

# Flood Investigation Report Wimborne Town Centre Storm of 16<sup>th</sup> September 2016



Report date – June 2017



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## 1. Introduction

The Flood Risk Regulations 2009 and the Flood and Water Management Act 2010 (the Act) have established unitary and upper tier local authorities as the Lead Local Flood Authority (LLFA) for their area. This has placed a number of responsibilities on the LLFA in relation to flood risk management and in particular Section 19 of the Act which states:

**Flood and Water Management Act 2010: Section 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.

When considering if it is necessary or appropriate to investigate a flood event Dorset County Council (DCC) will review the severity of the incident, the number of properties affected and the frequency of such an occurrence. Dorset's Local Flood Risk Management Strategy clearly sets out the criteria to be used when considering a Flood Investigation Report.

The town centre locations in this report meet the significance threshold of 2 or more commercial properties that experienced internal property flooding.

This report has been produced to comply with legislation and to determine the main causes of the flooding. Each affected area will have a number of recommended actions to be taken forward by the relevant Risk Management Authorities (RMA's).



## 2. Risk Management Authority Responsibilities

The general RMA responsibilities in relation to flood risk and surface water management are outlined below:

- **The Environment Agency (EA)** is responsible for managing the risk from the sea, main rivers and reservoirs and has a strategic overview role for all flood risk management, making it a key local partner for DCC, especially when managing the risk from combined sources and in the event of a large flood incident. The EA also provides a flood warning service throughout England and Wales in areas at risk of flooding from rivers or the sea.
- **Dorset County Council as the Lead Local Flood Authority (DCC LLFA)** is responsible for the management of the flood risk from ordinary watercourses, groundwater and surface water runoff. It is also responsible for consenting to works on and enforcing the removal of any unlawful structure or obstruction within ordinary watercourses. DCC must also prepare a Local Flood Risk Management Strategy, maintain a record of flood risk assets and undertake investigations. It is also a statutory planning consultee for the management of surface water drainage to major developments (ten or more houses and commercial development of floor space greater than 1000m<sup>2</sup> or sites larger than 1Ha)
- **Local District Councils** are classified as land drainage authorities with discretionary powers under the Land Drainage Act 1991, such as the implementation and maintenance of flood defences on ordinary watercourses. They also have powers under the Public Health Act 1936 to ensure the removal of any blockage within an ordinary watercourse that is considered a nuisance. As a planning authority they are responsible for the preparation of development plans, making decisions based on planning policy and for consulting the LLFA for surface water management on all major applications.
- **Dorset County Council as the Highway Authority (DCC HA)** maintains the highway drainage system to reduce the amount of standing water on the highway. This is achieved by limiting the water on the roads and ensuring that they are kept clear of surface water; including the maintenance of highway gullies and culverts.
- **Water and Sewerage Companies (Wessex Water)** Water and Sewerage Companies are responsible for managing the risks of flooding from surface water and foul or combined sewer systems providing drainage from buildings and yards.
- **Highways England (HE)** is responsible for managing, maintaining and improving the motorways and trunk roads across England and any associated drainage and flood risk.



- **Land/Property Owners** that have a watercourse in or adjacent to their land have riparian responsibilities on that watercourse. This means the landowner must:
- Let water flow through their land without any obstruction, pollution or diversion which affects the rights of others.
  - Accept flood flows through their land, even if these are caused by inadequate capacity upstream.
  - Keep the banks clear of anything that could cause an obstruction and increase flood risk, either on their land or downstream if it is washed away.
  - Maintain the bed and banks of the watercourse and the trees and shrubs growing on the banks and should also clear any litter or debris from the channel and banks, even if it did not come from their land and to keep any structures, such as culverts, trash screens and debris grills, weirs and mill gates, clear of debris.

**The LLFA must also take an overseeing role to ensure that all flood risk is being managed appropriately. All RMAs have a duty to co-operate and to share information in relation to their flood risk management functions.**



### 3. Study Area Description

Wimborne is a market town in East Dorset situated at the confluence of the River Allen and the River Stour. The town centre area experienced a storm with heavy rainfall in the early hours of 16<sup>th</sup> September 2016. The area of the town centre most affected by surface water flooding was between The Square to the north to East Street in the south and from High Street to the west to the River Allen in the east.

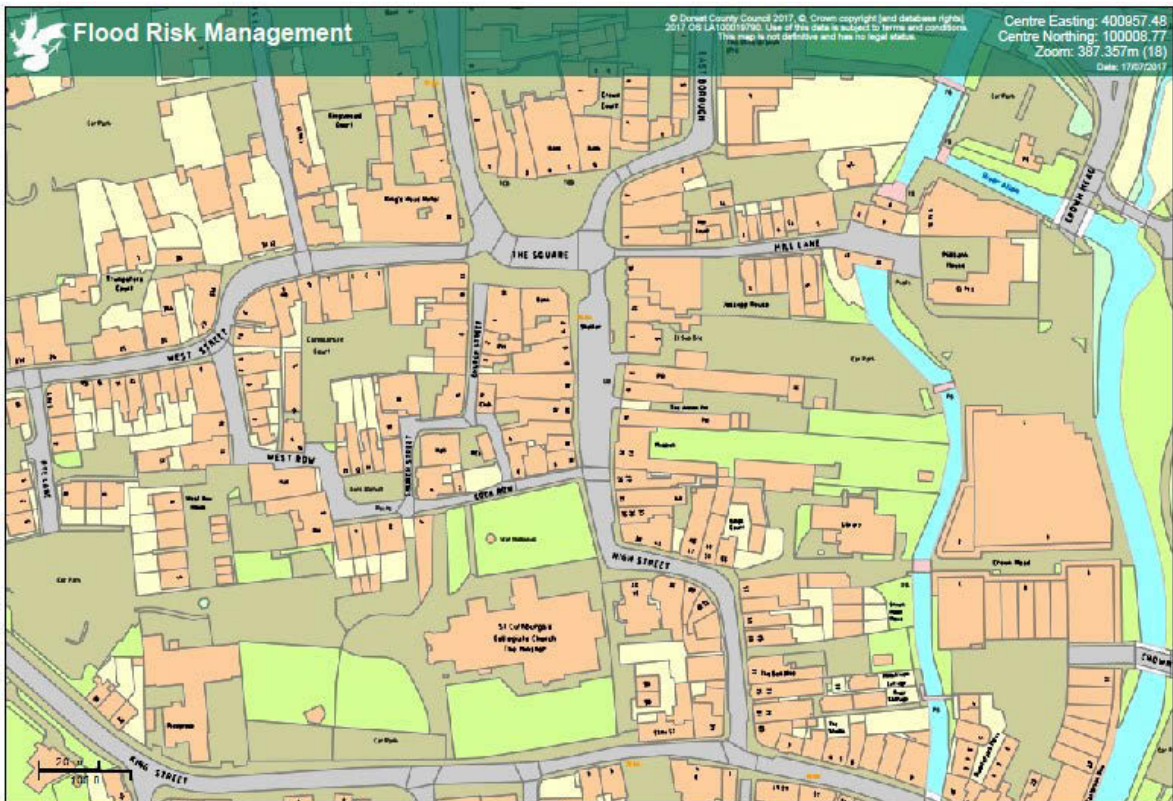


Figure 1- Wimborne Town Centre

#### 3.1 Surface Water Drainage

Generally in Wimborne surface water was drained via an old combined drainage system until foul sewers were installed sometime in the 1950's and the original sewers were retained for surface water only.

The surface water drainage system in Wimborne town centre extends from West Borough and East Borough to the River Allen. The surface water sewer in West Borough falls towards The Square and then turns at right angles as it enters The Square under the main

pedestrian area. The surface water sewer in East Borough connects into this system under the footpath on the eastern side of The Square. The surface water system then falls in a southerly direction along High Street with an overflow connection into the surface water system in Mill Lane which has an outfall into the River Allen to the south of the bridge.



**Figure 2- Surface Water and Foul Sewage Systems Drainage Systems**

The surface water system continues to fall in a southerly direction along the High Street then turns eastward under the paved area in front of The Library and has an outfall into the River Allen immediately to the north of the footbridge.

### 3.2 Highway Drainage

As part of the Wimborne Square Enhancement Scheme a slot highway drainage system was installed in the pedestrian area at the northern end of The Square and the widened footpaths and connected into the existing Wessex Water surface water drainage system.

The slot drain incorporates online gullies and silt traps to prevent the underlying channel from blocking. The gullies installed in this scheme either replaced or increased the original number of road and footpath gullies. The scheme ended at the access way between numbers 1 and 7 High Street. In the event that all slot drains surcharged or became blocked the pavement levels were designed to allow the excess flow along the line of the slot drain.



### 3.3 Surface Water Flood Risk

The surface water flood risk maps on Dorset Explorer give an indication of where surface water might be expected to flow or pond during heavy rainfall experienced in various magnitudes of storm.

The surface water flood risk maps indicate a prevailing surface water flood risk for the town centre area. There is a risk of surface water flooding along the southern end of High Street into East Street during the 1 in 30 year rainfall event. The risk of surface water flooding extends from West Borough, across The Square, down High Street and along East Street during the 1 in 100 year rainfall event.



**Figure 4 – Surface Water Flood Risk Areas for the 1 in 30 year and the 1 in 100 year events.**

(Darker blue is the 1 in 30 year flood risk area, Lighter blue is the 1 in 100 year flood risk area)





## 4. Incident Summary

Following a heavy storm in the early hours of 16<sup>th</sup> September 2016 reports were received from three commercial properties in Wimborne Town Centre area located in The Square, High Street and East Street to record both internal and external flooding.

**Table 1 Summary of properties flooded, (Based on approximate numbers reported and brought to our attention during this investigation).**

Location	Number of properties flooded internally	Incident Date	Main source(s) of flooding during incident
<b>The Square, Wimborne</b>	1 commercial property reported internal flooding and indicated that a further two commercial properties had also been affected.	Early hours of 16 <sup>th</sup> September 2016	Surface water
<b>High Street, Wimborne</b>	1 commercial property reported internal flooding and indicated that a further three commercial properties had also been affected	Early hours of 16 <sup>th</sup> September 2016	Surface water
<b>East Street, Wimborne</b>	1 commercial property reported internal flooding and indicated that a further three commercial properties had also been affected	Early hours of 16 <sup>th</sup> September 2016	Surface water

**NB:** It should be noted that this report is based only on the information brought to the attention of DCC, it does not guarantee an exact list of affected properties during this reported event.

### 4.1 Rainfall data

Wessex Water rainfall data obtained by radar indicates that 27mm of rain fell during a 12 hour period with a maximum intensity of 41mm/hour. This equates to a return period of 10

years based on this radar information, but it should be noted that the radar rainfall data is not calibrated and as such should be treated with caution.

Wessex Water’s rain gauge located in Alderney, some 6km to the south east, recorded a total of 31mm of rainfall on the 15<sup>th</sup> September 2016.

Rainfall data obtained from a private weather station website for Corfe Mullen (some 3 miles to the south west) indicated that the highest rainfall was 87.6mm/hour at 01:53 on 16<sup>th</sup> September 2016, the highest hourly rainfall total was 26.4mm to 02:08 on 16<sup>th</sup> September 2016 and the highest daily rainfall total was 28.0mm on 16<sup>th</sup> September 2016.

## 4.2 Locations Affected

The Wimborne Town Centre area experienced a heavy storm during the early hours of 16<sup>th</sup> September 2016 and during the next few days reports of commercial properties suffering internal flooding were received. Reports were received from properties in The Square, High Street and East Street.

Further information on each of the Wimborne Town Centre locations affected by the storm on 16<sup>th</sup> September 2016 and any previous events brought to our attention are discussed in more detail below.

### 4.2.1 The Square

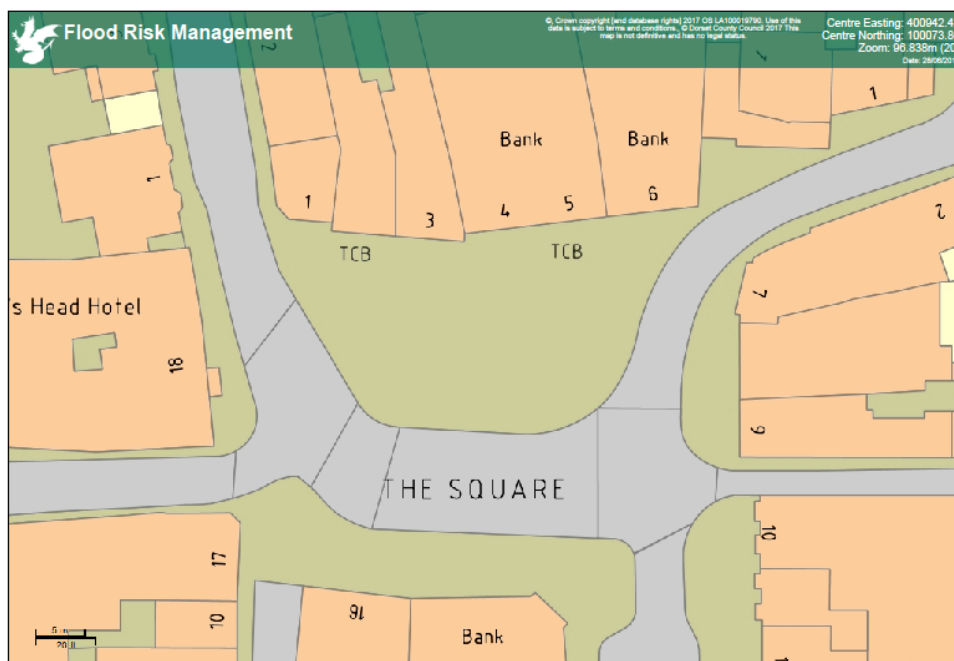


Figure 5 – The Square, Wimborne



A commercial property located on the eastern side of The Square reported internal flooding from surface water run-off from the public highway during the storm in the early hours of 16<sup>th</sup> September 2016. Surface water run-off from the road and pavement collected immediately in front of the commercial property at the location of “slot” highway drainage that had been installed as part of pedestrianisation works carried out some 5 to 6 years previously. The water could not drain quickly enough which resulted in the surface water entering the commercial property.

The “slot” highway drainage system was inspected during the following days and was found to be in need of jetting. This was subsequently carried out throughout The Square and High Street. The surface water manholes were also inspected and found to be clear.

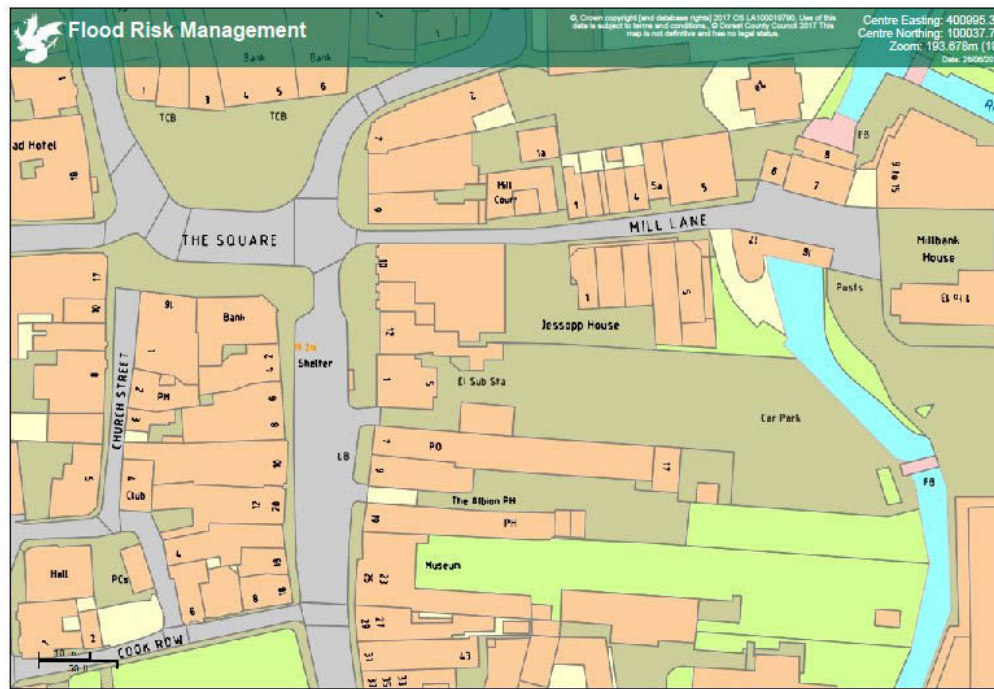
The proprietors have advised that on a previous occasion (thought to be in August 2011) surface water run-off had collected at the highway drainage locations in the West Borough and East Borough legs of The Square as well as in the pavement area on the western side of The Square. Vehicular movement through the standing water caused bow waves across The Square in an easterly direction. This combined with the water already on the pavement and entered the same commercial property.

The Wimborne Square Enhancement Scheme was constructed in 2010/2011 and included a main pedestrian area on the north side of The Square with widened pavements elsewhere in The Square. A Gatic Slotdrain Paveslot System of highway drainage was installed in the pedestrian area and the widened footpaths and connected into the existing Wessex Water surface water drainage system as part of this scheme.

East Dorset District Council have advised that the slot highway drainage system did suffer from blockages most likely caused by the frequency of events held in the Square leading to the slot being blocked with debris. The slot drain incorporates online gullies and silt traps which should prevent the underlying channel from blocking. In the event that all slot drains surcharged or blocked the footpath levels were designed to pass excess flows along the line of the slot drainage.

East Dorset District Council records indicate that flooding events have occurred in September 2006, November 2007, August 2011 and July 2014. Flooding prior to the earliest date given possibly went unrecorded.

## 4.2.2 High Street



**Figure 6 – High Street, Wimborne**

A commercial property on the eastern side of High Street reported internal flooding from the front and side of the property during the storm in the early hours of 16<sup>th</sup> September 2016. Rainfall run-off collected immediately in front of the property and entered the property when it reached sufficient depth. In addition it is thought that surface water run-off from the car park to the rear of the property collected along the northern wall adjacent to the access way and then entered through the side of the premises.

The “slot” highway drainage system to the north of this commercial property was inspected during the following days and was found to be in need of jetting. This was subsequently carried out throughout The Square and High Street. The surface water manholes were also inspected and found to be clear.

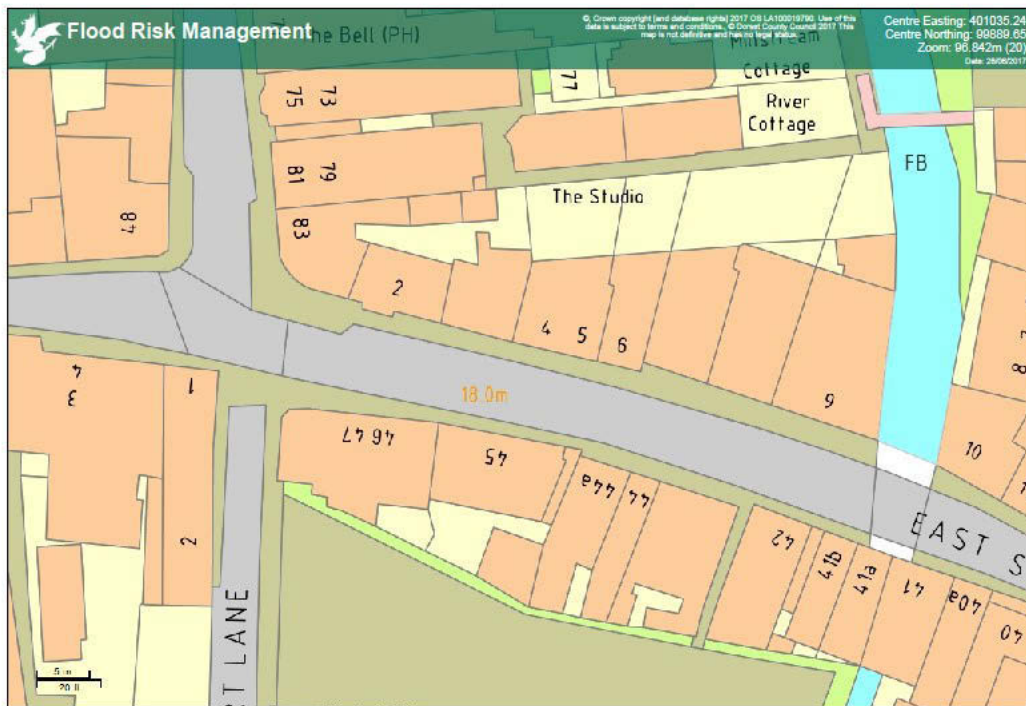
The Wimborne Square Enhancement Scheme constructed in 2010/2011 included widened pavements along the eastern side of High Street. As in The Square a Gatic Slotdrain Paveslot System of highway drainage was installed in the pavement and connected into the existing Wessex Water surface water drainage system. The works finished at the access way alongside this commercial property with the footpath entrance being paved. In the event that all slot drains surcharged or blocked the footpath levels



were designed to pass excess flows along the line of the slot drain and discharge into the newly paved footpath area.

East Dorset District Council records indicate that flooding events occurred in September 2006, November 2007, August 2011 and July 2014. Flooding prior to the earliest date given possibly went unrecorded.

### 4.2.3 East Street



**Figure 7 – East Street, Wimborne**

A commercial property on the northern side of East Street, Wimborne reported that they and neighbouring premises either side suffered internal flooding via the front of the property from surface water flooding to the public highway. There was discharge of rainfall run-off from both directions along East Street which all collected at the low point outside of 3 to 5 East Street entering the affected properties. As the rainfall receded the water drained away via the highway/surface water drainage systems.

The proprietors reported that highway flooding occurs regularly during intense rainfall and it is thought likely to have occurred during the events / incidents listed in the previous sections.



## 5. Quick Wins and On-going Investigation

As part of the on-going investigation a number of quick win measures were identified to increase the understanding of possible flooding mechanisms and that could be implemented quickly by the RMA's or land owners within a short timescale and at relatively low cost. These have already been completed as this report has been progressed and are summarised in the table below:

**Table 2 Quick Win Schemes for Wimborne Town Centre**

Quick wins
<ul style="list-style-type: none"> <li>Dorset County Council Highways to review their highway drainage infrastructure in affected areas within the Wimborne Town Centre area to identify how this is connected into the surface water drainage network. This will increase the understanding of the surface water flood risk in the town centre area.</li> </ul>
<ul style="list-style-type: none"> <li>Dorset County Council Highways to undertake routine clearance of the highway drainage infrastructure to ensure that any possible blockages are removed to reduce the surface water flood risk.</li> </ul>
<ul style="list-style-type: none"> <li>Dorset County Council Highways and East Dorset District Council to supply as-built records for the Wimborne Square Enhancement Scheme. This will increase the understanding of the surface water flood risk in the town centre area.</li> </ul>
<ul style="list-style-type: none"> <li>Wessex Water to review the surface water drainage infrastructure in affected areas within the Wimborne Town Centre area and to review any previous reports of surface water flooding that have been received.</li> </ul>
<ul style="list-style-type: none"> <li>East Dorset District Council to supply historical information with regards to any previous flooding incidents to increase the understanding of surface water flood risk in the town centre area.</li> </ul>



## 6. Recommended Actions

As a result of this investigation report, recommendations have been made for actions to be taken in the Wimborne Town Centre area. These are either as a result of initial site or desktop investigations, or the continuation of works or investigations already in progress.

**Table 3 Recommended Actions for the Wimborne Town Centre Area**

Action By	Recommended Action	How
<b>General Actions</b>		
<b>DCC Highways</b>	To ensure efficient operation of highway drains and culverts.	Review highway gullies and consider whether any maintenance issues require attention. To investigate increasing the frequency for routine maintenance.
<b>Wessex Water</b>	To ensure efficient operation of surface water sewers	Review any reported flooding incidents for the three locations and undertake any hydraulic assessments as necessary.
<b>LLFA/EA/Property Owners</b>	To consider flood resilience measures to affected properties.	Potential funding for Property Level Resilience to be investigated by the Environment Agency together with Dorset County Council Flood Risk Management.

## 7. Next Steps

The next steps following this report will be for Dorset County Council (DCC) as the Lead Local Flood Authority to ensure that the recommended actions are taken forward by the identified Risk Management Authorities. DCC will monitor actions through regular reviews, whilst working in partnership with the Environment Agency, District Council, Wessex Water and the local communities affected.



