



INVESTIGATION INTO THE FLOODING AT LOAMPIT VALE ON 11 MAY 2016 UNDER SECTION 19 OF THE FLOOD AND WATER MANAGEMENT ACT 2010

1) Summary

- 1.1 Flooding in the Loampit Vale area near Lewisham Station in the early hours of the morning on 11 May 2016 resulted in the temporary closure of the A20 and the Docklands Light Railway (DLR) station.
- 1.2 This report sets out the findings of an investigation carried out by Lewisham Council into that flood, fulfilling the responsibility of a Local Lead Flood Authority under section 19 of the Flood and Water Management Act (2010).
- 1.3 The source of the water causing the flooding was localised to the Ravensbourne River in an area where infrastructure works are being carried out as part of the Lewisham Gateway development.
- 1.4 A number of local and regional agencies attended the scene as part of recovery operations. The flooding subsided later on the morning of the 11 May and the A20 and DLR subsequently reopened.
- 1.5 The Environment Agency attended the site and agreed actions with the onsite contractors to reduce the risk of debris affecting the flow of water in the Ravensbourne channel at the site.
- 1.6 The investigation concludes that the flood risk management authorities with relevant responsibilities have carried those responsibilities out. The investigation found that actions proposed are likely to reduce the risk of a similar event. This report concludes that further assessment be done in relation to surface water flooding risks in the area around the Ravensbourne at Lewisham Gateway.

2) Flood and Water Management Act duty to investigate flooding incidents

- 2.1 Lead Local Flood Authorities were established under the Flood Risk Regulations 2009 and the Flood and Water Management Act 2010. Section 19 of the 2010 Act identifies the powers and duties of Lead Local Flood Authorities in respect of flood investigations, as follows:

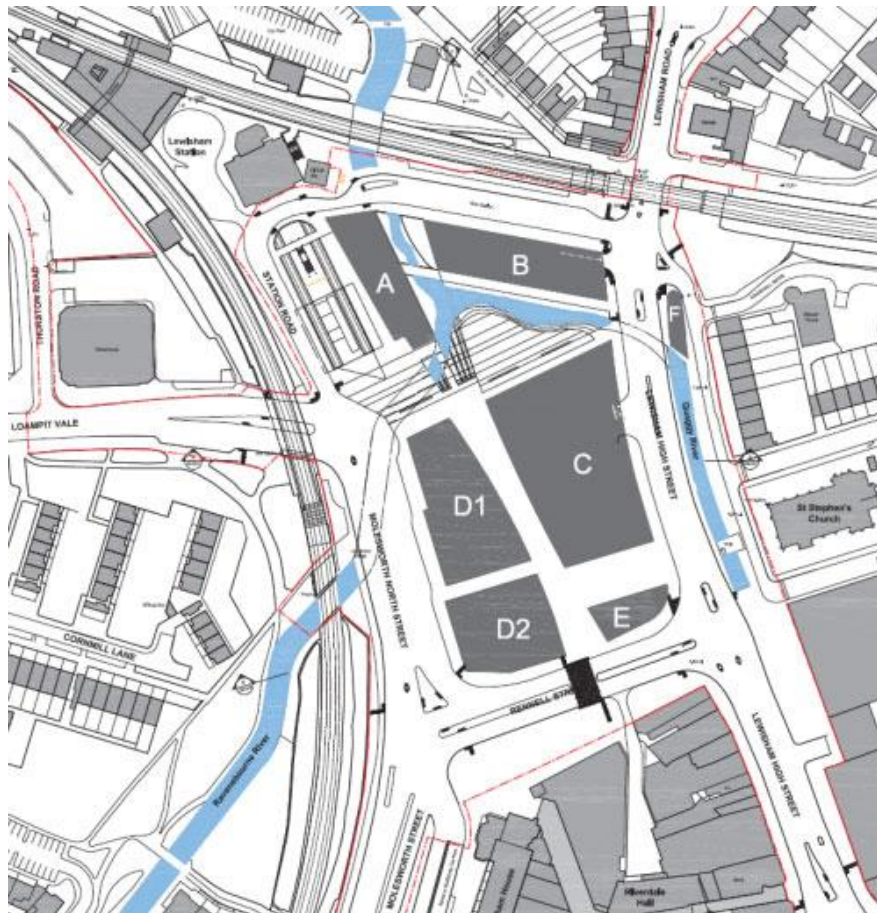
- (1) *On becoming aware of a flood in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate:*
 - (a) *which risk management authorities have relevant flood risk management functions, and*
 - (b) *whether each of those risk management authorities 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.*

- 2.2 Lewisham Council is the Lead Local Flood Authority for the borough of Lewisham. Given that the flood on the 11 May 2016 resulted in the temporary closure of major transport infrastructure in

the borough it was agreed at the Council's internal flooding group on the 17 May 2016 that an investigation under section 19 of the 2010 Act should be carried out. This report presents the findings of that investigation.

3) Background on the local area affected

- 3.1 Loampit Vale is the name of the A20, a Transport for London maintained highway, in the area off the roundabout at Lewisham Town Centre towards New Cross. At this point the A20 road runs under a railway line serving Lewisham Station and is a localised low-point prone to flooding.
- 3.2 Adjacent to Loampit Vale is the Lewisham Gateway development. The development involves the removal of the roundabout opposite Lewisham's railway and DLR stations and creation of a new road layout. The station infrastructure is owned and maintained by CGL Rail, the Concessionaire for the DLR Lewisham Extension.
- 3.3 The Lewisham Gateway development is expected to deliver up to 800 homes, shops, restaurants, bars and cafes and leisure facilities. The site is also where the Ravensbourne and Quaggy rivers converge, which is intended to be part of a new open space: Confluence Place. The diagram below (taken from the Lewisham Council website <https://lewisham.gov.uk/inmyarea/regeneration/lewishamtowncentre/Pages/Lewisham-Gateway.aspx>) shows the Lewisham Gateway site, Loampit Vale and the rivers Ravensbourne and Quaggy.
- 3.4 Muse Developments are leading on the overall development in partnership with Lewisham Council. Volker Fitzpatrick are the contractor delivering infrastructure for the development including highways, river works and services. Sisk are the contractor delivering the housing. The works are programmed as part of a phased development with the contractors working in separate compounds. The bulk of Volker Fitzpatrick's work on infrastructure is expected to complete in summer 2016.



- 3.5 A Flood Defence Consent agreed with the Environment Agency and Volker Fitzpatrick is in place in respect of temporary diversion of the Ravensbourne to facilitate the permanent realignment of the river in the location of Loampit Vale / the A20. At the time of the incident on the 11 May 2016 a temporary culvert was in place at the north end of the Volkerfitzpatrick site linking the existing culvert from Molesworth Road to the Sisk site.
- 3.6 On the 23 November 2014 the Loampit Vale area was flooded following heavy rainfall. A report into this incident by Volker Fitzpatrick described the event as follows: *“The Ravensbourne River flooded upstream of the VFL site at Lewisham. The river water found its way to the lowest point which was Loampit Vale Road. This caused the road to be closed to traffic at 11:00 while the water was pumped away. The road was finally opened at 16:30pm”*.
- 3.7 Met Office rainfall data and Environment Agency telemetry of the flow of the Ravensbourne recorded at the time of the 2014 event indicated that 29.2mm of rain fell 12 hours prior to the flooding with 8.72m³ of flow recorded at Catford monitoring station.
- 3.8 Actions identified by Volker Fitzpatrick in their investigation into the 2014 flood include:
- Removal of trash screens on the Ravensbourne as they have a tendency to block up and cause further obstructions in the river
 - Quaggy River trash screen to be cleaned daily
 - Additional pumps deployed onsite
 - 1,000 sand bags filled and onsite ready to deploy with an order of 10,000 sand bags if required

4) 11 May 2016 flooding at Loampit Vale

- 4.1 Between 2pm on 10th May 2016 and 2am on 11th May 2016 the Environment Agency recorded the following rainfall in the area:
- New Addington 10.2mm
 - Beckenham 13.5mm
 - Deptford 14.4mm
 - Orpington 12.0mm
 - Mitcham 11.0mm
 - Norwood 13.9mm
- 4.2 The Environment Agency noted that it was possible that higher totals were experienced in the immediate vicinity of the incident from localised thunderstorms.
- 4.3 CCTV footage at 0150hrs shows water collecting in the low point in Loampit Vale under the railway bridge. By approximately 0215hrs the A20 was impassable due to the depth of the flood water and was closed to traffic by the police. A car was observed to have stopped in the water, with the occupant leaving the vehicle stranded.
- 4.4 At 0200hrs maintenance staff working for CGL Rail at Lewisham DLR station reported water flooding over the high point of the pedestrian access to the DLR station and flowing on to the platforms and tracks. At 0203hrs the duty CGL Rail Systems Technician implemented the CGL Rail Emergency Management processes, and assumed 'Bronze Control'. At 0220hrs the Emergency was reported by CGL Rail to the DLR Control Centre at Beckton, whereupon the DLR Duty Manager assumed 'Silver Control'. At 0225hrs officers of the British Transport Police, the London Fire and Emergency Planning Authority (LFEPA) and the Metropolitan Police, were on site. CGL Rail staff, supported by the LFEPA, commenced DLR operational recovery actions at the station at 0245hrs.
- 4.5 The Council's on-call officer for emergency response was contacted at 0240hrs with initial reports of flooding. At 0435hrs the Council Local Authority Liaison Officer (LALO) was asked to attend on-scene to assist, arriving at 0515hrs. There was no requirement to evacuate residents. Water reached the edge of the Glass Mill Leisure centre but did not enter the site.
- 4.6 Water was witnessed coming from two locations before collecting at Loampit Vale. The Ravensbourne over-topped the river wall upstream of the Gateway development and, downstream of this, water was coming from the location of the temporary works ditch at the interface of the Volkerfitpatrick and Sisk sites.
- 4.7 TfL dispatched clean up gully suckers. Fire Brigade units as well as DLR teams were on site pumping out water.
- 4.8 The flood water subsided over the next couple of hours. The A20 re-opened at 0800hrs. Power was restored to the DLR station at 08:10am. A DLR test train arrived at Lewisham station at 0825hrs and following which the station was opened for operational use.
- 4.9 The Environment Agency has a river flow gauge upstream of the site at Catford. The maximum flow recorded at Catford on the night of 10/11th May was 10m³/s. Flows on the Ravensbourne have exceeded 10m³/s on three other occasions in 2016, including 12.5m³/s in Feb and 11m³/s in the week beginning the 30th May. The Environment Agency was not aware of any river banks

flooding from these events, so it is reasonable to say that the flows on the 11th May were unexceptional at Catford although stormwater discharges between Catford and Lewisham could have resulted in higher flows at the site. Site inspections the following day found debris in the watercourse and this debris, together with higher flows in the Ravensbourne and localised surface water is likely to have caused water in the Ravensbourne to back up from just downstream (i.e. north) of Loampit Vale breaching the temporary ditch and submerging the culvert on the south side of Molesworth Street.

5) Flood risk management authority functions in relation to the 11 May event

Lewisham Council

5.1 As a Lead Local Flood Authority Lewisham Council has a responsibility to:

- develop, apply, maintain and monitor strategies for local flood risk management in their areas
- maintain a register of structures and features that are likely to have a significant effect on flood risk in their area and designate assets if appropriate
- prepare and maintain a preliminary flood risk assessment, flood hazard maps, flood risk maps and flood risk management plans
- take the lead on preparing surface water management plans

5.2 Of those flood risk management functions relevant to the 11th May incident the incident has been recorded and a flood investigation, as set out in section 19 of the Flood and Water Management Act (2010) conducted.

5.3 As a Highway Authority Lewisham Council is responsible for providing and managing highway drainage and must work within the Environment Agency's national Flood and Coastal Erosion Risk Management strategy and the lead local flood authority's local flood risk management strategy when:

- carrying out highway drainage works
- filling in roadside ditches
- diverting or carrying out works on part of a watercourse

5.4 The A20 at Loampit Vale is a red route and so the highway authority is Transport for London. Officers from the Council's highways engineering team visited the site following the incident to assess the impact in relation to Council managed highways in the vicinity but no further action was deemed necessary.

Environment Agency

5.5 As a risk management authority, the Environment Agency:

- provides and operates flood warning systems
- carries out works to manage flood risk from the sea and main rivers
- carries out works in estuaries to secure adequate outfalls for main rivers
- carries out surveys to inform FCERM works
- issues consent for works on or near main rivers, and works affecting watercourses, flood and sea defences and other structures protected by its byelaws
- advises planning authorities on the implications of development proposals on flood risk

- designates structures and features of the environment that affect flood or coastal erosion risk
- has the right to enter private land to carry out FCERM works

5.6 Of those flood risk management functions relevant to the 11th May incident:

- No reports of flooding were received by the Environment Agency at the time of the incident and flow telemetry did not indicate that breaches of river banks were expected. As a result no EA resources were deployed to the area at the time of the incident.
- The Environment Agency has agreed flood defence consents with Volker Fitzpatrick for the permanent and temporary works affecting the Ravensbourne River in the location of the incident.
- The Environment Agency has stated that it has attended site at least 13 times in the last two years to review the implementation of the works, discuss future phases and check and ensure compliance with the issued consents.
- The Environment Agency has advised and worked with Lewisham on the design of the permanent works through the planning process.
- The Environment Agency has contributed to the post-incident investigation conducted by the Council.

Transport for London

5.7 As a Highway Authority TfL is responsible for providing and managing highway drainage on red routes as well as to work within the Environment Agency's national Flood and Coastal Erosion Risk Management strategy and the lead local flood authority's local flood risk management strategy when:

- carrying out highway drainage works
- filling in roadside ditches
- diverting or carrying out works on part of a watercourse

5.8 TfL responded to the flood by (i) setting up traffic management measures and diversions to reduce traffic congestion and (ii) assisting with safeguarding measures to prevent water affecting properties and the station including deploying gully suckers to the area

Thames Water

5.9 Water and sewerage companies are responsible for managing the risks of flooding from surface water and foul or combined sewer systems. Thames Water has confirmed that they received no notification of flooding risk in relation to sewer systems and no actions were taken.

6) Actions following the incident

6.1 Since the 11th May incident the Environment Agency made a site visit on the 13th May. Prior to the visit Volker Fitzpatrick had already removed a sheet piled upstand in the bed of the river at the downstream end of their site where debris had accumulated. The Environment Agency requested that Volker Fitzpatrick pumps, while not in use, be removed from the channel as there was some evidence that debris had caught on them.

- 6.2 The Environment Agency sought and received confirmation from SISK that they have nothing in the channel of the river except the temporary bridges spanning it. The Environment Agency has also liaised with SISK in relation to debris clearance regimes for their site upstream.
- 6.3 The importance of debris maintenance has been re-emphasised to onsite staff at SISK and Volker Fitzpatrick and out of hours contact details shared across both organisations.
- 6.4 The Environment Agency has initiated an internal project to improve gauging and telemetry in Lewisham to identify opportunities to provide a more locally focussed flood warning and response service.
- 6.5 Volker Fitzpatrick working with SISK have undertaken to review levels of the river bed across through the temporary ditch linking the new culverts to the north of the site to clear any build up downstream of the site that may constrict flow of water during future similar events.
- 6.6 Lewisham Council's Emergency Plan has been reviewed and will be updated to include guidance developed in conjunction with Highways for on-call emergency response staff to support a coordinated response to similar incidents in the future.
- 6.7 In addition to the Flood Risk Management Functions outlined above the Civil Contingencies Act (2004) requires all Category 1 responders to put procedures in place to record and capture lessons emerging. Lewisham Council officers held an internal debrief of the Council's response to the incident and discussed the incident at the Council's internal flooding group meeting on the 17 May. The incident and response from a Civil Contingencies perspective was discussed at the Borough Resilience Forum on 15 June and meeting with relevant stakeholders on 17 June.

7) Conclusion

- 7.1 An investigation under Section 19 of the Flood and Water Management Act (2010) "*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.
- 7.2 The narrative above is intended to set out the relevant risk management authorities, the flood risk management functions of those authorities and the actions taken in relation to those functions in response to the flooding at Loampit Vale on the 11 May 2016.
- 7.3 It is concluded from the investigation that for those flood risk management functions that were relevant the appropriate risk management authorities did respond as required. It is further concluded that the actions taken immediately after the incident and those proposed by the Environment Agency and the onsite contractors are likely to reduce the risk of similar events occurring, although while work continues at the Lewisham Gateway site there remains a risk that this could increase vulnerability to rainfall events similar to that experienced on the 11 May.
- 7.4 It is noted that completion of the infrastructure works at the Lewisham Gateway site are expected to result in significantly increased capacity within the Ravensbourne at this point and it is in all parties interests that these works are concluded as soon as possible to reduce the risk of further flooding events.

- 7.5 As the works at the Lewisham Gateway site progress the Environment Agency will receive proposals from SISK for new flood defence consents as they move into the area currently occupied by Volker Fitzpatrick. It will be important that these consents emphasise the importance attached to debris management. It will also be important that SISK share relevant details on the timetable with partners including the Environment Agency, the Council, CGL rail and others as appropriate.
- 7.6 All stakeholders may wish to consider additional upstream trash screens to mitigate against further debris flowing into the area. This will need to minimise the impact on upstream areas including the Glass Mill Leisure Centre.
- 7.7 Further flood mitigation works are planned as part of the Lewisham and Catford Flood Alleviation scheme being delivered by the Environment Agency in partnership with Lewisham Council. It is recommended that further analysis is undertaken into potential mitigation works for surface water flooding in the Lewisham Gateway and Loampit Vale areas to identify whether there are any opportunities on the back of existing plans to address surface water flooding risks.