

Southend-on-Sea Borough Council

Agenda
Item No.

Report of Corporate Director for Place
To
Cabinet
On
5 January 2016

Report prepared by: Richard Atkins
Coastal Defences Engineer

Flood Incident Report – 19th September 2014
Executive Councillor: Councillor Martin Terry

1. Purpose of Report

To advise Members of the completion of the formal report under Section 19 of the Flood and Water Management Act 2010 (the Act) into the flooding in Southend of 19th September 2014.

2. Recommendations

2.1 That Members note the report and approve its publication.

2.2 That Members approve the Action Plan as recommended in the report.

2.3 That members note the actions taken and work carried out to date to address or investigate identified issues in the highway drainage and sewerage network.

3. Background

3.1 Section 19 of the Act requires the authority, to the extent that it considers necessary or appropriate, to investigate flood incidents and publish the results of the investigation. This report relates to an event which occurred on 19th September 2014.

3.2 The event of 19th September 2014 consisted of a period of extremely intense rain which fell during the evening of that day. It was abnormal in that it was very concentrated within a relatively small “cell” and tracked north-west from the Thames Estuary over the central seafront and over Westcliff and Leigh. The track and intensity of the cell was recorded on radar by the Meteorological Office, and a snapshot of this recording is included in the Flood Incident Report (FIR). Although heavy rain also occurred in the eastern area of the town, this did not result in flooding. In contrast, below the storm cell, considerable flooding occurred, particularly in the central seafront area.

- 3.3 The intensity of the rainfall, was assessed as 1 in 23 years event at a rain gauge in Southchurch Park, outside the storm cell, and 1 in 293 years within it. This latter figure underlines the extreme nature of this rainfall. The wide difference between the assessments also underlines the very local nature of the storm cell.
- 3.4 Flood reports were received from residents in the following areas and streets:-
- Central Seafront area, including Marine Parade, Eastern Esplanade and Victoria Road
 - High Street area
 - Highlands Boulevard and Vardon Drive
 - Cricketfield Grove
 - Chalkwell area, including Chalkwell Avenue, Chalkwell Esplanade and The Ridgeway
 - Western Esplanade
 - Northumberland Crescent
 - Fairfax Drive
 - Central Southend and Victoria Avenue
 - Symons Avenue
 - Prince Avenue
 - Harp House roundabout
 - Woodgrange Drive
- 3.5 The report discusses the probable causes of the flooding area by area, and at each location, concludes that they consist of one or more of the following factors:-
- Overwhelming of sewer capacity by the intensity of the rain
 - Surcharging, that is water being forced out of the sewers through gullies, due to internal pressure in the pipes
 - Overland flow of water on open land towards low lying areas
 - Tide-locking of outfalls to sea (the peak of the rain occurred a few minutes before high tide)
 - Drowning of outfalls to watercourses
 - Blocked or broken drainage infrastructure (both the Council's and Anglian Water Services' (AWS))
 - Non-operating flap valves on sea outfalls (reduces the capacity of the drainage system to store water. These are AWS assets.)
- 3.6 The report highlights the following major contributory factors to the flooding on this occasion:-
1. The rainfall intensity was observed by radar to be above 64mm per hour within the storm cell. This is estimated by the Met Office to equate to a "1 in 293 year" probability event. It should be noted that, as a result of such an event, any drainage system, even one built to the most up-to-date standards, would fail, and flooding would result.
 2. The peak rainfall intensity occurred just before high tide on the evening of the 19th September, so the maximum inhibition to discharge of surface water would have been experienced at sea outfalls. This would have been most significant for the central seafront area.

- 3.7 The FIR sets out the work that has been done before and since the event by the Risk Management Authorities, and proposes an Action Plan for additional measures, including investigation of specific sites for creation of storm water retention areas. The items in the plan are already covered strategically in the Council's Local Flood Risk Management Strategy, which recently received Council approval. In particular, the report highlights the collaborative work being undertaken between the Council and Anglian Water to construct an integrated computer model capable of investigating the interactions between overland surface water flow and the underground drainage system. This will then be used to identify and test possible flood mitigation projects within each Critical Drainage Area. (Critical Drainage Areas are identified in the Surface Water Management Plan recently adopted by the Council).
- 3.8 The full report including the Executive Summary and the Action Plan is included as Appendix A.
- 3.9 A list of repair and upgrading work, carried out by the Council's highways team, correct at January 2015, and continually being expanded, is included at Appendix B.
- 3.10 Whilst this report focuses specifically on the flood incidents experienced as a result of the rainfall on the 19th September 2014 it is also important to be aware that other work to address flood risk is taking place across the borough including the central seafront area and Shoeburyness for example.

4. Corporate Implications

4.1 Contribution to Council's Vision & Corporate Priorities.

Safe Flooding can create substantial hazards for the public in their homes and in the street, from flowing and potentially deep water, in addition to risks to health considered below. This leads to the inevitable extensive deployment of emergency services personnel and equipment and of resources from the local authorities

Clean The immediate aftermath of surface water flooding is a residue of debris, contamination from overflowing sewers and quantities of household effects, damaged by the water, which unavoidably are deposited outside private residences until they can be disposed of.

Healthy Flooding creates risks to the health of affected residents due to direct contact of contaminated water with the person and with the fabric of their properties, and potential for injury due to falling, or impact of floating debris.

In addition it leads to high levels of stress which may have effects on mental health.

Prosperous Flooding on a regular basis would impact on the tourist offer of the town, by potentially discouraging visitors.

The likelihood of increasing insurance premiums for homes and businesses would also impact on financial well-being and profitability within the town, possibly leading to relocation of businesses.

Excellent The Council has legal obligations under the Act to lead on flood risk management, through local partnership with other designated Risk Management Authorities. Such partnership also offers the opportunity to transcend the limits of legal obligation and provide enhanced service standards for residents.

4.2 *Financial Implications*

The funding implications which are clear at present are limited to staff time in liaising with EA and AWS, and other existing revenue demands. In the future, applications for funding bids for capital projects may come forward. Members should note that funding for this area of work qualifies for EA grant-in-aid support on the same basis as coastal defence works.

4.3 *Legal Implications*

The production and publication of this report is a statutory duty under the Flood and Water Management Act 2010.

4.4 *People Implications*

It is anticipated that the on-going partnership working can be provided with existing staff resources.

4.5 *Property Implications*

A number of Council owned properties are located in flood vulnerable areas in addition to the many private residences and commercial premises. Any steps taken to mitigate the impacts of future flooding will therefore have beneficial effects for the Council as well as many private residents having property in the flood risk areas.

4.6 *Consultation*

As the report recommends actions by the EA and AWS as well as the Council, they have been consulted on its content.

4.7 *Equalities and Diversity Implications*

The risk to people from flooding is borne disproportionately by the elderly, and

people with health or mobility issues. The reduction of risk therefore provides enhanced benefit to these groups.

The communication of flood risk and people's response to it needs to be propagated to all residents and will require that consideration be given to providing translations for people whose first language is not English.

4.8 Risk Assessment

The risk of flooding within Southend, based on experience before and since August 2013, appears to have risen from very low to substantially higher than is indicated by official government statistics. Four events causing extensive flooding have been experienced within a year, two of which are classed as "Extreme events".

4.9 Community Safety Implications

While this report discharges a duty on the Council in legal terms, the working relationships being forged with partner organisations will lead to increased safety of people and resilience of property to the risks posed.

4.10 Environmental Impact

The negative impacts of flooding on the human environment have been commented on above. In addition, inundation of wildlife habitats by polluted water could have major impacts on species using those habitats, and any measures to improve their security will be of benefit to biodiversity in general.

5. Background Papers

None

6. Appendices

Appendix A: Southend-on-Sea 19th September 2014 Flood Investigation Report, AECOM

Appendix B: List of remedial works to Council drainage assets at January 2015.

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List of remedial works to Council drainage assets at January 2015

Drainage Remedial Works (Completed Between May 2014 & January 2015)

1. Kenilworth Gardens / Arundel Gardens junction (jetting of approx 5 storm lateral connections from new manhole Henderson & Taylor – Gary currently constructing)
 2. Marine Parade, Leigh-on-Sea – 5 Non Runner Road gullies to check and unblock if possible outside house nos. 11, 46, 53 and (55 Both sides).
 3. New Road, Leigh-on-Sea – 5 Non Runner gullies to check and unblock adjacent lighting col no. 8 (and opposite), corner of Uttons Ave and o/s house no. 3 and 14
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4. Fairfax Drive, Westcliff-on-Sea - 4 Non runner road gullies to check and unblock if possible outside house nos. 105, 239, 385 and adjacent lighting col 48
 5. Wellstead Gardens, Westcliff-on-Sea – 3 Non runner road gullies to check and unblock if possible outside house nos. 1, 14 and 21
 6. Manchester Drive, Leigh-on-Sea – 3 Non runner road gullies to check and unblock if possible opposite house no. 65, 405 and adjacent lighting col 19
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7. 7. High Street, Bell Wharf, Old Leigh Town – Investigate storm and foul drainage network to establish SBC's or Anglian Water Services assets and clean out foul pumping chamber at Bell Wharf and jet clear all road gulleys and blocked manhole chambers.
 8. 57, Eastern Esplanade, Southend-on-Sea – Jetting of Beany Block linear drainage system. (Kerb face inlet holes and blocked gulleys)
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9. Sutton Road, Southend-on-Sea (North of Eastern Avenue) – Investigate blocked gullies at :-
 - a. Gully opposite no. 519 Sutton Road.
 - b. Gully adjacent no. 525 Sutton Road.
 - c. Gully opposite 499 Sutton Road
 - d. Gullies adjacent lamp posts 81, 86, opp 89, opp 87, opp 86, opp 75, adj 74.
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10. Vardon Drive, Leigh-on-Sea – Investigate gullies along road particularly outside no. 59 and up to junction of Agnes Avenue for any blockages.
 11. Walker Drive, Leigh-on-Sea Investigate all road gullies between no. 57 and 71 for any blockages.
 12. Shepard Close, Eastwood – Investigate 2 blocked road gullies outside no. 9
 13. Prittlewell Chase – Investigate blocked road gully outside no. 282
 14. Symons Avenue, Eastwood – Investigate blocked road gully outside no. 20
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15. Maplin Way, Southend-on-Sea – Investigate gullies along road outside house nos. 131, 177 and 183 for any blockages.
 16. Appledore, Southend-on-Sea – Investigate 1 blocked road gully opposite lamp column no. 2
 17. Shoebury Common Road, Shoebury – Investigate blocked road gullies opposite lamp column nos. 3 and 6
 18. Ness Road, Shoebury – Investigate blocked road gullies outside house no. 115 and opposite lamp column 17
 19. Constable Way, Shoebury – Investigate blocked road gully adjacent lamp column 12
 20. Elm Road, Shoebury - Investigate blocked road gully opposite lamp column 10 and outside house no. 32
 21. Hermes Way, Shoebury – Investigate blocked gully adjacent lamp column 6
 22. Ashanti Close, Shoebury – Investigate blocked gully outside house no. 86
 23. Avon Way / Ness Road corner, Shoebury – Investigate blocked road gully
 24. Waterloo Road, Shoebury – Investigate blocked road gully outside house no. 35
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25. Crescent Road, Leigh-on-Sea – Investigate gullies along road outside house nos. 73, 74, 75 and 77 for any blockages.
 26. Sutton Road / Fossetts Way Southend-on-Sea – Investigate, clean out blocked Hydro-brake Chambers in grass verge area at south-east corner of junction.
 27. Glendale Gardens, Leigh-on-Sea – Investigate blocked road gully outside no. 92 (road gully grating has collapsed)
 28. Bonchurch Avenue, Leigh-on-Sea – Investigate blocked road gullies opposite no. 17 and 211 corner of Station Road junction

29. Ashes Road, Shoeburyness, Southend-on-Sea – Investigate blocked road gullies outside and opposite no. 36 and outside no. 5
30. Hadleigh Road, Leigh-on-Sea – Investigate road channel gully outside house no. 103 for any blockage and remove/repair drain as necessary.
31. Leigh View Drive, Leigh-on-Sea – Investigate, road channel gully outside house no. 37 for any blockage and remove/repair drain as necessary.
32. Essex Gardens, Leigh-on-Sea – Investigate blocked road gully outside no. 37 and repair drain if required.
33. Boundary Road, Leigh-on-Sea – Investigate blocked road gully outside no. 21 and repair if required.
34. Keith Way, Southend-on-Sea – Investigate blocked road gully outside no. 35 and repair if required.

35. West Road, Shoeburyness – Investigate road channel gully outside Chiquita Restaurant near junction with Seaview Road, for any blockage and remove/repair drain as necessary.

36. Campfield Road, Shoeburyness – Investigate, road channel gullies opposite LP17, adjacent LP4 and outside public toilets for any blockages and remove/repair drains as necessary.

37. Wakering Road, Shoeburyness – Investigate blocked road gullies outside house nos. 59, 199, 205, 223, opposite LP12 and repair drains if required.

38. Samuels Drive / Burlescombe Road, Thorpe Bay – Investigate road channel gullies around junction area, for any blockages and remove/repair drains as necessary.

39. Chadacre / Burlescombe Road, Thorpe Bay – Investigate, road channel gullies around junction area, for any blockages and remove/repair drains as necessary.

40. Jubilee Cottages, 1 – 3 Marine Parade, Southend-on-Sea – Investigate blocked road gullies in newly laid block paved carriageway and repair drains if required.

41. 60, 62, and 64 Ennismore Gardens, Southend-on-Sea - Investigate blocked road channel gullies in carriageway and repair drains if required.

42. 160 Thorpe Hall Avenue, Thorpe Bay - Investigate blocked road channel gully in carriageway and repair drain if required.

43. Northumberland Crescent / Huntingdon Road, Southend-on-Sea – Install double road channel gully at low point opposite junction area (Southern Road Channel) and connect to main storm drain.
 44. Fairfax Drive, between house nos. 141 and 165 - Shopping Layby area, subject to frequent flooding– Investigate blocked road gulleys and storm drains and repair / replace drains as necessary.
 45. Fairfax Drive / Westbourne Grove - subject to recent flooding– Investigate blocked road gulleys and storm drains and repair / replace drains as necessary.
 46. Foxwood Place, Leigh-on-Sea - subject to frequent flooding– Investigate blocked road gulleys and storm drains and repair / replace drains as necessary.
 47. Kenilworth Gardens, Leigh-on-Sea, from St Thomas Moore School through to Prittlewell Chase both eastbound and westbound c/w channel gullies – Investigate standing water/drainage issues and repair / replace drains as necessary.
 48. Sutton Road / Fossetts Way junction – Private drainage ditch - Highway storm drain inlet to ditch – Locate storm inlet drain and construct concrete bag headwall for ease of future access.
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49. Southchurch Boulevard, Southend-on-Sea – Investigate 9 blocked road gulleys and storm drains and repair / replace drains as necessary outside house numbers 51, 75, 86, 93, 96, 129, 139, 153 and outside School.
 50. Maplin Way, Thorpe Bay - Investigate 3 blocked road gulleys and storm drains and repair / replace drains as necessary outside house numbers 131, 177, and 183.
 51. Appledore, Thorpe Bay - Investigate 1 blocked road gully opposite LP2.
 52. Thorpe Hall Avenue - Investigate 1 blocked road gully outside 292.
 53. Sedgemoor, Thorpe Bay - Investigate 1 blocked road gully outside no. 1
 54. Shoebury Common Road - Investigate 2 blocked road gulleys opposite lighting column no. 3 and opposite lighting column no. 6
 55. Ness Road, Shoeburyness - Investigate 4 blocked road gulleys, two opposite lighting column nos. 16 and 17 and two adjacent lighting column nos. 19 and 28
 56. Elm Road, Shoeburyness - Investigate 2 blocked road gulleys, one opposite lighting column no. 10 and one outside house no. 32

57. Hermes Way, Shoeburyness - Investigate 1 blocked road gully adjacent lighting column no. 6

58. Fairhead Green Car Park, Eastern Esplanade, Southend-on-Sea – Investigate 2 blocked road gulleys, blocked linear drain and storm drain connections and repair / replace drains as necessary.

59. Eastern Esplanade - Investigate blocked ACO channel drain (Jet and clear) and outfall gully and repair / replace drains as necessary between no. 12 and 20 (In car parking layby area)

60. Glendale Gardens / Leighville Grove junction - Investigate 1 blocked road gully outside no. 92

61. Hillway, Leigh-on-Sea - Investigate 2 blocked road gullies outside no. 11 and 12.

62. Archer Close, Southend-on-Sea - Investigate 1 blocked road gully outside no. 21/22 at end of road in turning area.

63. Southchurch Road - Investigate 1 blocked road gully o/s Pawn Shop next to The Sutton Arms Pub

64. Woodlands Park, Leigh-on-Sea – Investigate 1 blocked road gully opposite no. 62

65. Ewan Close, Leigh-on-Sea - Investigate 1 blocked road gully opposite no. 12

66. Marshall Close, Leigh-on-Sea - Investigate 1 blocked road gully outside no. 15

67. Sutherland Boulevard, Leigh-on-Sea - Investigate 1 blocked road gully outside no. 55

68. Montague Avenue, Leigh-on-Sea - Investigate 1 blocked road gully outside no. 27

69. Agnes Avenue, Leigh-on-Sea - Investigate 2 blocked road gullies outside no. 7 and 34

70. Sterling Avenue, Leigh-on-Sea - Investigate 1 blocked road gully adjacent LP1

71. Vardon Avenue, Leigh-on-Sea - Investigate 1 blocked road gully outside no. 71

72. Henry Drive, Leigh-on-Sea - Investigate 3 blocked road gullies outside no. 43, 50 and side of 37

73. Tankerville Drive, Leigh-on-Sea - Investigate 2 blocked road gullies outside no. 12 and 108

74. Lime Avenue, Leigh-on-Sea - Investigate 1 blocked road gulley opposite St Margarets Church
75. Bonchurch Avenue, Leigh-on-Sea - Investigate 2 blocked road gullies outside no. 123 and opposite no. 17
76. Scarborough Drive, Leigh-on-Sea - Investigate 1 blocked road gulley outside no. 29
77. Glenbervie Drive, Leigh-on-Sea - Investigate 1 blocked road gulley outside no. 33
78. Manchester Drive, Leigh-on-Sea - Investigate 3 blocked road gullies opposite no. 65, 405 and adjacent LP19
79. Grange Park Drive, Leigh-on-Sea - Investigate 1 blocked road gulley outside no. 32
80. Wellstead Gardens, Westcliff-on-Sea - Investigate 3 blocked road gullies outside no. 1, 14 & 21
81. Southborough Drive, Westcliff-on-Sea - Investigate 1 blocked road gulley outside no. 29
82. Silversea Drive, Westcliff-on-Sea - Investigate 1 blocked road gulley outside no. 22
83. Kenilworth Gardens, Westcliff-on-Sea - Investigate 4 blocked road gullies outside no. 44, 90 105 and adjacent LP29
84. Fairfax Drive, Westcliff-on-Sea - Investigate 5 blocked road gullies outside no. 23, 105, 239, 385 and adjacent LP48
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85. London Road / Eastwood Road, Leigh-on-Sea – Investigate several blocked road gullies around the junction area.
86. Cashiobury Terrace, Southend-on-Sea - Investigate blocked road gully outside no. 8 next to tree (tree root issues experienced some years ago)
87. Crowstone Road, Southend-on-Sea - Investigate 1 blocked road gulley outside no. 106
88. Satanita Road, Westcliff-on-Sea - Investigate 1 blocked road gully outside no. 2
89. Valkyrie Road, Westcliff-on-Sea - Investigate 1 blocked road gulley adjacent LP1
90. Argyll Road, Westcliff-on-Sea - Investigate 1 blocked road gully outside no. 8

91. Anerley Road, Westcliff-on-Sea - Investigate 1 blocked road gully outside no. 18
92. Milton Road, Westcliff-on-Sea - Investigate 1 blocked road gully opposite LP7
93. Canewdon Road, Westcliff-on-Sea - Investigate 3 blocked road gullies adjacent LP20, LP2, and outside Sunray House.
94. Station Road, Westcliff-on-Sea - Investigate 1 blocked road gully opposite LP20
95. Grosvenor Road, Westcliff-on-Sea - Investigate 2 blocked road gullies outside Hotel and adjacent LP12
96. Chalkwell Esplanade, Westcliff-on-Sea - Investigate 1 blocked road gully outside no. 26
97. Western Esplanade, Westcliff-on-Sea - Investigate 6 blocked road gullies opposite bay 208, adjacent the Three Shells (2 no.), adjacent the Esplanade Public House, opposite LP76 and opposite bay 363

Installation of 7 new road gullies at the following known flood sites :-

98. Thorndon Park Drive low point outside house number 83 and 96. – to collect surface water not currently being intercepted.
99. Thorndon Park Close junction with Thorndon Park Drive (east side) – to intercept surface water from the eastern steeply sloping channel, before it accumulates at the low point outside no. 96.
100. Orsett Avenue – junction with Thorndon Park Drive east side - to intercept surface water from eastern steeply sloping channel before it accumulates at the low point outside no. 96.
101. Thorndon Park Drive – junction with Linksway south-west side – to intercept surface water flowing eastwards along TPD.