Flood Risk Study - Church Lane, Etchingham

Introduction
East Sussex County Council has been notified by local residents of Etchingham that there is a flooding problem on Church Lane. This technical note aims to clarify the current position and to investigate the key flooding mechanisms and possible options to manage the existing flood risk.

Study Area
Etchingham is situated in northeast East Sussex close to Battle and Robertsbridge with a railway-line running across the northern side of the village.

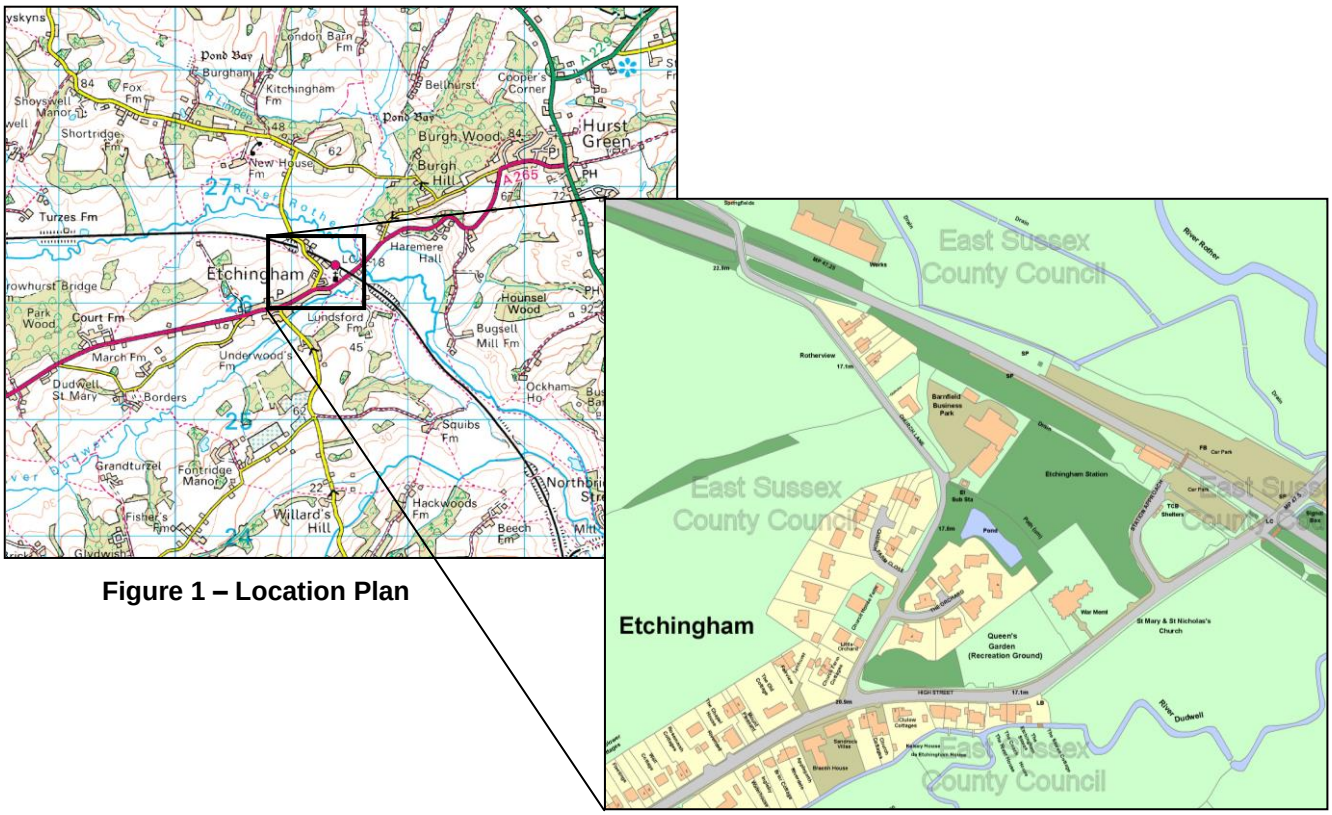


Figure 1 – Location Plan

Etchingham is built on ridge descending to the Rother/Dudwell Flood Plain. Ground levels are lowest surrounding Etchingham train station. The railway-line embankment running along the north side of the village reduces the conveyance of water under the man-made structure. This can reduce the impact of fluvial flooding from the River Rother whilst equally increase flood risk from the south by preventing the conveyance of surface water runoff to the River Rother. Church Lane levels are <18m AOD at its lowest point near Quinces.

The geology of the high ground situated immediately to the southwest of Church Lane comprises of Wadhurst Clay with the properties on Church Lane being located on Ashdown Sand (see Figure 2 below).

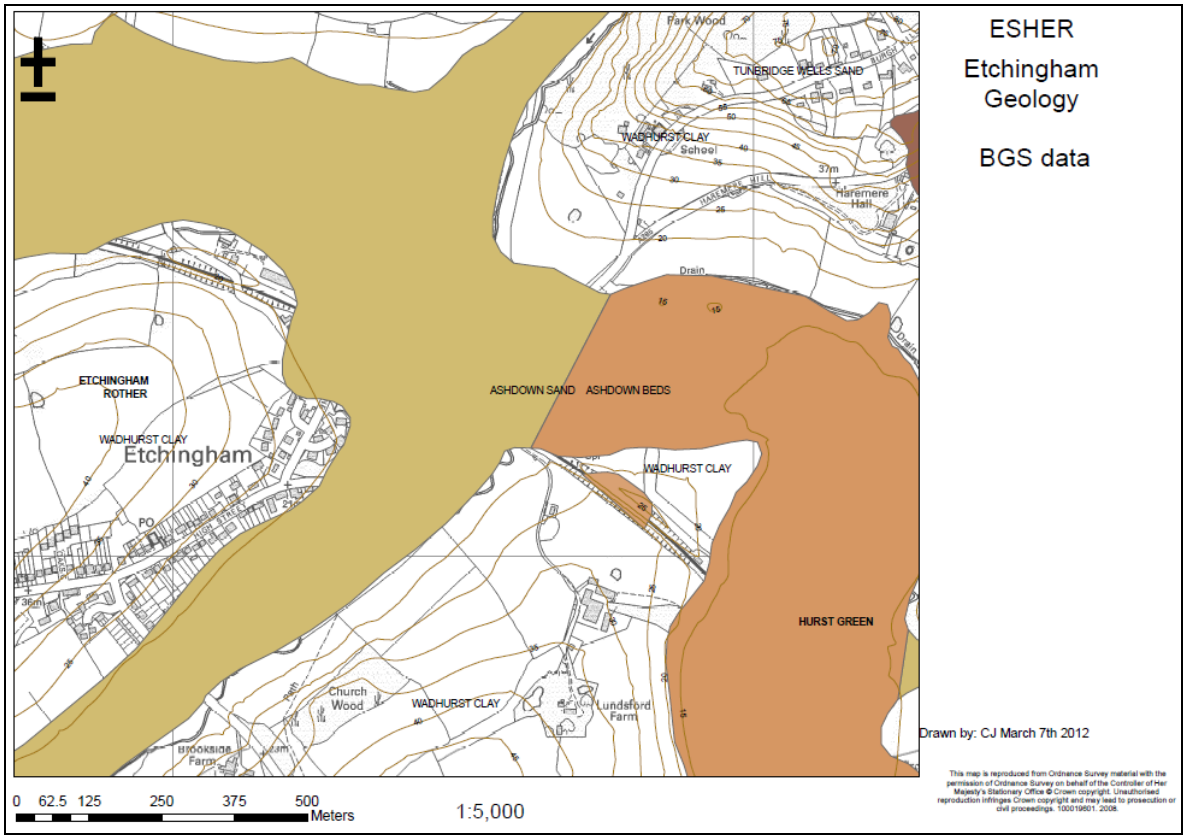


Figure 2 – Geology Plan

Existing Drainage Arrangements

The River Dudwell draining from the west flows along the south-eastern side of the village and discharges into the River Rother immediately east of the train station. Both watercourses are Environment Agency Main River which accept flows from local ditches draining largely the low-lying area situated to the north.

Southern Water's existing drainage arrangements comprise of a 150mm dia combined sewer running along Church Lane draining in a south-easterly direction (highlighted in Figure 3 in red). Three ESCC highway gullies are located along the stretch of Church Lane which is most at risk of flooding, which is assumed to discharge into Southern Water's 150mm dia pipe.

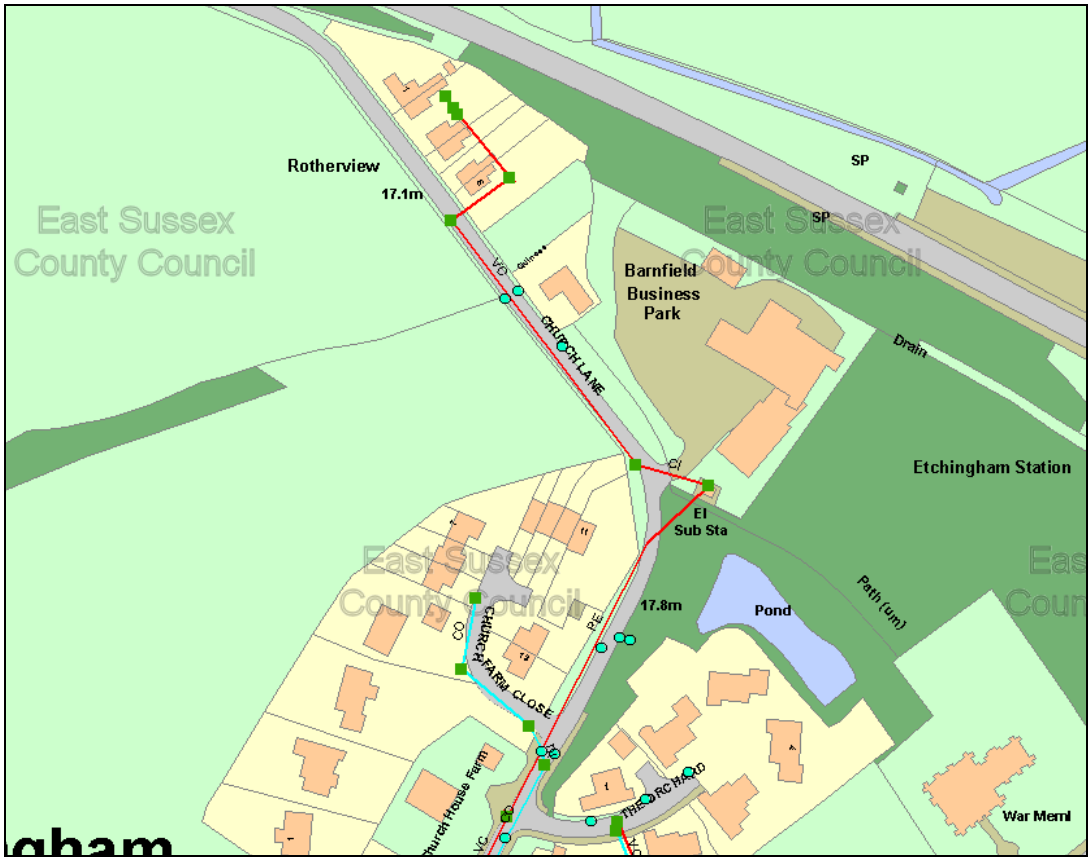


Figure 3 – Existing Southern Water Drainage Arrangements

Historic Flooding

There have been numerous flood events which have impacted on the residents of Church Lane with the most recent occurring on 3rd January 2012.

Typically flooding has occurred after a prolonged period of intense rainfall causing flooding to the Church Lane highway and curtilage flooding of properties.


Figure 4 – Photos of Flooding from Jan 2012 Event

Flooding Mechanisms

The flooding experienced on Church Lane appears to be a combination of surface water and ground water flooding.

The surface water runoff from the elevated fields situated to the south west of the properties at risk is caused by a combination of the relatively high topographic levels, the Wadhurst Clay, low vegetation within the field to intercept flows and the local farmer ploughing downhill encouraging the conveyance of flows in a north-easterly direction towards Church Lane.

The ground water flood risk is confirmed by the residents observing the cartilage of the properties is frequently boggy with poor drainage. The geological map indicates Church Lane is situated on the border of clay and sand which typically indicates the possibility of localised springs appearing during prolonged period of rainfall. This is confirmed by the screenshots in Appendix A which has been taken from Google Streetview showing the egress of groundwater flows by a telegraph pole which then flows down Church Lane to the properties at risk before entering a local highway drain. This groundwater reduces the capacity of the existing 150mm dia sewer to accept flows during a rainfall event.

The properties at risk are located in a low-spot with a railway line embankment situated to the north limiting the conveyance of flows from Church Lane to the River Rother.

Existing Schemes

Through consultation with the partners in the summer of 2011 it was agreed the Railway line ditch situated to the rear of the properties requires vegetation clearance to improve the conveyance of the channel; this was undertaken by Network Rail in November 2011.

Figure 5 – Photo of ditch clearance

Since the ditch clearance has been undertaken local residents have recorded another flooding event in January 2012 which resulted in highway and curtilage flooding.

Site Visit (14/04/12)

A visit to Church Lane, Etchingham was undertaken by ESCC and Southern Water, the findings were as follows:-

- The ground between Property No. 6 and Quinces appeared to be boggy
- Standing water was observed in the field adjacent to Quinces, Church Lane

- A visual inspection of the highway gully opposite to Quinces, Church Lane found that the gully appears to be free of debris and silt.
- The highway ditch running parallel to Church Lane appears to be overgrown but still has capacity to accept flows.
- The drainage ditch running along the boundary of Quinces, Church Lane to the boundary of Network Rail appears to be heavily silted and overgrown.
- The drainage ditch running within the boundary of Network Rail appears to be heavily silted and overgrown.
- The chainlink fence owned by Network Rail at the downstream end of the drainage ditch runs across the channel and acts as a trash screen.
- The drainage ditch running from the boundary of Network Rail to the A265 appears to be marginally overgrown.
- The upstream face of the culvert running under the Station Approach (Culvert C in Figure 7) is partially blocked with debris (see Figure 6 below).

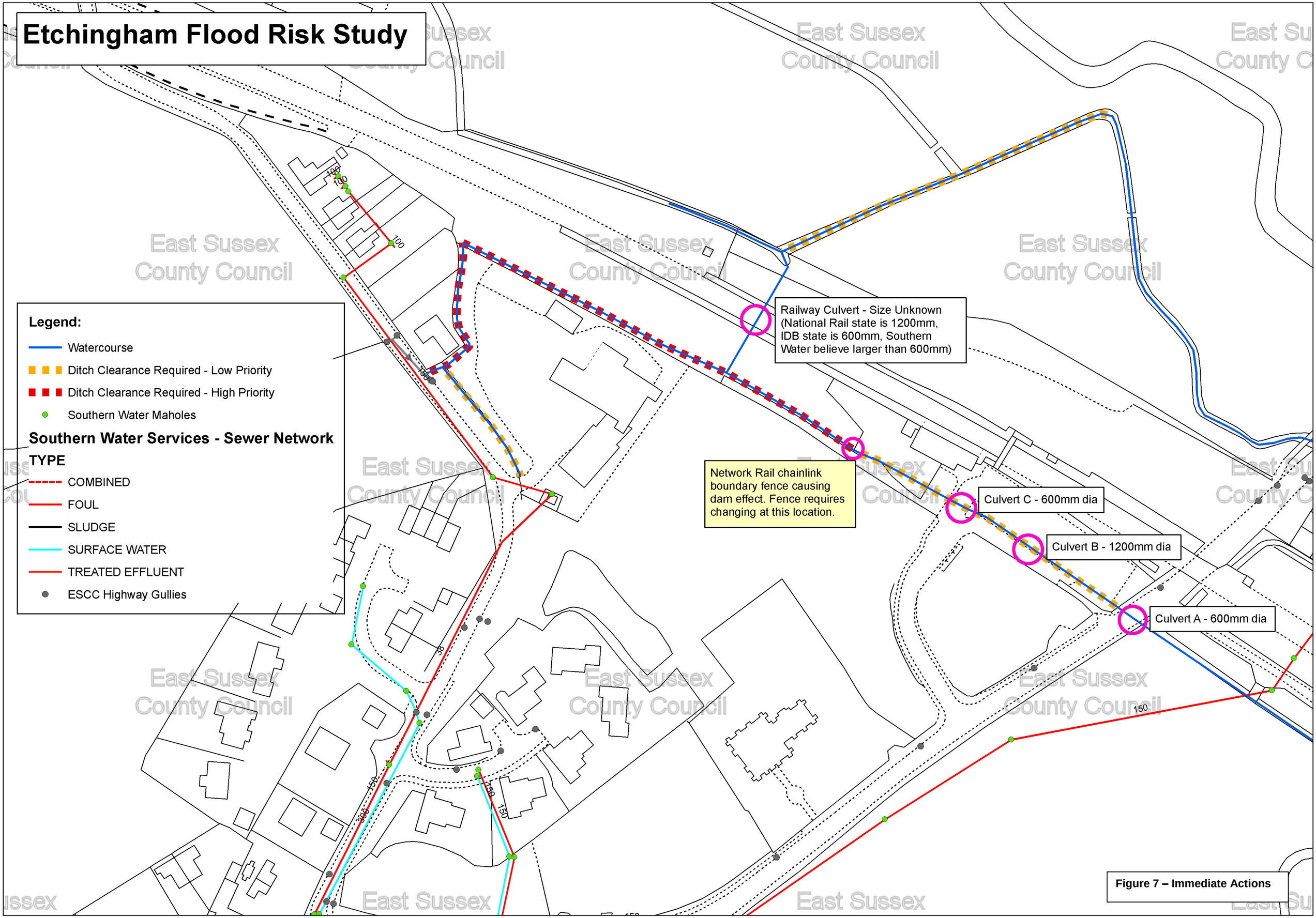
Figure 6 – Photo of debris build up against culvert

Immediate Actions

The necessary measures which are required to be undertaken to reduce the immediate risk of flooding are detailed in Figure 7 overleaf. This is summarised below:-

- Current riparian landowners of the drainage ditch on Church Lane are required to clear the watercourse to an acceptable standard to improve conveyance.
- Network Rail is required to clear and widen the watercourse within their land to improve conveyance.
- Network Rail is required to remove the chainlink fence which is currently acting as an obstruction in the watercourse and replace with a trash screen.

Etchingham Flood Risk Study



Legend:

- Watercourse
- Ditch Clearance Required - Low Priority
- Ditch Clearance Required - High Priority
- Southern Water Maholes

Southern Water Services - Sewer Network

TYPE

- COMBINED
- FOUL
- SLUDGE
- SURFACE WATER
- TREATED EFFLUENT
- ESCC Highway Gullies

Figure 7 – Immediate Actions

Proposed Flood Alleviation Scheme

The immediate actions will reduce flood risk, however it will not resolve the associated flood risk experienced across Church Lane.

- Installation of interceptor drainage ditches within the fields
- Installation of culvert under the highway accepting flows from the interceptor ditch to discharge into the existing channel running alongside the property on Church Lane.

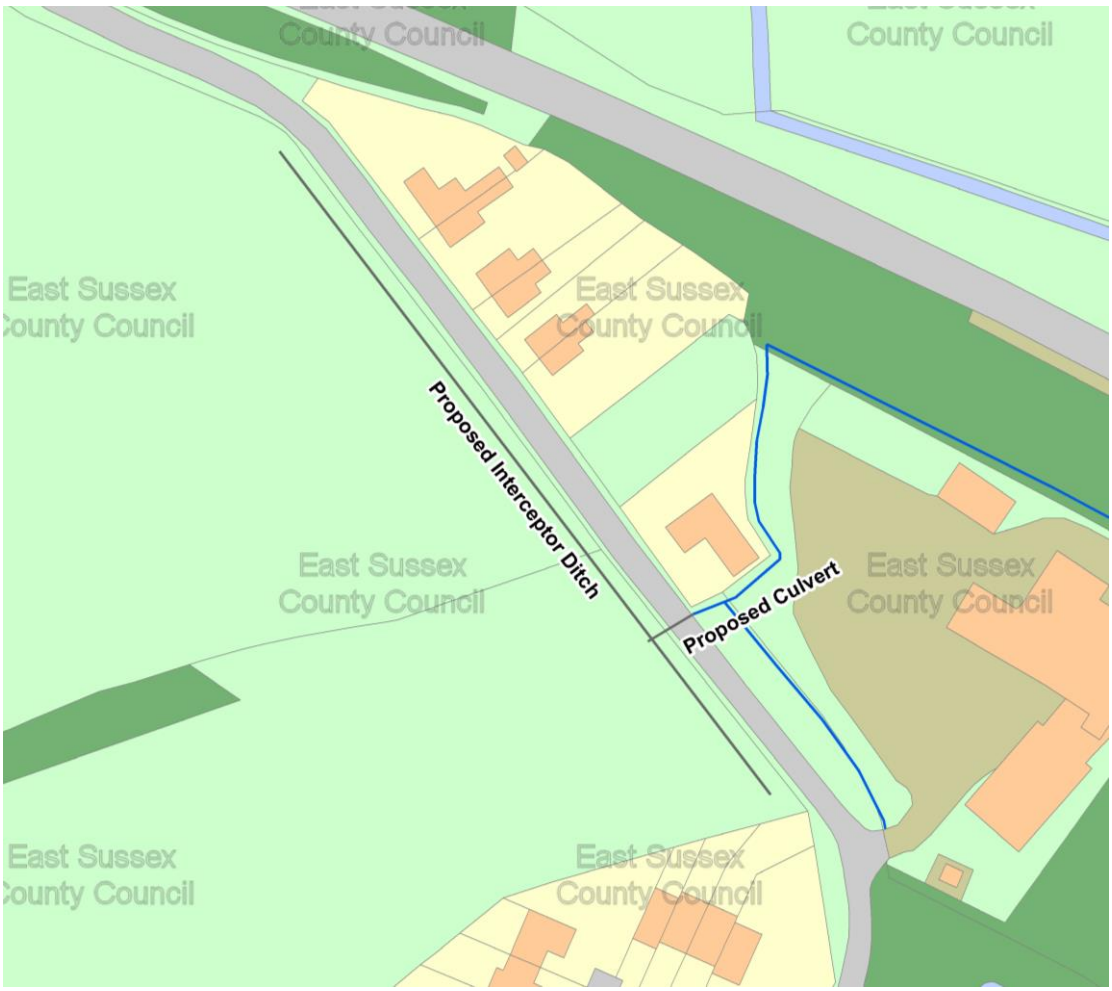


Figure 8 – Proposed Flood Alleviation Scheme

Recommendations

- Feasibility study of the proposed long-term flood alleviation scheme.
- Investigate the spring shown in Appendix A
- Investigate the feasibility for reinstating the pond in the field adjacent to the properties at risk of flooding.

APPENDIX A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