postern, Edenbridge, Sundridge, Maidstone, Tovil, East Farleigh, Barming, Teston, Little Venice and Cobham.

2.14 The severe weather impacts felt this autumn and winter across the UK reflected the Met Office long-term forecast, which predicted a warmer and wetter than average winter. These forecasts also correlate with the ‘Intergovernmental Panel on Climate Change (IPCC) special report on the impacts of global warming of 1.5°C’, which projected shifts in seasonal and rainfall patterns, increases in the frequency and magnitude of extreme weather events such as a greater frequency and intensity of rainfall and storm events, resulting in escalating coastal storm surges and an elevated risk of tidal/coastal flooding events in the South East of England.

3. Looking forward

- 3.1 According to Met Office long-term forecasts, confidence is very high for warmer temperatures for March, April and May. The long-term rainfall forecast is less clear; however, it suggests wetter than average conditions over this period. Overall, the Met Office anticipates generally warmer and wetter conditions across the UK for the spring period.

- 3.2 The EA continuously runs surge forecasts, informed by astronomical tide calculations. If a risk of coastal flooding is forecast 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 between 9th - 15th March, 25th - 28th March, 6th - 13th April, 23rd - 27th April, 5th – 12th May and 23rd – 26th May 2020.
- 3.4 The national East Coast Flood Group is running an east coast surge exercise between 6th – 8th October 2020 (CoastEx20). The aim is to exercise national and county level response, information exchange and mutual aid during a major flooding incident along the East Coast of England. Planning is currently at an early stage, but it has been proposed that Kent will participate at a Bronze / Operational level, focussing primarily on local response, rather than command and control. Personnel from KCC services met on 29th January to agree their preferred scenario and level of engagement. An aspiration for a focus upon evacuation and shelter interventions within any scenario arose from this meeting.
- 3.5 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 planning and response policy and practice through oversight and debate.

9. Contact Details

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Appendix 1: EA Flood Alerts and Warnings issued since 11th November 2019		
Date issued	Flood Zone	Status
02/11/19	Coast from Fairlight to Dungeness including The Tidal Rother	Alert
	Upper River Medway Area	
	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	
07/11/19	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	Alert
08/11/19	Pent Stream in Folkestone	Alert
11/11/19	Upper River Stour	Alert
13/11/19	River Teise area from Lamberhurst to Goudhurst	Alert
	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	
	Upper River Medway Area	
	Upper River Stour	
	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	
	Rivers Eden and Eden Brook Area	
26/11/19	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	Alert
	Rivers Eden and Eden Brook Area	
	Upper River Stour	
	Upper River Medway Area	
27/11/19	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	Alert
	Lower River Medway Area	
	Middle River Medway Area	
	Lower River Stour	
28/11/19	Tidal Stour Area from Fordwich to Stonar Cut	Alert
	Coast from Ramsgate to Kingsdown	
	Coast from Whitstable to Margate	
	Isle of Sheppey and Coast from Kemsley to Seasalter	
	Coast from Dartford to Allhallows	
	Tidal Medway, Medway estuary and Isle of Grain	
29/11/19	Coast from Dartford to Allhallows, and	Alert
	Isle of Sheppey and coast from Kemsley to Seasalter	
	Tidal Medway, Medway estuary and Isle of Grain	
12/12/19	Upper River Medway Area	Alert
	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	
13/12/19	Lower River Medway Area	Alert
	Middle River Medway Area	
	Upper River Stour	
16/12/19	Upper River Medway Area	Alert
	Rivers Eden and Eden Brook Area	
	River Bourne from Hadlow to East Peckham	
	Middle River Medway Area	
	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	
17/12/19	Lower River Medway Area	Alert
	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	

18/12/19	Upper River Stour	Alert
	Rivers on the Isle of Sheppey Area	
	Tidal Stour Area from Fordwich to Stonar Cut	
	Upper River Stour	
	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	
	Upper River Medway Area	
19/12/19	Rivers Eden and Eden Brook Area	Alert
	Upper River Medway Area	
	Rivers Eden and Eden Brook Area	
	Middle River Medway Area	
	River Teise area from Lamberhurst to Goudhurst	
	River Bourne from Hadlow to East Peckham	
	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	
River Rother and its tributaries from Turks Bridge to the Royal Military Canal and Upper River Stour		
19/12/19	Upper River Medway Area and Upper River Stour	Warning
20/12/19	Lower River Medway Area	Alert
	Rivers on the Isle of Sheppey Area	
	Middle River Medway Area	
	River Teise area from Lamberhurst to Goudhurst	
	River Darent from Westerham to Dartford	
	Rivers Eden and Eden Brook Area	
	Upper River Stour	
	River Teise and Lesser Teise area from Horsmonden to Yalding	
	Shuttle and Cray and Lower River Stour	
20/12/19	Middle River Medway Area	Warning
	River Teise area from Lamberhurst to Goudhurst	
	River Darent from Westerham to Dartford	
	Rivers Eden and Eden Brook Area	
	Upper River Stour	
	River Teise and Lesser Teise area from Horsmonden to Yalding	
	Shuttle and Cray Lower River Stour	
	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	
	Rivers Eden and Eden Brook Area	
	21/12/19	
Middle River Medway Area		
Middle River Medway Area and River Beult from Pluckley Bethersden to Hampstead Lock at Yalding		
22/12/19	Lower River Stour	Alert
22/12/19	Middle River Medway Area	Warning
	Lower River Stour	
23/12/19	Middle River Medway Area	Warning
14/01/20	Coast from Dartford to Allhallows	Alert
	Tidal Medway	
	Medway estuary and Isle of Grain	
	Isle of Sheppey and coast from Kemsley to Seasalter	
	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	
	Rivers Eden and Eden Brook Area	
Upper River Medway Area		

	Lower River Medway Area	
	River Bourne from Hadlow to East Peckham	
	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	
	Coast from Fairlight to Dungeness including The Tidal Rother	
15/01/20	Middle River Medway Area	Alert
26/01/20	Upper River Medway Area	Alert
27/01/20	Upper River Medway Area	Alert
	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	
28/01/20	Lower River Medway Area	Alert
09/02/20	Coast from Sandgate to Dungeness	Alert
	Coast from Fairlight to Dungeness Including the Tidal Rother	
	Coast from St Margaret's at Cliffe to Sandgate	
	Coast from Ramsgate to Kingsdown	
	Coast from St Margaret's at Cliffe to Sandgate	
	Upper River Medway	
	Rivers Eden and Eden Brook Plenty	
	Swalecliffe and West Brooks	
	Lower River Medway	
Middle River Medway Area		
09/02/20	Coast from St Margaret's at Cliffe to Sandgate	Warning
10/02/20	Coast from Dartford to Allhallows Tidal Medway	Alert
	Medway estuary and Isle of Grain	
	Isle of Sheppey and coast from Kemsley to Seasalter	
	Coast from Whitstable to Margate	
	Upper River Stour	
	Lower River Stour	
10/02/20	Properties seaward side of tidal defences from Greenhithe to Gravesend	Warning
	Coast from Sandgate to Dungeness	
	Dungeness Power Station Operational Area	
11/02/20	Coast from Dartford to Allhallows	Alert
	Tidal Medway	
	Medway estuary and Isle of Grain	
	Coast from Dartford to Allhallows	
	Isle of Sheppey and Coast from Kemsley to Seasalter	
12/02/20	Coast from Dartford to Allhallows	Alert
	Tidal Medway, Medway estuary and Isle of Grain	
	Isle of Sheppey and Coast from Kemsley to Seasalter	
	Coast from Fairlight to Dungeness including The Tidal Rother	
	River Rother and its tributaries from Turks Bridge to the Royal Military Canal	
13/02/20	Upper River Medway Area	Alert
	River Bourne from Hadlow to East Peckham	
	River Teise area from Lamberhurst to Goudhurst	
	Rivers Eden and Eden Brook Area	
	Lower River Medway Area	
	Upper River Stour	
	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	
	River Teise and Lesser Teise area from Horsmonden to	

	Yalding	
14/02/20	Middle River Medway Area	Alert
15/02/20	River Darent from Westerham to Dartford	Alert
	Upper River Medway Area	
	River Teise area from Lamberhurst to Goudhurst	
	Rivers Eden and Eden Brook Area	
	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	
	Middle River Medway Area	
	Upper River Stour	
	River Rother and its tributaries from Turks Bridge to the Lower River Stour	
	Royal Military Canal	
	Lower River Medway Area	
	River Bourne from Hadlow to East Peckham	
River Teise and Lesser Teise area from Horsmonden to Yalding		
15/02/20	Middle River Medway Area	Warning
16/02/20	Rivers Eden and Eden Brook Area	Warning
	Upper River Medway Area	
	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	
	Lower River Medway Area	
	Middle River Medway Area	
	River Teise and Lesser Teise area from Horsmonden to Yalding	
	River Teise area from Lamberhurst to Goudhurst	
	River Beult from Pluckley and Bethersden to Hampstead Lock at Yalding	
16/02/20	Rivers on the Isle of Sheppey Area	Alert
	Lower River Stour	
23/02/20	Coast from Fairlight to Dungeness including the Tidal Rother	Alert
25/02/20	Coast from Fairlight to Dungeness including the Tidal Rother	Alert

Appendix 2:

47 Met Office Severe Weather Warnings issued (including updates)

- 43 Yellow
- 4 Amber
- 28 Low Impact
- 19 Medium Impact

Appendix 2: Met Office Severe Weather Warnings – November 2019 to March 2020

Weather Element	Number of Warnings	Dates of Weather Events
Fog	8 (5 Events)	19 th Nov 2019 3 rd Dec 2019 4 Dec 2019 17 th -18 th Dec 2019 30 th Dec 2019
Rain	21 (4 Events)	14 th Nov 2019 19 th -22 nd Dec 2019 14 th -15 th Jan 2020 15 th -16 th Feb 2020
Wind	17 (5 Events)	2 nd Nov 2019 14 th -15 th Jan 2019 8 th -10 th Feb 2020 15 th Feb 2020 29 th Feb – 1 st Mar 2020
Ice	1 (1 Event)	26 th Feb 2020

Met Office Flood Guidance Statements

19th December 2019	Minor Impact – Low Likelihood River & Surface
19th & 20th December 2019	Minor Impacts – Medium Likelihood Significant Impacts – Low Likelihood Minor Impacts – Low Likelihood River & Surface
21st & 22nd December	Significant Impacts – Low Likelihood Minor Impacts – Medium Likelihood Minor Impacts – Low Likelihood River & Surface
15th February 2020	Significant Impact – Very Low Likelihood River & Surface
16th February 2020	Significant Impact – Medium Likelihood River & Surface
17th February 2020	Significant Impact – Low Likelihood River & Surface
17th & 18th February 2020	Minor Impact – Low Likelihood Minor Impact – Medium Likelihood River

Appendix 3: Environment Agency Thames Barrier closures since 11th November 2019

Thames Barrier closures	Date	Status
Thames Barrier closed	18/11/2019	Test

Thames Barrier closed	17/12/2019	Test
Thames Barrier closed	10/02/2020	Operational
Thames Barrier closed	11/02/2020	Operational