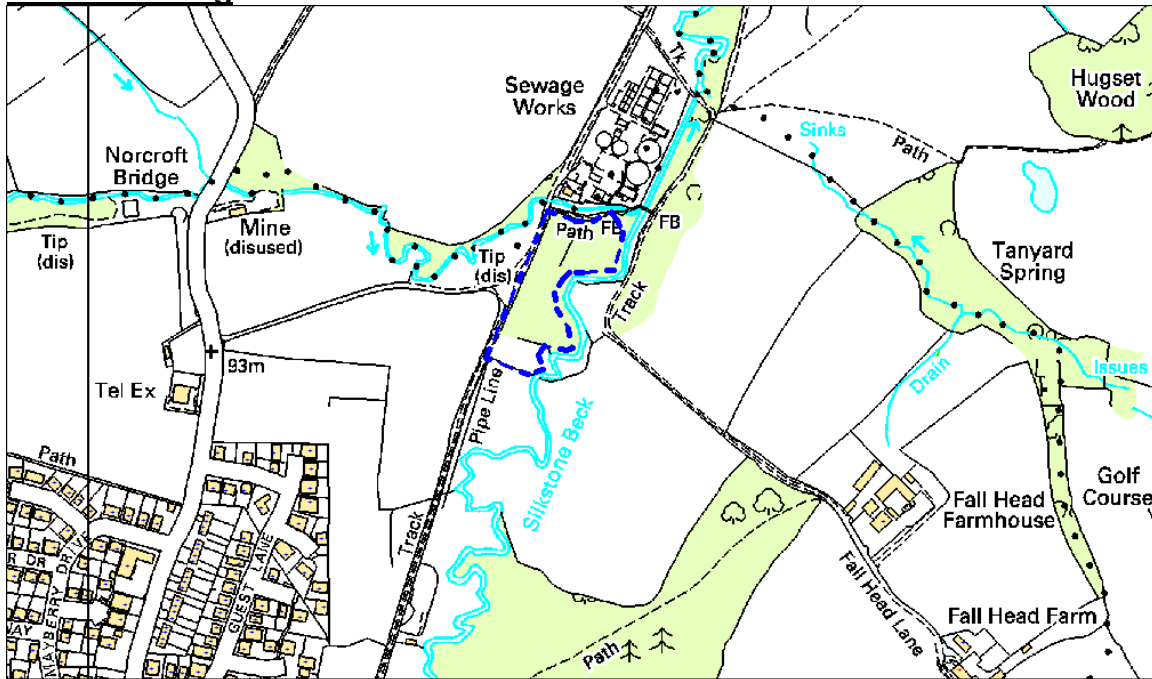


P2-406-i24 Phase I

Landfill 120, Silkstone

Active Layer: Landfill 120

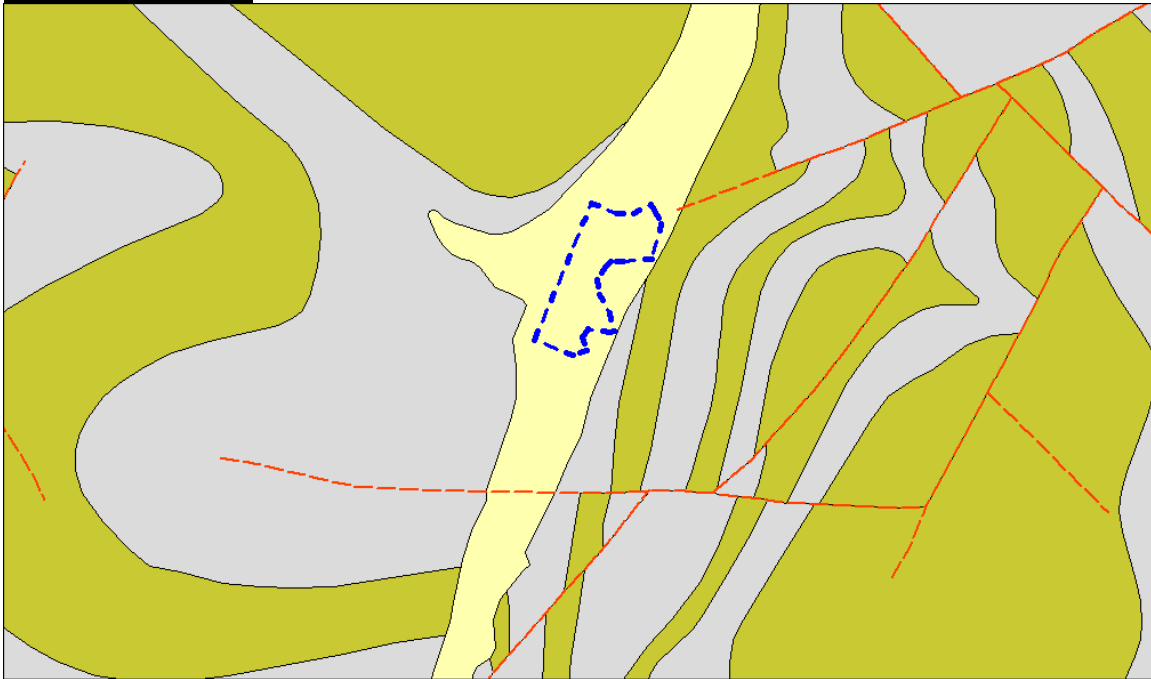
1.0 Site setting



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The site lies in a rural area, just to the northeast of the village of Silkstone. To the north is a small sewage works, separated from the site by Banks Bottom Dike which flows into Silkstone Dike, which follows the eastern boundary of the site. A pipeline of unknown content runs along the western boundary, beyond which is open ground a woodland. Open ground also lies to the south. The site itself is covered in woodland and scrub and is a former landfill site which was operated by Penistone R.D.C to take domestic waste from 1971 until it closed at an unknown time.

2.0 Site Geology



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This area lies upon the Lower Coal Measures formation (LCM) which dominates much of the underlying geology in this part of the Borough. The site lies mainly upon a band of undivided Cyclic Sedimentary Rock, i.e. mudstone and shale (indicated in grey). To the north and east of the site are bands of LCM-Sandstone (indicated in green) and the whole site is overlain by alluvial deposits associated with Silkstone Dike.

3.0 Surface hydrology

There are no surface hydrology features on the site itself. Silkstone Dike runs along the eastern boundary of the site and Bank Bottom Dike along the north, with the confluence being at the northeast corner of the site

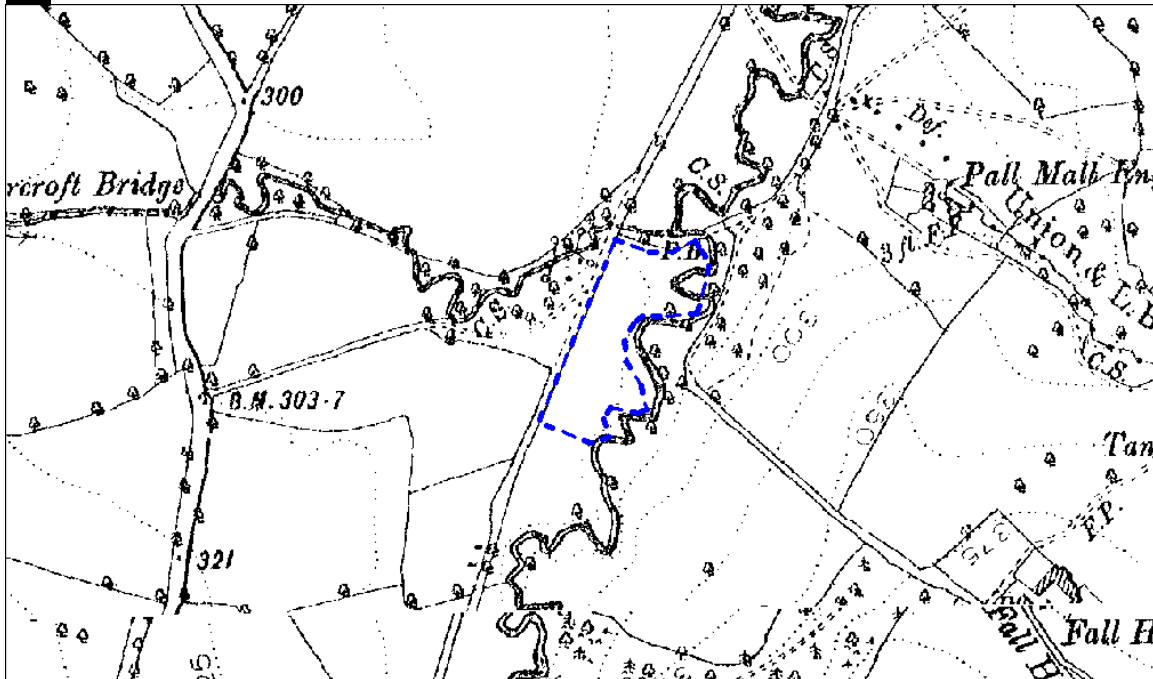
4.0 Site Hydrogeology

WATER ENVIRONMENT		GROUNDWATER SENSITIVITY ¹		
		NON AQUIFER	MINOR AQUIFER	MAJOR AQUIFER
DISTANCE TO NEAREST SURFACE WATER ²	>200m	Low Risk	Low Risk	Medium Risk
	50 – 200m	Low Risk	Medium Risk	High Risk
	<50m	Medium Risk	High Risk	High Risk

This area lies mainly upon a minor aquifer of high vulnerability. This means that while there is a significant possibility of contaminants migrating to the stored groundwater, the aquifer is of little hydrological value outside of the immediate area. This combined with the very short distance to the nearest surface water feature means that the overall risk to the water environment from potential contamination at this site can be regarded as High

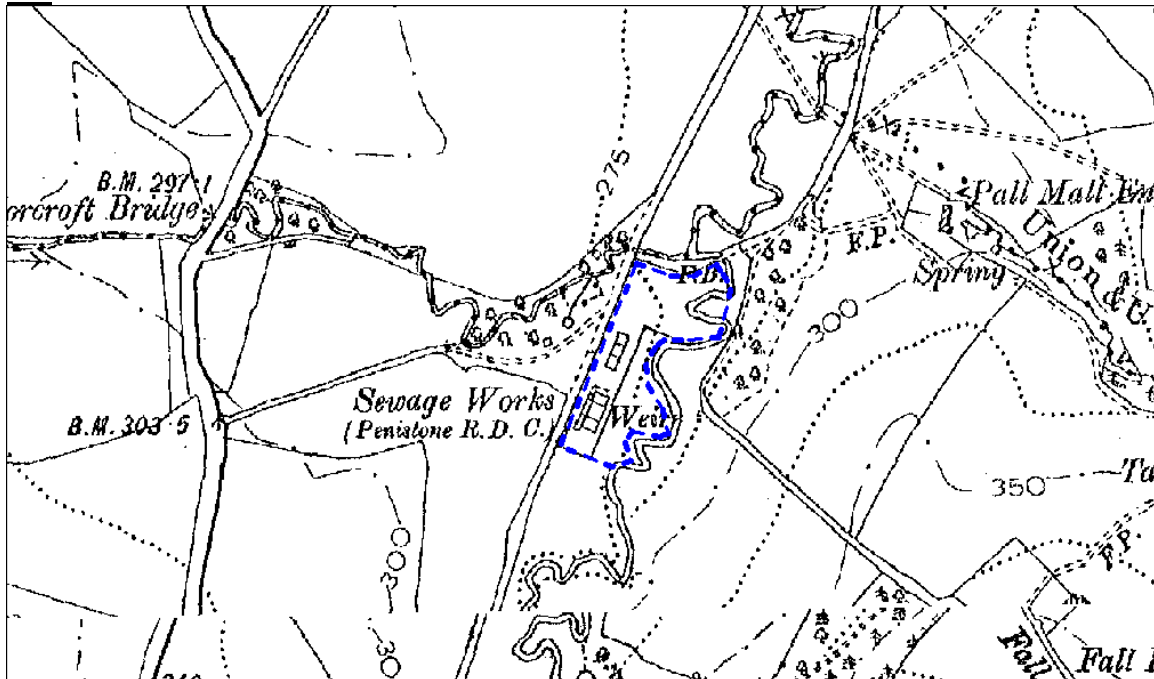
5.0 Site History

5.1 1895



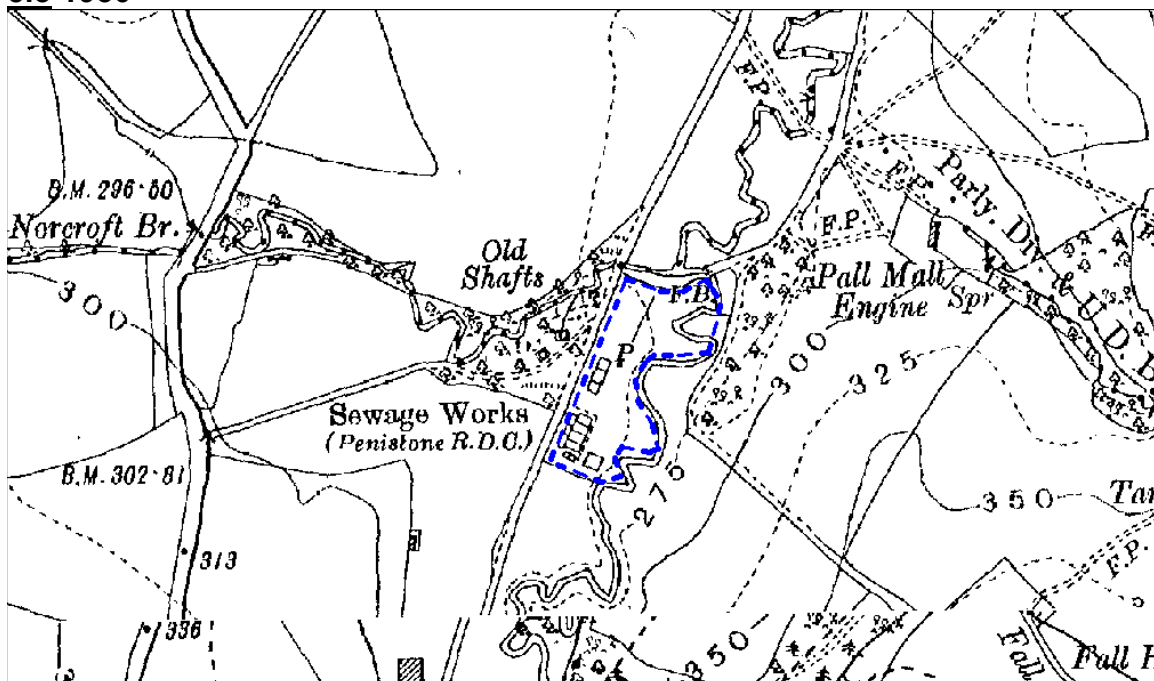
The site sits in an area of agricultural land at the confluence of 2 streams. There are small areas of woodland to the east and west

5.2 1910



There is now a sewage works occupying the site. The surrounding area looks much the same

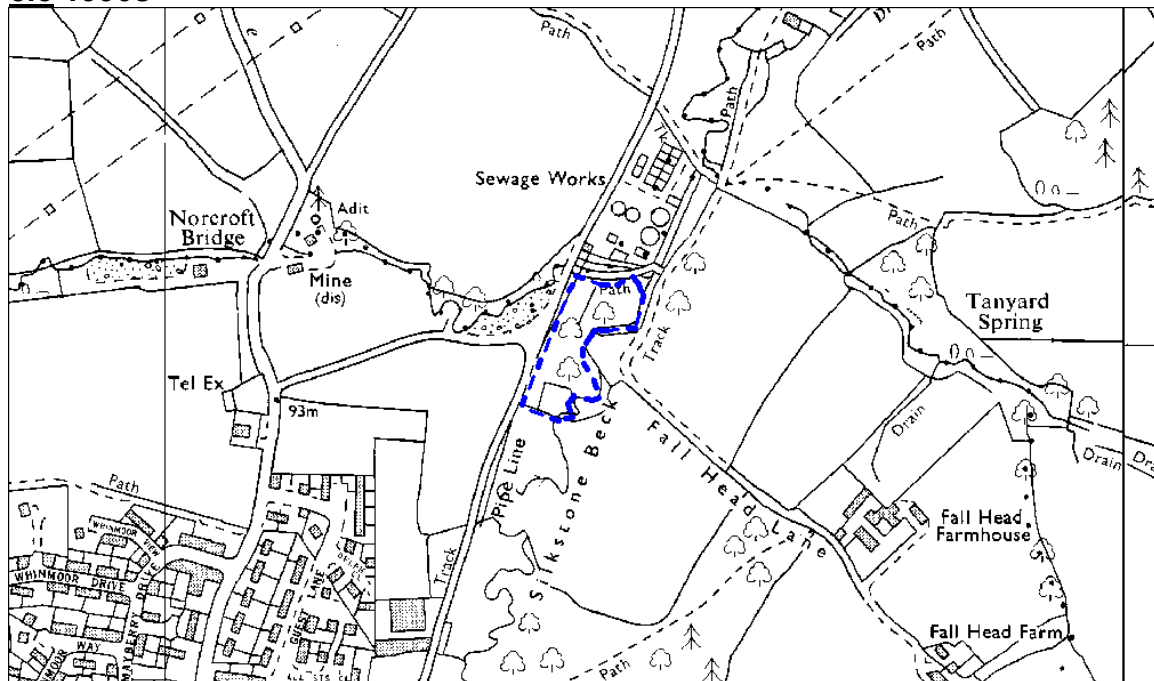
5.3 1930



There are now some old shafts marked just to the west of the site, indicating that there has been mining activity in this area

There is deposition of material around the old shafts to the west. Further to the west there are a group of Works buildings of unknown purpose

5.5 1990s



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The site is now covered in woodland and the works buildings to the west are indicated as a disused mine. The landfill activity is known to have occurred in the time between the previous historical map and this one

Summary

Prior to the landfill activity the only other potentially contaminative process to have occurred on this site was the sewage which occurred on the 1910 and 1930 maps. However, it's likely that any contaminative materials deposited there in are likely to have been removed and superseded by the landfill. There are no buildings of any purpose on the land directly adjacent but there has been mining activity in the area as demonstrated by the abandoned mine and old mine shafts to the west. Aerial photos indicate that vegetation is struggling to establish itself on the spoil from these mine workings which lie adjacent to the western edge of the site

6.0 Conceptual Model

Sources

The major sources of contamination that we have to consider for this site relate to the landfill and the surrounding mine works. The primary contaminant of concern will be methane and CO₂ generated from the decay of organic material within the landfill material. These gases may also be generated in the mine workings which are likely to lie below the site. There may also be issues from the mine workings in the form of metals and PAH compounds migrating from the

spoil material which lies adjacent. These contaminants are likely to be present as aerial photographs indicate that the spoil-covered areas are very poorly vegetated

Pathways

The pathways that must be considered for this site are ingestion, dermal contact, inhalation, asphyxiation, explosion and direct contact. These pathways may be preceded by a migration phase

Receptors

The receptors that must be considered here are site users, adjacent site users and controlled waters

Linkages

Source	Receptor	Pathway	Risk	Comments
CO2 & CH4 from the decay of buried organic waste	Site users, Adjacent site users	Inhalation, Asphyxiation, Explosion	LOW	Given the age of the landfill, it is likely that gas production will have stopped or tailed off by now and even if large quantities are being emitted from the landfill, there are no buildings on site which would probably rule out the more serious asphyxiation and explosion pathways
Mines gas	Site users		LOW	Again, the lack of buildings or places for gases to accumulate make it unlikely that Asphyxiation or Explosion pathways are active upon this site. Receptors are unlikely to spend enough time on site to be at risk from inhalation pathways
Leachates forming from decaying organic waste and PAH/metals migrating from spoil	Site users, Adjacent site users, Controlled waters	Ingestion, Dermal contact, Direct contact	LOW	There is little evidence to suggest that contaminants are entering the water course at this point. While water quality decreases slightly downstream of the site, it is still good and the evidence is not such that it can definitely be attributed to pollution from the landfill

7.0 Conclusion

Part IIA of the Environment Act 1990 defines contaminated land as being;

“any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that-

- (a) significant harm is being caused or there is a significant possibility of such harm being caused; or
- (b) pollution of controlled waters is being, or is likely to be, caused”

It is unlikely, given the current land use and ground cover, that this statement could be applied to this site. This was a small scale site in a rural area and as such does not present much in the way of potential contaminants or viable receptors. Aerial photographs show the site to be well vegetated and Environment Agency GQA data does not show any serious water quality issues. However, the water quality does decrease slightly downstream and some of the surrounding land is poorly vegetated so I will attempt to visit the site.