



LAVANT NEIGHBOURHOOD DEVELOPMENT PLAN 2016 - 2031

Historical flooding in Lavant

Lavant Parish Council

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1.0 INTRODUCTION

- 1.01 Lavant has been the subject of numerous flooding reports over many years and records go back to the 19th Century. The most recent are: the January 2015 *Upper Lavant Valley Flood Risk Management Study* (CH2MHILL); 2009 *Hydraulic modelling of Rivers Lavant and Ems* (Cole Howard and Moore Centre for Ecology and Hydrology); *The Chichester Flood 1994* report by S M Taylor of the National Rivers Authority and the Posford Duvivier River Lavant Flood Investigation commissioned by the National Rivers Authority S Region.
- 1.02 Whilst parts of Lavant have flooded many times in the past, the increased areas of hard surfacing has increased the impact of flooding on properties. This impact has become more marked since 1994 when several properties were flooded. The impact of climate change makes the future uncertain and safeguarding of properties is a major concern for residents.
- 1.03 The issue of flooding was raised on many occasions by residents during the consultation process. In particular concerns related to the safeguarding of properties that had previously been affected. Just as importantly the infiltration and inundation of the water into the sewerage network causing sewerage surcharge and flooding is of great concern.

2.0 CURRENT POLICY POSITION

2.01 The National Planning Policy Framework (NPPF) sets out that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. For these purposes:

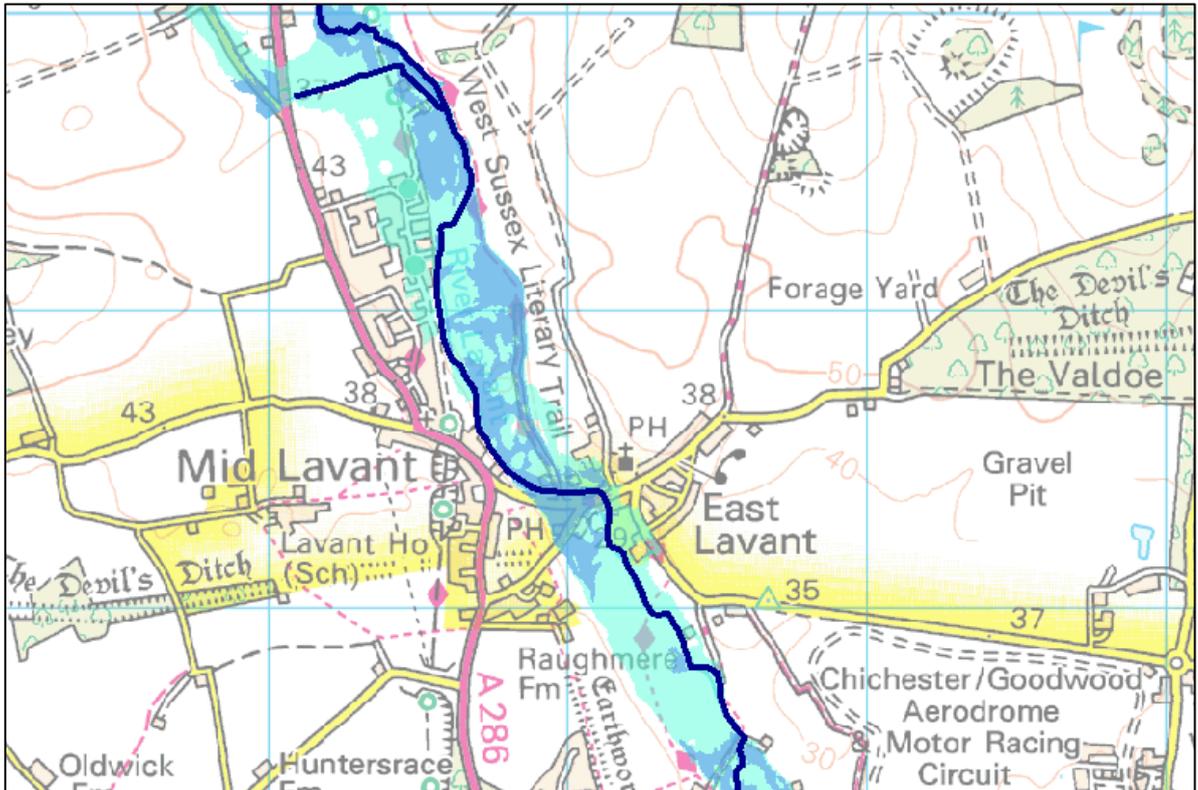
- “areas at risk of flooding” means land within Flood Zones 2 and 3; or land within Flood Zone 1 which has critical drainage problems and which has been notified to the local planning authority by the Environment Agency;
- “flood risk” means risk from all sources of flooding - including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.

2.02 The NPPF provides a Sequential Test to steer new development to areas with the lowest probability of flooding. The flood zones set out by the Environment Agency are the starting point for this sequential approach, the zones refer to the probability of sea and river flooding only, ignoring the presence of existing defenses. The overall aim of this sequential test is to steer new development to Flood Zone 1 where the land has been assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%)

Environment Agency Flood Maps

2.03 The flood risk in this area is impacted by groundwater springs adding to the flood water. This is not accounted for within the Environment Agency Flood Zones which look at rivers and the sea. This focus makes the definition of a functional floodplain in the LNDP area more complex as there is a lack of EA evidence to support a change of outline.

2.04 Current guidance on identifying the functional floodplain states that it should take account of local circumstances and not be defined solely on rigid probability values. Thus the core flood plain is considered as synonymous with the functional flood plain.



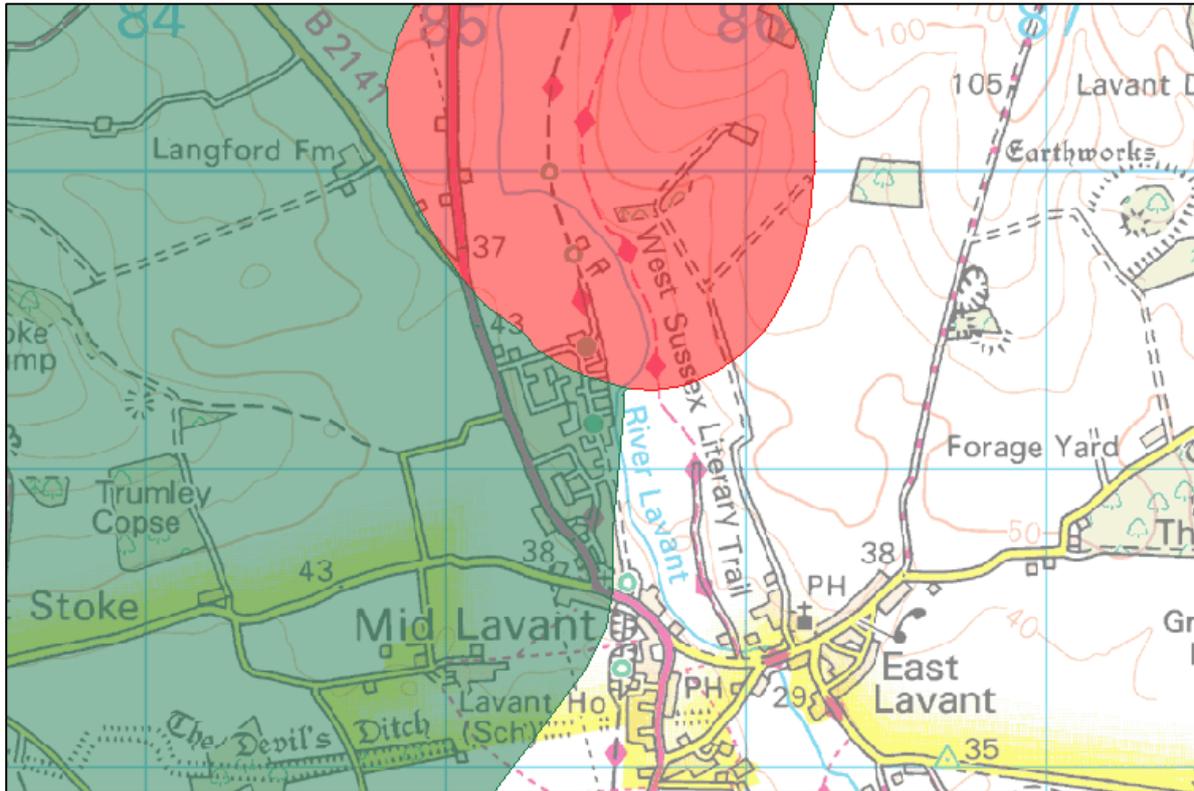
- **Flood Zone 3** *This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year*
- **Flood Zone 2** *This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.*

Groundwater

- 2.05 Due to the underlying chalk the River Lavant is primarily a groundwater fed stream. The river therefore responds to changes in groundwater levels throughout the year; it frequently runs dry during the summer months when ground water levels within the chalk catchment are low. Flooding occurs after heavy rainfall when surface water runoff cannot be absorbed in heavily saturated ground. Thus Ground water is an important factor in this region.
- 2.06 The Upper Lavant Valley Flood Risk Management Study (December 2014) ¹ states that flooding in this catchment is caused by groundwater emerging through ground floor slabs and inundating and infiltrating sewers. During 2013/2014 the most dominant of these mechanisms was the significantly enhanced flows in the River Lavant due to high groundwater levels (leading to fluvial flooding) and infiltration into the foul sewer network causing sewer surcharge and flooding. Contributory factors have been the lack of regular maintenance of the river bed by the Environment Agency and the lack of replacement / lining of the sewer network within the Lavant Valley. (In the future the community cannot rely on these factors being consistently rectified.)

¹ https://www.westsussex.gov.uk/media/4706/lavant_swmp_non_technical_summary.pdf

- 2.07 Flooding also occurs as a result of heavy rainfall on saturated catchments which cause river levels to rise rapidly and flow over the river bank. This overtopping occurs when already high river levels (caused by high groundwater levels) are exacerbated by a series of intense rainfall events. This causes problems in Singleton and Mid/East Lavant particularly.
- 2.08 The diagram below published by the Environment Agency shows where ground water flooding is most likely to occur in the parish. It clearly shows that the area to the north of the parish is most likely to flood from this source



- **Inner zone (Zone 1)** - Defined as the 50 day travel time from any point below the water table to the source. This zone has a minimum radius of 50 metres;
- **Outer zone (Zone 2)** Defined by a 400 day travel time from a point below the water table. The previous methodology gave an option to define SPZ2 as the minimum recharge area required to support 25 per cent of the protected yield. This option is no longer available in defining new SPZs and instead this zone has a minimum radius of 250 or 500 metres around the source, depending on the size of the abstraction;

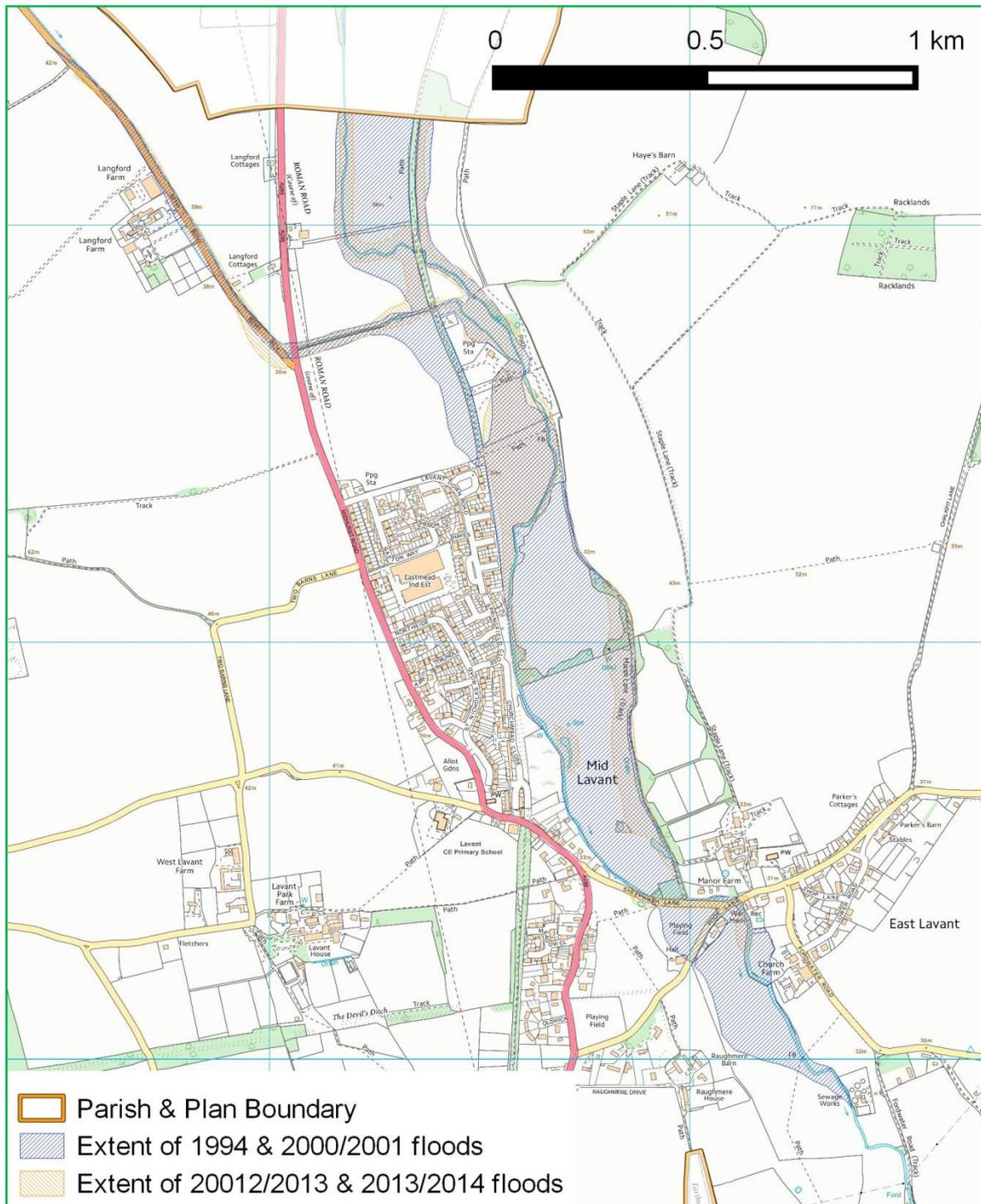
3.0 Historical Flooding

- 3.01 When assessing the likelihood of flooding, historical data can play a key role in informing planners and can often provide useful insight that cannot be established from computer simulations.
- 3.02 The River Lavant has flooded many times in living memory, namely in 1960/61, 1994, 2001, 2011/12 and 2013/2014. Historically the Village Green has been known to flood the most, followed by the upper part of Mid Lavant flood plain.
- 3.03 The **CAUSES** of the major flooding in 1994 (and to a lesser extent subsequently) was the inadequate downstream discharge capacity to cope with the excessive rainfall and volumes of water. This was exacerbated by poor maintenance. Since 1994 major engineering works have enabled the diversion of the Lavant flows to the east of Chichester.
- 3.04 In East Lavant, the village green has flooded due to blockages at the bridges which cross over from Sheepwash Lane.
- 3.05 In all recent floods the **LAG TIME** between excessive rainfall and flooding is very short as the ground is already saturated and the river is already running close to capacity. Thus over capacity and flooding can happen over overnight.
- 3.06 The **DURATION** of the flooding varies. Since the post 1994 engineering works the downstream capacity has been enhanced and thus the duration of recent flooding has been shorter since 1994.
- 3.07 The Environment Agency has been encouraged to re-instate their regular dredging of the silt and vegetation of the river bed and Southern Water are lining the sewerage pipes (although the work upstream is not yet completed and continues to show considerable infiltration). It is anticipated that this will help to alleviate both the severity of previous flooding that affected properties around the Village Green and in Lavant Down Road and the inundation of the sewerage system.
- 3.08 Current thinking is that flood water should be attenuated upstream on the flood plains such that the downstream flows are not increased.

Map and Photographic Evidence

- 3.09 This section provides a map of the Historic Flooding and a range of photographic evidence to demonstrate the extent of flooding over the years.

Figure 1 - Map showing the extent of historical floods



1994 Floods in Lavant

3.10 The flooding that occurred in 1994 was the most serious of recent times. Chichester was also severely flooded and since then major diversionary engineering works have been carried out to increase the Lavant's capacity and take the flow of the river east of the city.

Figure 2 - Aerial photograph looking northwest up the River Lavant



Figure 4 - Aerial photograph looking northwest up the River Lavant from a position above Church Farm. The village green is in the centre of the photo with the Lavant Memorial Hall surrounded by flood water.



Figure 5 - The junction of Sheepwash Lane and Pook Lane looking towards the village green. The photo is taken from the road bridge and shows the result of the river overtopping and finding a new route.



Figure 6 - Properties in Sheepwash Lane. The normal flow of the river restricted by the bridges and thus overtopping of the bank occurred.



Figure 7 - Looking west along Sheepwash Lane. The river course is on the right of the picture.



Figure 8 - Fields looking south from Pook Lane. The river flows on the left of the photo.



Figure 9 - 1994 Looking north from Lavant Down road with the line of trees on the west edge of Centurion Way.



Figure 10 - 1994 Looking NE across the water meadows from the edge of the Mid Lavant settlement area.



Flooding in 2000

Figure 11 - Looking towards Lavant Down Road from the north.



Figure 12 - 2000 The village hall and Pook Lane looking north.



Flooding in 2013/2014

3.11 The Lavant River flooded. There were no substantial issues in relation to properties however, the inundation of the sewerage system created major concerns and required the deployment of tankers for many weeks to prevent unacceptable sewerage discharge into the river.

Figure 13 - 2014 Looking south down the core flood plain from the pumping station road.



Figure 14 - 2014 View from St Mary's Close looking east.



