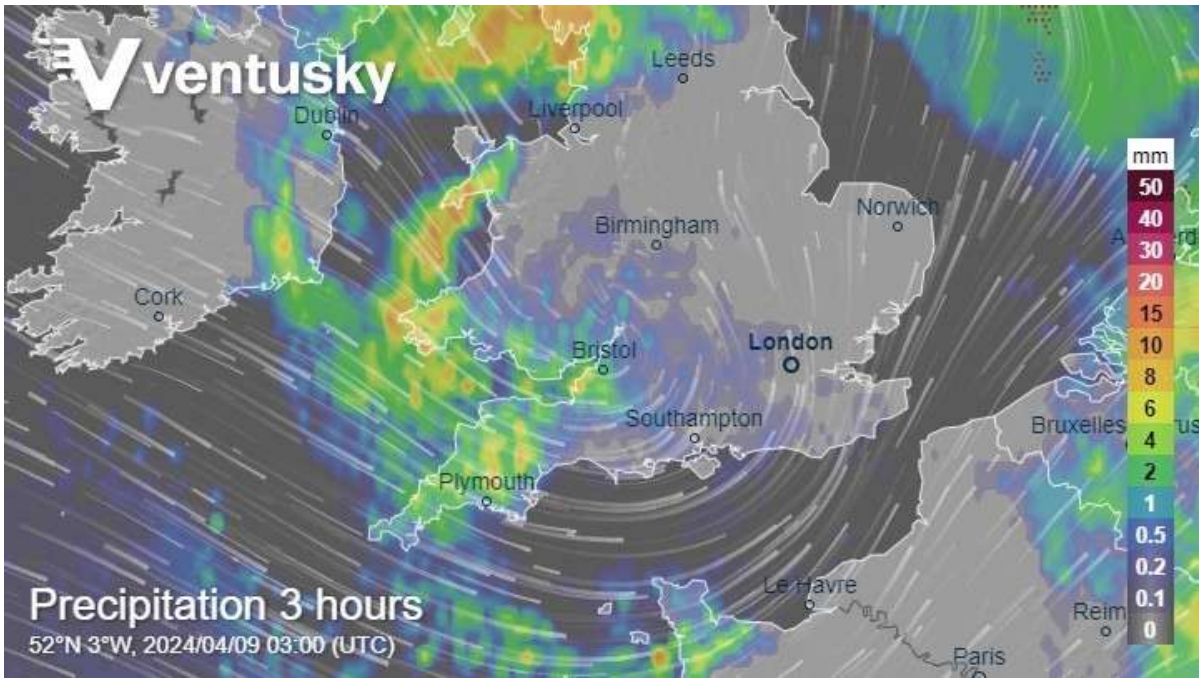
Coastal Flooding New Forest to Hayling Island

9th April 2024

Section 19 Flood Investigation Report



This Flood Investigation Report has been compiled by Hampshire County Council (HCC) under their responsibilities as Lead Local Flood Authority (LLFA) for Hampshire and the duty to investigate significant flood events as defined under the Flood and Water Management Act 2010.

Hampshire County Council

Executive Summary

This Flood Investigation Report has been compiled by Hampshire County Council under their responsibilities as Lead Local Flood Authority (LLFA) for Hampshire and the duty to investigate significant flood events as defined under the Flood and Water Management Act 2010.

This report provides a summary of the extent and consequences of the flooding on 9th April 2024 in the coastal regions of Hampshire, between the New Forest and Hayling Island and the actions undertaken or proposed by each of the identified authorities.

The LLFAs remit covers surface water, groundwater and ordinary watercourses. Coastal flooding sits outside of the LLFAs remit. As such, the report is limited to an assessment of the flooding event and the response from the relevant risk management authorities (RMAs).

The report is based on records of internal property flooding and road closure information requested from each RMA. While every reasonable effort has been made to validate the information, the nature of the data and the methods of collation, mean that only flooding that has been observed by officers or recorded through the relevant RMAs has been captured.

The report highlights the extreme nature of the event with the impacts from Storm Pierrick exacerbating the spring high tidal impacts and causing flooding of properties across the south coast. Portsmouth recorded its highest ever tidal level and estimated probabilities put the storm at a 1:75 year event or an event with 0.013% chance of occurring in any 1 year.

Impacts within Hampshire were reported between the New Forest and Hayling Island with the largest numbers of properties being flooded within Gosport and Hayling Island.

An extensive emergency response was undertaken with the Environment Agency, Borough Councils, Hampshire County Council, Southern Water and Blue Light agencies, all undertaking their respective duties throughout the event and during the recovery phase.

While there was no evidence of failures in undertaking the relevant responsibilities, the report finds that there were areas that could be improved around the provision of information and co-ordination. Given that tidal impacts sit outside the LLFA's remit, no specific recommendations have been identified in relation to flood risk assets.

Hampshire County Council, as LLFA, disclaims any responsibility for the accuracy or comprehensiveness of the information supplied to the authority as part of the preparation of this report, and accepts no liability for any indirect, consequential, or incidental damages or losses arising from use of the information.

Contents

1. Introduction

1.1. Requirements for investigation

1.1.1. Hampshire County Council, as Lead Local Flood Authority (LLFA), is responsible for the management of Surface Water, Groundwater and flooding from Ordinary Watercourses as set out in the Flood and Water Management Act.

1.1.2. The Flood and Water Management Act 2010 requires LLFAs to undertake flood investigations, as detailed in Section 19 of Part 3 of the Act (reproduced below):

> **19 Local authorities: investigations**
>
> (1) On becoming aware of a flood in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate—
>
> (a) which risk management authorities have relevant flood risk management functions, and
>
> (b) whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.
>
> (2) Where an authority carries out an investigation under subsection (1) it must—
>
> (a) publish the results of its investigation, and
>
> (b) notify any relevant risk management authorities.

1.1.3. Hampshire County Council's criteria for undertaking a Section 19 investigation requires that internal flooding of more than 20 properties has taken place during one weather event, from one flooding source in one local area.

1.1.4. This report was undertaken to investigate the flooding incident on 9th April 2024 at a number of locations along the Hampshire coastline, from the New Forest to Hayling Island, as more than 20 properties in total were affected internally by flood water within these areas.

1.1.5. The information within this report has been prepared from reports received by residents and other risk management authorities (RMAs) and is reliant on the information provided to the LLFA.

1.1.6. It is important to note that the flooding also affected adjacent LLFAs areas including West Sussex as well as Portsmouth City Council and Southampton City Council, who are LLFAs for their respective areas. As such, any areas of flooding associated with this event in these areas are not included within this report.

1.1.7. As LLFA, Hampshire County Council's remit is in relation to surface water, groundwater and ordinary watercourses only. Coastal flooding sits outside this remit and given the limited remit of the LLFA, the report has been limited to the

identification of the extent of the incident and the responses of the various RMAs.

1.1.8. The Environment Agency and relevant District / Borough Councils, as supported by the Coastal Partners, have the remit in relation to the management of coastal impacts and are best placed to review actions and improvements as required in relation to their remit and priorities. More information on the role of the different agencies is set out in Section 2.

1.1.9. The information contained within this report has been prepared based on reports and information received by residents and other RMAs to the LLFA. The amount of detail received in relation to different areas is extremely variable and it is likely that some flooding incidents were not reported. As such, the areas detailed in Section 5 are where internal property flooding had been reported or the impacts reported caused significant damage. Other areas are likely to have experienced impacts from the storm event and may not have been specifically identified.

2. Roles and responsibilities

2.1. Hampshire County Council - Lead Local Flood Authority, Highway Authority, Emergency Planning team

2.1.1. As defined within the Flood and Water Management Act 2010, Hampshire County Council, in their role as Lead Local Flood Authority (LLFA) has a responsibility for taking the lead in flood risk management. This flood investigation report has been prepared in accordance with that responsibility.

2.1.2. Hampshire County Council is also the Highway Authority and has a responsibility to maintain the highways, including the highway drainage, ensuring safe passage for all users.

2.1.3. Hampshire County Council's Emergency Planning team are responsible for discharging Hampshire County Council's responsibilities under the Civil Contingencies Act 2004. The team work to ensure that the Council can respond to, and recover from, emergencies affecting Hampshire.

2.2. Fareham Borough Council, Gosport Borough Council, Havant Borough Council, New Forest District Council, Eastleigh Borough Council

2.2.1. Local authorities have a number of permissive powers under Coast Protection Act 1949, Land Drainage Act 1991 and Water Resources Act 1991 for prevention and mitigation of flood damage and also responsibility for managing flood risk within planning legislation. They also have roles in relation to Emergency Planning and Resilience as set out in the Civils Contingencies Act. The relevant local authorities for the flooding identified in this report are Fareham Borough Council, Gosport Borough Council, Havant Borough Council, New Forest District Council and Eastleigh Borough Council.

2.2.2. Such local authorities are a point of contact for residents and the public concerned about flooding in the identified areas. As well as permissive powers relating to land drainage and managing flood risk within planning legislation, these councils keep records of flooding events and can carry out both maintenance and improvement works within their area, depending on availability of resource and capacity.

2.3. Coastal Partners

2.3.1. Coastal Partners manage coastal flood and erosion risk across five Local Authorities, on behalf of Fareham Borough Council, Gosport Borough Council, Portsmouth City Council, Havant Borough Council and Chichester District Council.

2.3.2. The Partnership was created under the recognition that the impacts of coastal flooding and erosion are not limited to the administrative boundaries. Through local service level agreements and partnership working, Coastal Partners deliver a fully combined and comprehensive coastal management service which has been identified as an example of best practice by the Environment Agency and Defra.

2.4. Environment Agency

2.4.1. The Environment Agency have an overview of flood risk in relation to fluvial and coastal matters as well as a Strategic Overview Role for other sources of flooding. They have permissive powers to undertake maintenance works and a general supervisory role over all aspects relating to flood defence.

2.4.2. The Environment Agency will also encourage third party asset owners to maintain their property in appropriate condition and take enforcement action when it is required. The Environment Agency may consider undertaking maintenance or repair works on third party assets only where it can be justified in order to safeguard the public interest and where other options are not appropriate.

2.5. Southern Water

2.5.1. Southern Water have a responsibility for public water supply, wastewater and sewerage systems in the affected areas. Water companies do not have a formal role in the management of surface water except where there are adopted surface water sewers. Under the duty to co-operate as a risk management authority, they are required to cooperate and share flood risk information with the Lead Local Flood Authority if asked.

2.6. Other Authorities

2.6.1. There are a number of other authorities such as blue light services who are directly involved in risk and recovery operations and are included within the Category 1 and Category 2 responders. These roles are set out in the Civil Contingencies Act and further information on specific roles and responsibilities can be obtained from Preparation and planning for emergencies: responsibilities of responder agencies and others - GOV.UK.

2.7. Riparian Landowners

2.7.1. Riparian Landowners are individuals or entities that own land adjacent to or encompassing a watercourse, like a river, stream, or ditch. While Riparian Landowners are not RMAs, they do have a key role to play in flood risk management as asset owners. Where landowners have assets passing through or on the boundary of their property, there is a presumption that they are responsible for maintenance of these assets either singly or jointly with adjoining landowners, unless it is stated to the contrary in deeds or easements. These assets can have a significant impact on flood risk.

3. Information / Actions Prior to the Event

3.1.1. The beginning of April 2024 was dominated by the impacts of Storm Kathleen on the 4th – 6th April which brought strong winds and heavy rain across much of the UK. This was closely followed by Storm Pierrick which while being centred on France, tracked north and brought low and medium warnings for wind and rain along the south coast.

3.1.2. The Met Office issued a yellow weather warning for wind affecting the coastal areas of Hampshire, along with the majority of the south coast

3.1.3. The warning on the morning of 08/04/2024 stated:

The warning is valid from 2100 this evening until 0900 Tuesday, bringing a Medium Likelihood of Low Impacts, which mean:

- *It's likely that some coastal routes, sea fronts and coastal communities will be affected by spray and/or large waves*
- *Some delays to road, rail, air and ferry transport are likely*
- *Some short term loss of power and other services is possible*

Figure 1: Met office warning – 8th April 2024

3.1.4. Moderately high spring tides were forecast for midnight on 8th April 2024 and the Environment Agency were monitoring the forecasts to take into account the varying weather patterns.

3.1.5. As a result of the forecasts and likely uncertainty associated with them, flood alerts and warnings were issued to those areas where flood impacts were considered possible.

3.1.6. The flood alerts (be prepared) active between the 8th and 9th April 2024 along the Hampshire coastline are listed below with those in bold being flood warnings (take action):

- Langstone to Emsworth Harbour
- Southampton Water and Hamble
- Mansbridge and Riverside Park
- Beaulieu estuary
- **Calshot, Hythe, Marchwood, Eling and Redbridge**
- **Beaulieu**
- Port Solent to Brockhampton
- Milford on Sea to Lymington
- Southampton Water and Hamble
- Hayling Island
- **Langstone and Emsworth**
- **Fareham**
- **Portchester**
- **South Hayling and South Eastoke seafront**
- **Ferry Point, The Kench, Sinah Warren and Stoke, West Hayling**
- **South Hayling at Sinah Common, Westfield, Sea View and Mengham**
- **North and East Hayling at Northney, Tye and Selsmore**
- **Gosport**
- **Hamble estuary**
- **Itchen estuary**
- Mansbridge and Woodmill on the River Itchen

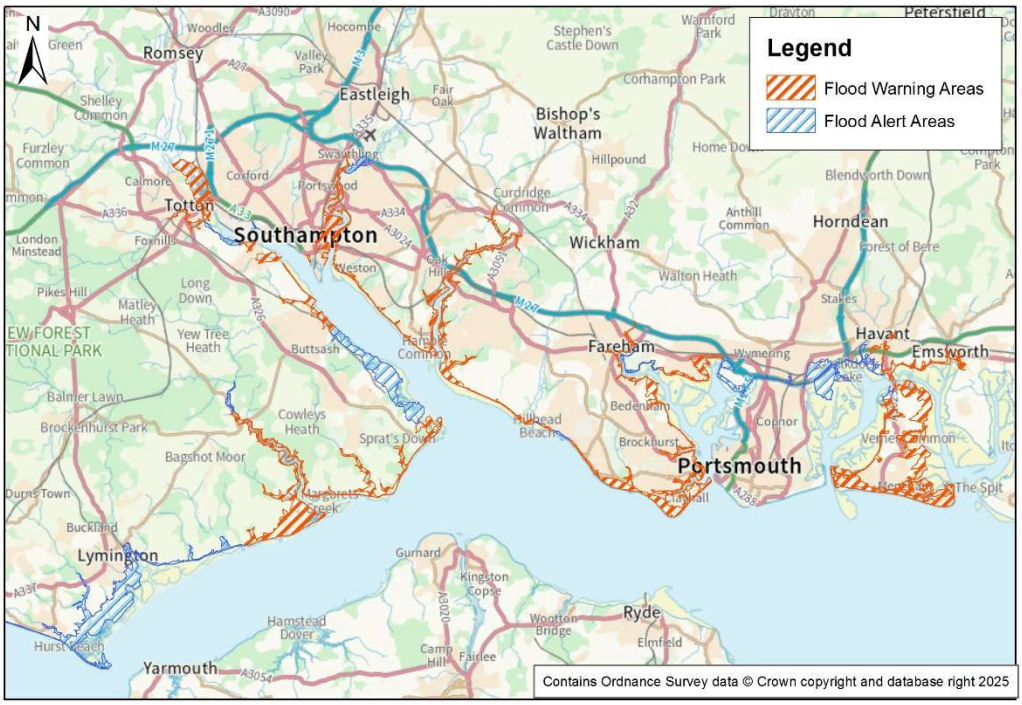


Figure 2: Flood Alert and Flood Warnings issued within Hampshire

3.1.7. By 1.30pm, the weather conditions had deteriorated, with the low-pressure system and winds associated with Storm Pierrick negatively influencing the likely tidal ranges and wave impacts and increasing the risk of flooding. A Partner Activation Teleconference was facilitated by the Local Resilience Forum, as requested by the Environment Agency, for all Category 1 & Category 2[1] responders to make them aware of the potential issues and to ensure the relevant authorities were briefed and had the appropriate resources available or on standby.

3.1.8. As part of this, actions were undertaken in preparation for the potential risk in terms of checking key drainage and flood defence features with tide gates being shut at Lymington, Emsworth pond being drained and other defences being erected where available.

3.1.9. Although there was a yellow warning issued along the coast, conditions deteriorated rapidly with all the different factors combining to create the worst likely outcome. This meant that there was a considerable storm surge which resulted in tidal levels well above expected levels and generated the subsequent flooding.

3.1.10. A Yellow Warning remained in place from Monday 8th April to Wednesday 10th April 2024, with the overall flood risk stated as Low.

4. Actions During and After the Flooding

4.1.1. High tide occurred around 12pm on 08 April 2024 with a level of 5.8m Chart Datum (CD) at Portsmouth (3.01m Above Ordnance Datum (AOD)) which is the highest recorded level in this location and highlighted the extreme nature and severity of the event. CD is a reference point used for measuring sea depths and tidal levels. AOD refers to a vertical datum used to measure heights, particularly in coastal areas.

4.1.2. It is estimated that this would correspond to a 1:75 year event or an event with 0.013% chance of occurring in any 1 year.

4.1.3. Operational officers from the Environment Agency, Hampshire County Council, Gosport Borough Council, Havant Borough Council, New Forest District Council, Eastleigh Borough Council, Southern Water and others were on site checking assets and supporting residents. Emergency services were also on site with a significant number of call outs, particularly in relation to the fire service.

4.1.4. A Tactical Coordinating Group was established to co-ordinate the response to the event, support agencies where required and to ensure the required information and equipment was available.

4.1.5. The specific actions undertaken following this event varied depending on the impacts and location of flooding and are described in more detail in Section 5.

5. Site Locations and flood incidents

5.1 The following map gives an overview of the site locations and flooding incidents for the event across southern Hampshire.

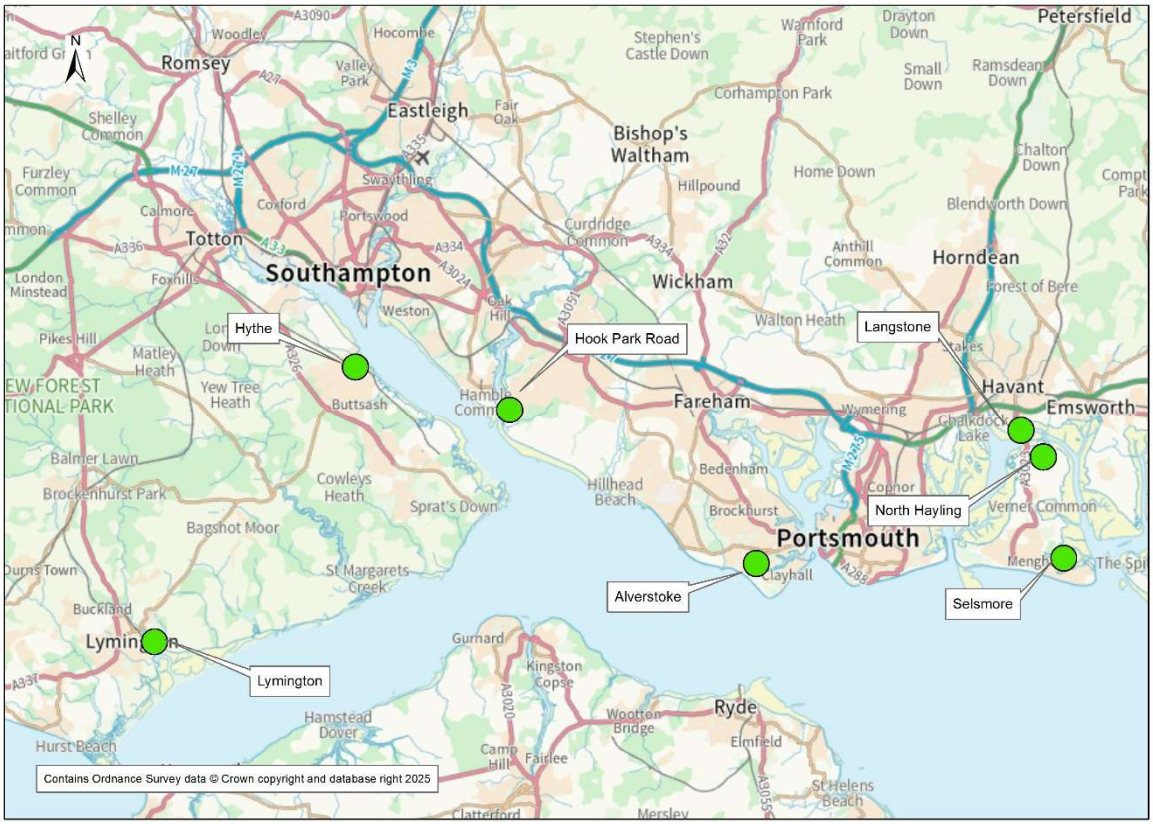


Figure 3: Approximate locations of areas reported as flooding on the 9th April 2024

5.1. Alverstoke

5.1.1. The following map highlights the approximate areas of flooding in Alverstoke.

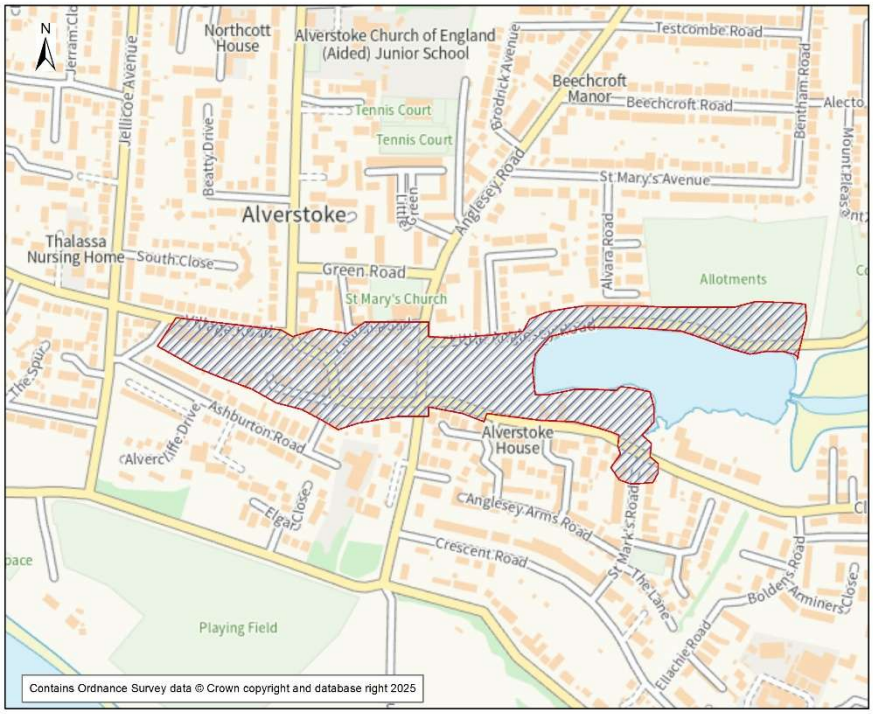


Figure 4: Approximate area of flooding - Alverstoke

5.1.2. Hampshire County Council, as LLFA and Hampshire Highways, received reports of flooding at Anglesey Road and Park Road in Alverstoke. Hampshire Highways were contacted by emergency services at 00:47am Tuesday 9th April 2024, with roads closed due to flooding. The closures were at the junction of Little Anglesey Road (see figures 5 and 6) and St Marks Road, and at Village Road.

5.1.3. Gosport Borough Council were notified at 1:07am of over 50 properties flooded due sea defences being overwhelmed. A rest centre was established at Thorngate Hall, Gosport at approximately 2.30am on Tuesday 9th April 2024. Two residents attended the rest centre whilst all other residents chose to remain upstairs in their homes. All properties were privately owned, and Gosport Borough Council worked with homeowners to provide advice around insurance whilst assisting with the recovery process.

Figure 5: Anglesey Road, 9th April 2024 (Source: Coastal Partners)

Figure 6: Anglesey Road, 9th April 2024 (Source: Hampshire & Isle of Wight Fire Rescue Service).

5.1.4. A secondary impact of the sea wall overtopping was that Southern Water's surface water pumping station was inundated with sea water, overwhelmed and was unable to cope with the additional demand. Southern Water deployed 600 sandbags to help protect the pumping station. They also worked in partnership with Hampshire Highways to sandbag access routes and to help protect properties. Southern Water deployed their customer services team to support impacted residents and made additional sandbags available if required.

5.1.5. Hampshire & Isle of Wight Fire and Rescue Service received more than 50 phone calls in total relating to coastal flooding. Gosport and Fareham firefighters were called to Village Road at around 1:00am after receiving

reports of an electrical box fire. Although the fire was extinguished upon arrival, there was significant flooding in the vicinity. Fire crews remained on site to offer aid to vulnerable residents whose homes were impacted by the flooding.

5.2. Warsash

5.2.1. Hampshire County Council Highways received reports of flooding at Hook Park Road, following the collapse of the sea wall at Hook Lake. The following map highlights the approximate areas of flooding in Warsash.

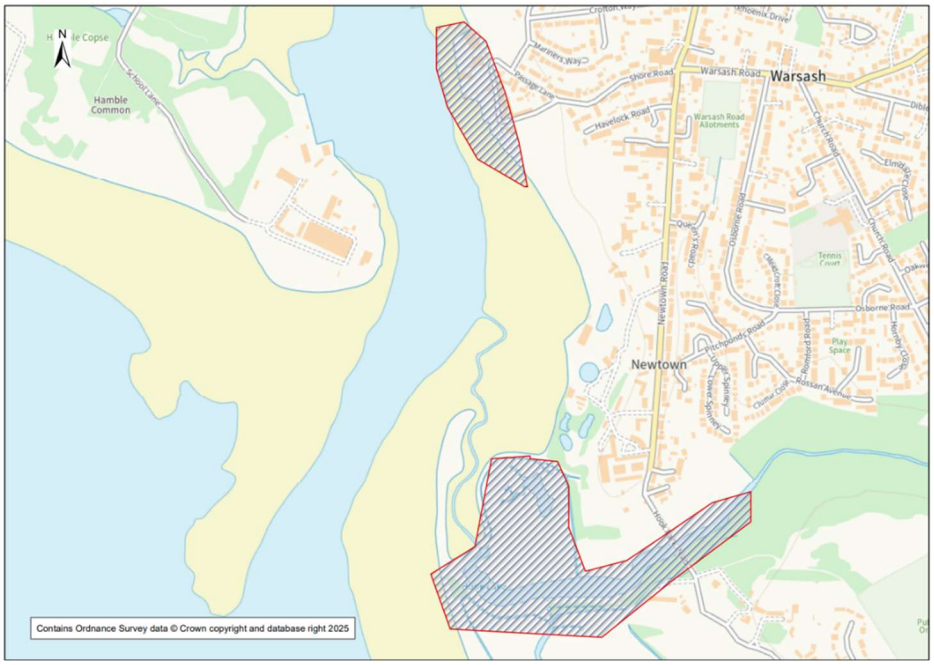


Figure 7: Approximate area of flooding - Warsash

5.2.2. The road flooding and the debris deposited on Hook Park Road bridge left 60 properties unable to use the main access road. Hampshire Highways attended to clear the debris from the bridge and arranged for it to be inspected for structural damage. Until the sea wall is repaired, Hampshire Highways are prepared to manage future debris deposits during high tides.

Figure 8: Hook Lake sea wall collapse (Source: Coastal Partners)

Figure 9: Hook Lake sea wall collapse (Source: Hampshire Highways)

5.2.3. Fareham Borough Council attended the morning after the flooding to assist with the removal of debris from Shore Road, Warsash where the Rising Sun pub had flooded during the night. No further internal flooding has been reported to the LLFA at the time of writing this report.

5.2.4. The Environment Agency recorded the nearby tide level in Hamble at a record high of 2.87m AOD. It was this exceptionally high level which caused the collapse of the sea defence.

5.3. Hamble

5.3.1. The following map highlights the approximate areas of flooding in the Hamble vicinity.

5.3.2. No reports were made to Hampshire County Council in relation to the flooding at this location so no further details are currently available.

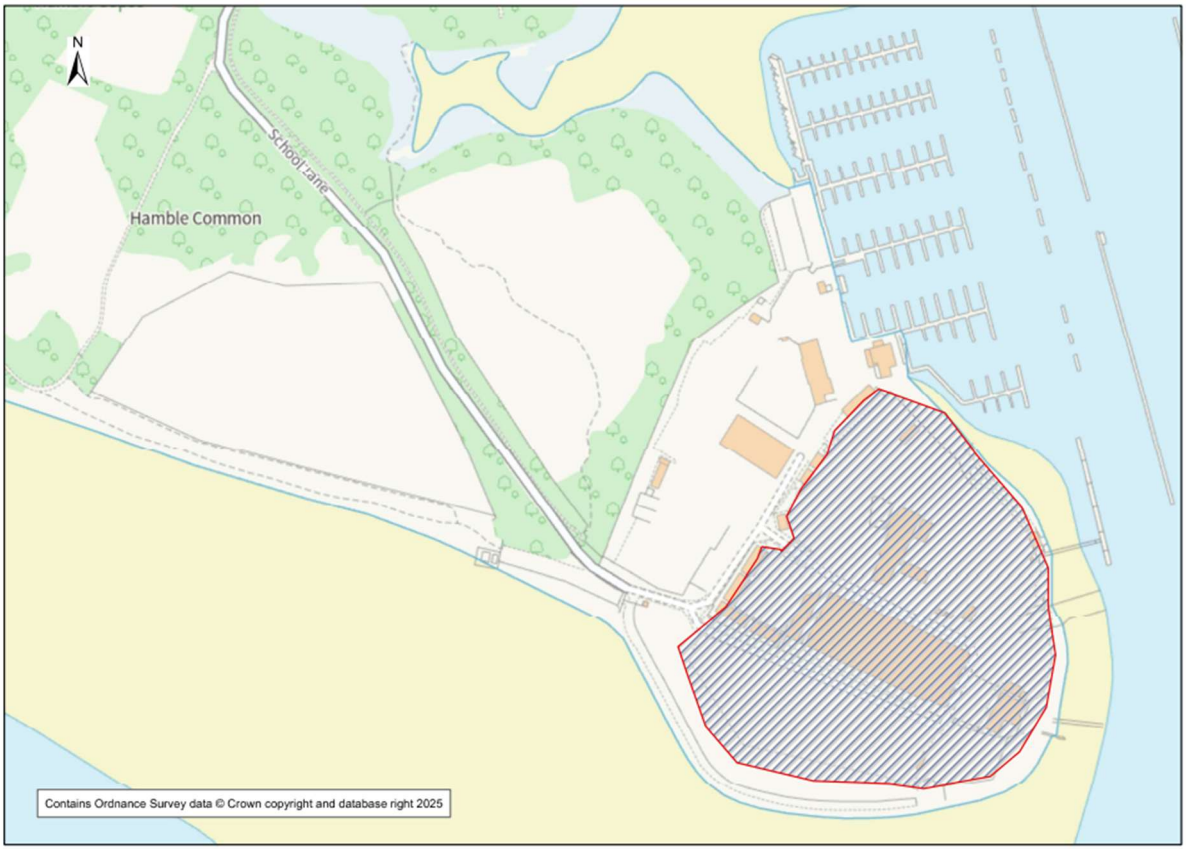


Figure 10: Approximate area of flooding - Hamble

5.4. Hayling Island

5.4.1. The following map highlights the approximate areas of flooding in Selsmore.

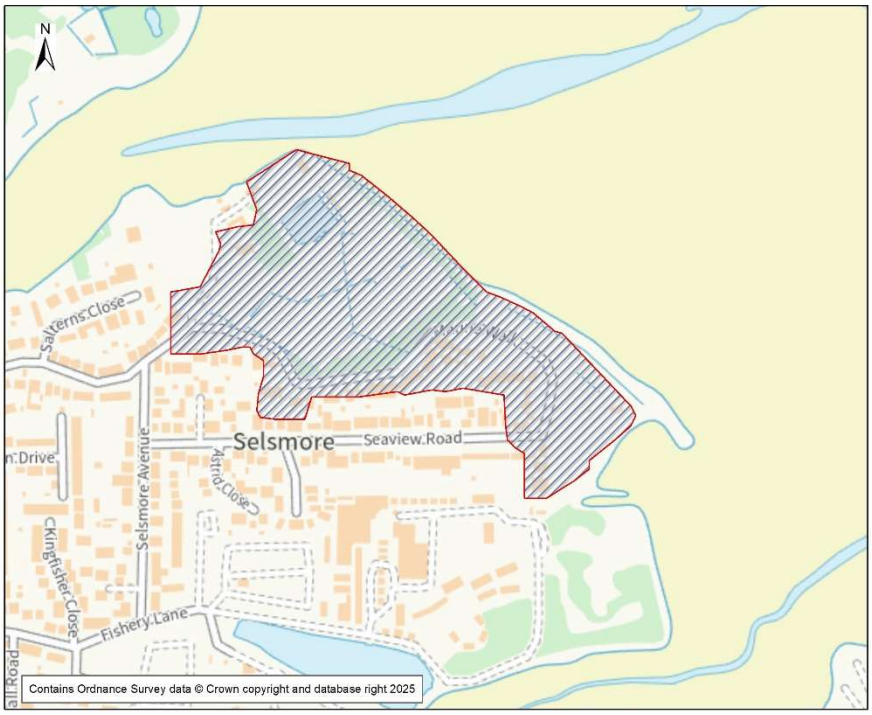


Figure 11: Approximate area of flooding - Selsmore

5.4.2. Havant Borough Council reported 35 properties in on and around Marine Walk, Selsmore were impacted by flooding with water blocking road access and not draining away with the tide.

5.4.3. It was estimated that the road flooding was in excess of 600mm in depth in places which made it extremely difficult to access the area to support the community.

5.4.4. In addition, the flood water impacted on critical infrastructure with a substation being affected and power was lost to the majority of the properties.

5.4.5. A sluice gate understood to be owned by Mengeham Rythe Sailing Club had partially collapsed, become overrun with debris and was preventing flood waters from draining. It was attempted to clear this blockage but it was not possible at the time of the flooding given the dangerous conditions.

5.4.6. The Fire Service and Environment Agency facilitated large pumps to reduce water levels allowing access to be re-established and repairs to commence on the infrastructure.

5.4.7. HANTSAR, Hampshire Search and Rescue team, managed the welfare of residents through visits and passing relevant information to partner agencies.

Figure 12: Drone imagery provided by the Environment Agency

5.4.8. Scottish & Southern Electricity Networks worked with the Environment Agency to plan safe return of power to flooded properties once the pumping operation was complete.

5.4.9. In addition, 10 – 15 properties were identified as being flooded in North Hayling where high tides prevented surface water networks from being drained. There are known to be damaged flap valves which exacerbated the issues.

5.4.10. The following map highlights the approximate areas of flooding in North Hayling.

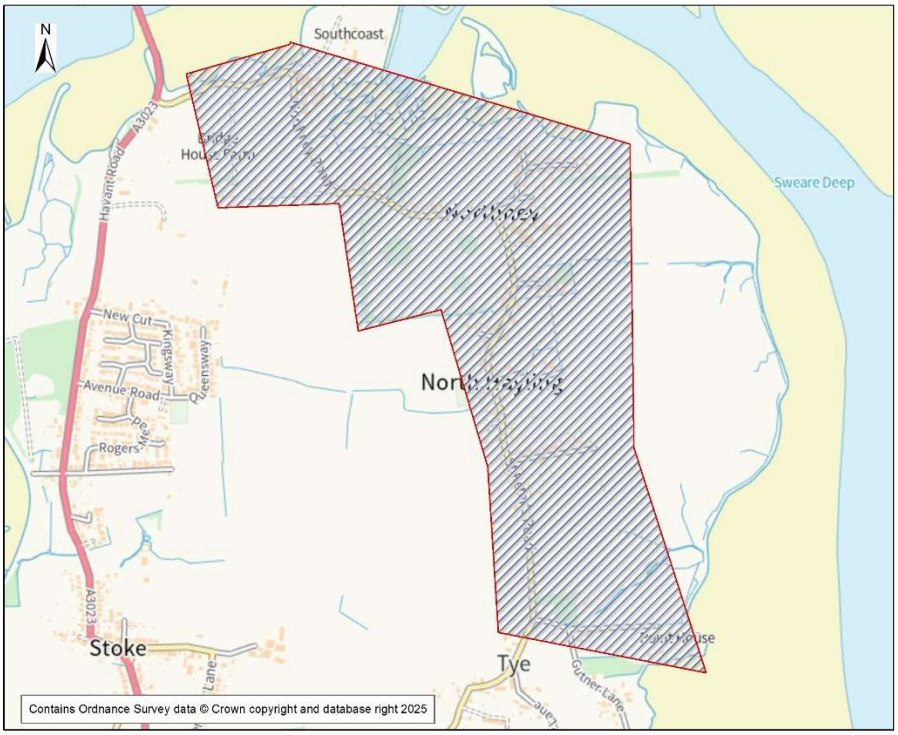


Figure 13: Approximate area of flooding – North Hayling

5.4.11. Firefighters responded to an incident at Oakley Copse / Copse Lane and successfully assisted two adults who were trapped in their vehicles submerged under 3 feet of water.

5.5. Langstone

5.5.1. The following map highlights the approximate areas of flooding in Langstone.

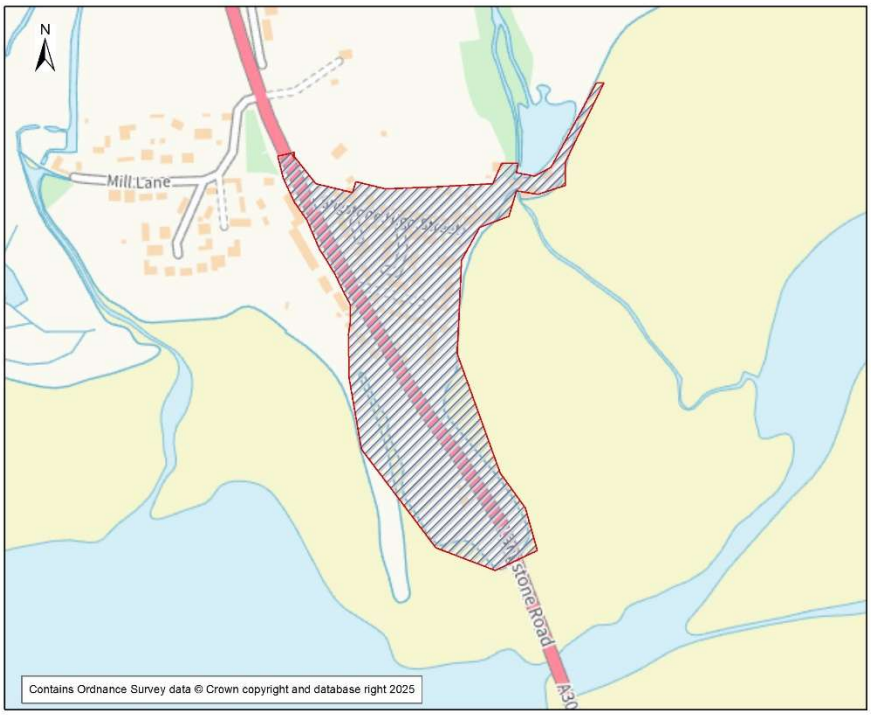


Figure 14: Approximate area of flooding - Langstone

5.5.2. This area is low lying with the local drainage networks reliant on outfalls into the sea. Given the high tides, there was overtopping of the sea defences but in addition, the drainage outfalls were tide locked and unable to drain.

5.5.3. Hampshire Highways only received one direct report of flooding on Langstone High Street, with sea water depositing sand into a private drain.

5.5.4. Subsequent discussions with the local resident group have identified flooding of over 40 properties along the High Street, Tower Gardens and Langstone Road from tidal sources with surface water networks surcharging and foul flooding along the High Street.

5.5.5. It is also known that the A3023 was flooded which blocked the sole access to Hayling Island.

5.5.6. Once tide levels dropped, the flooding dissipated with the clean-up and support operations being undertaken by the relevant agencies.

5.6. New Forest

5.6.1. The following map highlights the approximate areas of flooding in the New Forest area.

Figure 15: Approximate area of flooding – New Forest

5.6.2. Disruption to the train service between Lymington and Brockenhurst was reported due to debris on the track at Lymington Pier. This was quickly cleared with normal rail services resuming.

5.6.3. Flooding was forecast by the Environment Agency in Hythe and the Beaulieu Estuary. Flood gates were closed in Keyhaven and Lymington. The tide level measured in Lymington was third highest ever recorded. No reports of properties flooded by this event have been received. However, information sourced from local media identify Shore Road, Hythe and Hythe Marine Park were flooded with several premises inundated, including the Fire-Aid Academy.

5.6.4. Very little information is available on the impacts or actions within this area.

6. Summary of flooding causes

6.1.1. In April 2024, Storm Pierrick alongside spring tides created extreme coastal conditions across our region. The stormy conditions created an intense storm surge during a spring tide cycle when tides were higher than usual. This led to some locations across the region experiencing the highest tide levels ever recorded. In isolated areas, it led to property and infrastructure flooding.

6.1.2. Based on technical data provided to the LLFA, the effects of Storm Pierrick were that the still water level created a 1 in 75 year event. This led to the effects being a lot worse for low-lying sheltered harbour areas where still water level has the biggest impact.

6.1.3. The high tide reached 5.74m CD, which is the highest level recorded at one Portsmouth tide gauge since its operation in the 1960s. Alongside the high spring tides, the area received significant wave heights of 2.1m and a spike in peak wave height of 4.4m one hour after high tide, measured by the National Network of Regional Monitoring Programme's Hayling wave buoy.

6.1.4. There was also a short period of swell waves which peaked at 16 seconds, one hour after high tide and a wind speed that was recorded at 45 knots in Chichester Harbour.

6.1.5. It is considered that the primary source of flooding was directly related to tidal impacts although there were other elements that contributed to the severity and extent of flooding where outfalls were unable to drain and asset failures i.e. pumping stations.

7. Areas for Improvement

7.1.1. The rapidly changing weather conditions meant that there was significant uncertainty over the likely impacts of this event until hours before the flooding occurred. This made it extremely difficult to plan for an appropriate level of response. There is also concern about the frequency and content of flood warnings and the need to balance the number of communications so that their effectiveness is maximised. It was indicated that the large number of flood alerts during the winter / spring, mostly relating to fluvial or groundwater issues, may have meant that the tidal warnings were missed.

7.1.2. The extent of the impact and the time at which it occurred made communication more challenging and there appears to have been some mixed messaging such as rest centres being established but residents being advised to remain in their homes leading to confusion for residents. The ongoing co-ordination meetings aimed to resolve these matters to ensure there was clarity in relation to which authority was taking which actions with communications being shared between the relevant authorities. However, there are lessons that can be learnt in terms of clarity on actions being undertaken by each authority and how they are reported to others. This has already been fed back through the Local Resilience Forum.

7.1.3. Some of the flooding incidents were caused or exacerbated as a result of damaged assets. This highlights the importance of understanding maintenance responsibilities, ownership and ongoing monitoring of assets. This is an area of work recognised by all authorities and work is ongoing to ensure assets are logged with ownership / maintenance responsibilities as they are identified.

7.1.4. Engagement and joint working can also be improved ensuring that the respective bodies are aware of each other's activities prior, during and after an event. This also includes supporting residents in terms of understanding roles, responsibilities and levels of risk in their area, particularly given the complexity and number of agencies involved in flood risk management.

7.1.5. Reporting of flooding incidents is still sporadic. Despite requesting information from other agencies and ensuring that the routes to report flooding was publicised through social media, it was extremely difficult to obtain the full picture of the areas affected. Ad hoc information and reports were still being received more than 12 months after the storm event. This is an areas for discussions for the RMAs.

8. Conclusion

8.1.1. The tidal flooding in April 2024 is considered to be an extreme event with tide levels beyond that previously recorded.

8.1.2. The relevant agencies undertook those actions as set out in their respective plans and policies and within their jurisdictions, working together to manage the flood events.

8.1.3. The areas where it is considered that improvements could be made have been raised with the relevant bodies however these points are beyond the role of the LLFA so will be reliant on the relevant bodies to take any actions they consider appropriate.

8.1.4. The key area which falls within the LLFA remit relates to obtaining information on flooding within appropriate timeframes to allow for assessment. Given that this is reliant on others to provide information, the LLFA will continue to work with the different RMAs highlighting our requirements as well as utilising social media and other communication channels to obtain information.

8.1.5. While there are areas where improvements could be made in relation to communication and co-ordination, it is not considered that there was any failure in undertaking statutory roles by the agencies.

9. Further Information

The links below provide further information about the different roles and responsibilities in relation to flood risk management and other useful resources.

For further information in relation to Hampshire County Council's role in flood risk management, visit Flood and water management | Environment | Hampshire County Council.

To report flooding to the Hampshire County Council, visit Report flooding | Environment | Hampshire County Council
For information on the roles and responsibilities of the different agencies, how to protect yourself, the Community Flooding Toolkit and additional flood risk management resources visit Managing flood risk | Environment | Hampshire County Council

For information about costal matters including coastal schemes visit Home — Coastal Partners

To gain a better understanding of local risks and how they are managed visit Local Resilience Forum | Hampshire & Isle of Wight

To sign up for flood warnings visit Sign up for flood warnings - GOV.UK