

**To:** Kent Flood Risk Management Committee – 15<sup>th</sup> 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

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**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 23<sup>rd</sup> November 2020.

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## **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)<sup>1</sup>. 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<sup>2</sup>. 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)<sup>3</sup>. 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 4<sup>th</sup> 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 20<sup>th</sup> January.

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<sup>1</sup> Please see appendix 1

<sup>2</sup> Please see appendix 2

<sup>3</sup> Please see appendix 3

- 3.3 KCC Resilience and Emergency Planning Service convened their initial multi-agency SWAG on 23<sup>rd</sup> 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 27<sup>th</sup> 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 27<sup>th</sup> and 28<sup>th</sup> 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 1<sup>st</sup> February.
- 3.4 Storm Darcey brought persistent and occasionally heavy snow to the county on 7<sup>th</sup> and 8<sup>th</sup> 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 30<sup>th</sup> 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**

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**Appendix 1: EA Flood Alerts and Warnings issued since 24<sup>th</sup> November 2020**

<b>Date issued</b>	<b>Flood Zone</b>	<b>Status</b>
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 24<sup>th</sup> November 2020**

<b>Thames Barrier closures</b>	<b>Date</b>	<b>Status</b>
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