

Hoyle Mill, Thurlstone

## **CROMWELL WOOD ESTATE COMPANY LIMITED**

**Mining Engineers, Surveyors and Development Consultants**

Butterfield House, 59 Oakenshaw Lane, Walton, Wakefield, WF2 6NJ

Telephone / Fax 01924 255666

# **PHASE 1 ENVIRONMENTAL REPORT**

## **LAND AT**

## **HOYLE MILL, THURLSTONE**

DECEMBER 2009

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## Executive Summary

The site was first inspected in July and November 2004, and has been re-inspected in March 2009 and recently on 26 October 2009, with a walk over survey through the site and along the river to ascertain the past use, the existing use and the strata. The site has been used as a PVCU window, door and conservatory manufacturing centre since 1978 and the most recent use has been to provide goods for the improvement of people's homes. There has been no change to the use identified in November 2004.

Prior to that, the site was used as a mill surrounded by pasture and since the 1850s. The mill was closed in the early part of the 20<sup>th</sup> century and the woollen mill demolished with only the storage and office buildings remaining. Brick buildings were added in the 1920s as the site was converted into a chicken processing unit.

The site is sealed and drained with concrete or tarmac, and there are gullies on site that route water to the foul water system.

The buildings have concrete floors, and they are enclosed with sandstone walling or brick which enclosed the operations on site.

The site inspection revealed that the window and conservatory business uses UPVC, glues and sealers for the manufacturing process.

The site also has a machine shop which has a concrete floor and is enclosed with a brick wall.

The buildings are in generally good repair, and consist of the sales office, a joiner's shop, a main workshop, the glass shop and the spray shop. Within the complex are a transformer bay and the waste storage area for the site.

The land to the north eastern boundary is at a similar level, and is pasture running to the wood along Work Bank Lane, which is within woodland and near to the TA centre. The land is relatively flat to the wood, and is part of the river plain for the area.

The site is accessed off Thurlstone Road at the point where the road crosses the river. The access runs along the side of the river, 4 metres above the River Don along the lane known as Hoyle Mill Lane. The road is in good condition and is sealed with tarmac and drained. Near to the bridge are a number of homes to the north and garages on the river bank.

The lane runs east to the mill complex, and there are buildings either side of the Lane until it meets the river where there is a small footbridge to link the road with Thurlstone Road.

The site hard standing is in generally good condition, consisting of tarmac and concrete, but there are a few cracks in the concrete, probably due to thermal expansion and then frost action.

The site is surrounded by past uses of land that could have the potential to contaminate the ground. There is the existing stone built mill which has been on site since 1850, and the additional buildings built in brick that were added in the 1920s. The site was formerly known as Oil Mill and was a woollen mill. There has been some quarrying that has taken place since the 1850s in the wood to the south known as Stottercliffe Wood, which has been filled in with waste from excavation and demolition work. The tip is now closed and the land is woodland. The use was a cemetery shown on the 1932 geological map.

The land is suitable for redevelopment for housing and the inspection has revealed that the potential for contamination in the materials beneath the site or the recovered recyclable building materials is low to medium. Contamination can be dealt with by sampling and risk assessment to encapsulate the materials in the site or remove to a licensed landfill prior to erecting the houses.

The land to the north east of the site was a sewage works with filter beds. The works appear to be quite a large operation, and probably dealt with most of the foul water from Penistone and Thurlstone until 1955. This site was capped over with excavation waste.

There was also a land raising exercise in 1989 for the sports club near to the former sewage works where the River Don bends north and then north east on its flow downstream.

The waste sites are between 100 metres and 225 metres distant from the eastern end of the site. Due to the age of the landfills, it is likely they were filled with dustbin rubbish such as ash, bottles and tins, leather goods, discarded textiles and earth.

A conceptual model has been prepared based on the phase 1 risk assessment and considers materials from the previous use and possible migration of landfill gas from the waste sites.

**LAND AT SOUTH YORKSHIRE HOME IMPROVEMENTS, HOYLE MILL,  
HOYLE MILL LANE, THURLSTONE ROAD, PENISTONE, SOUTH YORKSHIRE, S36 9PZ**

## **INTRODUCTION**

Cromwell Wood Estate Company Limited (CWECL) were instructed by Mr Michael Townsend of Townsend Planning Consultants on behalf of South Yorkshire Home Improvements Limited to undertake a site investigation on land at the site formerly used as a mill, depot and a chicken processing plant. The site was formerly known as (Oil) Hoyle Mill and the existing buildings that comprise part of the manufacturing unit are the old mill house and outbuildings. The site is situated to the north of the River Don and Thurlstone Road, and the National Grid co-ordinates are 423750E 403580N.

The investigation consisted of a walkover survey in October 2009, and an examination of the materials and past use on site to establish the oversite fill and the strata below. Earlier surveys were undertaken in June and November 2004. The inspection included a survey of the inside of the buildings and the condition of the floors in the buildings where the windows and doors are manufactured and assembled.

The purpose of the report is to ascertain the potential for contamination from the past use as the land is considered by the client as suitable for the erection of a number of residential apartment dwellings. A planning application will be submitted to Barnsley Metropolitan Council's Planning Authority for outline residential development, and this report has been requested by the client to assess the degree of contamination and remediation prior to a planning application for redevelopment of the site for 12 houses.

The guidance issued by the Government Department responsible for contamination, DEFRA and the Environment Agency, The Environmental Health Section of the Council has been considered. Other advice issued by the Government has been considered, in particular R&D publication 66, jointly published by the Environment Agency and the NHBC, the Soil Guideline Values (SGVs) issued in July 2009, the Contaminated Land Reports 1 to 11. In particular, CLR 7 and CLR 10 that discuss the theory and statistics behind the CLEA (Contaminated Land Exposure Assessment) Model and the recently published CLR 11 report on the assessment of the Model Procedures for the Management of Contaminated Land.

The immediate land use is as an assembly centre for UPVC windows and doors who use the two portal frame buildings and the old mill buildings which have been renovated. The portal frame buildings are used for machining the parts and the assembly of the windows and door frames prior to despatch. The store yard is used for garaging vehicles and the storage of parts. The site has two stone built buildings on site which are the original mill, and there are additions built in brick which have provided further accommodation for the business that used the site as a chicken processing plant and food processing centre. There is a sub station on site between the buildings and the Lane. The use of the yard prior to the window and door business was as a chicken processing plant for deliveries to the local area. To the north of the old mill is a parking area for customers up to the wall adjacent to the Lane. The area of the mill is higher in level above the river bed and the river has cut into the strata to form the river bed. On the south side along Thurlstone Road, the river bank has been walled to support the road, and on the north side the river bank has been excavated out in the past to provide a mill race.

The buildings are shown on the early maps of the area. Near the entrance to the existing site are a row of stone built terrace houses with long front gardens to the road and garage land above the river. The river has a weir near to the mill which appears to be over an outcrop of stone and drops the river in level by about 5 feet (1.5 metres) before it flows past the mill.

The property has been surveyed, together with the River Don, and there are proposals for the development of 12 residential properties.

A copy of the proposed development site area and a sketch plan of the current site are included in Appendix A.

## **PURPOSE OF THE REPORT**

The purpose of the report is to ascertain the potential for contamination of the land due to the past historical use identified from published Ordnance Survey maps, environmental data and the geological information published by the British Geological Survey.

Also as the site is situated on the exposed coal field, the Penistone Coal, near the outcrop of the Millstone Grit in the exposed coal field, the mining situation has been ascertained and the potential for mining subsidence and shallow workings investigated.

*The site is to be re-developed for housing, and the past use may have contaminated the land and this report considers the use and the source-pathway-receptors of any past contamination to the proposed use, and how that pathway for any potential contamination may be severed.*

The desk study has been prepared from our site visits between December 2004, November 2005, March 2009 and October 2009 to ascertain the potential for any contamination and ways of mitigating the contamination when the site is redeveloped.

The investigation considered the publications issued by the Environment Agency and the NHBC, CIRIA, DEFRA and the British Standards Institute and the CLEA guidance. Where the CLEA guidance does not yet deal with certain compounds, the ICRCL levels have been considered and the Industry Profiles Reports on Mechanical and Electrical Engineering works. The CLEA has superseded the ICRCL guidance in the past two years, and the guidance is still evolving. Where no SGV exists, the Generic Assessment Criteria guidance published by LQM has been considered.

The reader is advised to read the Envirocheck and Sitecheck reports in Appendix D as the reports discuss the location, the geology, hydrology, hydrogeology and past mining activity together with the historical use of the site.

## **LOCATION OF THE SITE**

The site is situated on the north side of Thurlstone Road and at the end of Hoyle Mill Lane between the land and the pasture. The site is situated near to the bridge that crosses the river and to the east is Penistone Bridge. The town of Penistone is situated east of the site south of the old Sheffield to Manchester railway. The site is situated on gently sloping land at an elevation of 200 metres aod in the valley bottom. To the north east the river is an alluvial plain.

The site falls gently to the east from the main road along a strip of land between the river, the lane and the pasture with a high wall on the lane side and the houses set back from the river bank.

The national grid co-ordinates are 423750mE and 403580mN.

## **SITE INSPECTION**

*The site was inspected in July and November 2004, and March and October 2009, and the walk over survey revealed that the site had been used for the manufacture of UPVC windows and doors since 1978. The site was sealed and drained with concrete, tarmac and paving with a sub base of hardcore and soil to a depth of between 0.15 and 0.2 metres in the river bank side near the buildings. Additional buildings have been attached to the mill to provide a depot and latterly a workshop and storage sheds and a store for wood and materials. The boundary consists of mature trees along the river bank with a dry stone wall on the northern boundary. The site has been levelled and then covered with tarmac. It is likely that the tarmac and concrete have been laid over stone setts that will have been laid down when the mill was built.*

The site consists of two buildings which are built in stone and were the original mill buildings for Oil Mill. Since the 1920s additions have been made with a brick built extension to the east with steel and cement bonded asbestos sheeting. There are two additions to the site that were built when the present owner began manufacturing which are portal frame buildings with concrete block walls and steel sheeting.

The stone building next to the river is the showroom and the store for product dressed stone walling forming the internal wall. The ground floor has not been altered except to provide an access to the portal frame building and there are brick pillars supporting the floors with the access areas.

The building on the northern side is a stone built building which has been converted into a joiners shop for the manufacture of frames and windows from hard and soft woods. Beyond this building to the east is a portal frame building of modern construction which is sheeted with metal cladding and concrete blocks.

The factory is a brick built structure with a steel truss for the roof supports and a cement bonded asbestos sheet roof and steel sheets on the lean to near the river. The glass shop is a portal frame building with concrete block and asbestos sheet roof.

On the east side between the site and the river is an area where the waste from the operation is stored for disposal to a waste centre by an authorised waste haulier. The end of the yard has a footbridge over the river to the public haulier.

The land is drained and sealed with tarmac and concrete. The inside of the building are concrete floors except the brick built structure which is tiled as this area was a food processing area.

## **SITE HISTORY**

Previous editions of historical maps have been examined and the following represents a summary. Refer to the Phase 1 Environmental Audit prepared in April 2002 for Mr Abbott.

1. The 1854 and 1871 geological publication based on the County Sheet first edition publication reference number 273 shows the site comprising of a mill known as Oil Mill which was a woollen mill and there was a mill race and pond off the river. The mill would appear to be between the existing stone buildings and the weir and was in a south to north orientation.

2. The 1933 edition shows there was further development to the east of the mill and the mill itself and the weir and pond have been removed although the footprint of the old mill is evident. The existing stone buildings are evident as are the brick built buildings which leads us to believe that by this time the site was a chicken processing plant. To the north east is a large sewage works that dealt with most of the foul water from Penistone.
3. The later plans of the area show there was little change to the site until the late 1970s when the current owner took over the site and added the new buildings to the east to house the manufacturing units and the glass shop.
4. The sewage works ceased being operative in the 1960s and the area was reclaimed by filling the sewage beds and capping them off with excavation material.

The inspection of the plans shows that the land was used as a mill from 1850 until 1920 when it was used as a food plant and then a chicken processing plant until 27 years ago when it has been used to manufacture windows and doors.

## **GEOLOGY**

The geological publication of 1872 based on the Ordnance Survey sheets 273 surveyed in 1871 shows the site geology to be strata to be Lower Coal Measures with sandstone under the site overlain by drift deposits from the river. Beneath the sandstone will be mudstones associated with the Penistone Flags, Halifax Hard Bed and the Middle Band Coal which is borne out by the note on the plan showing shale, bastard ganister and shaley sandstone in the river bank to the east.

The later publication dated 1932 shows the site to lie on the Grenoside Rock bed beneath the Grenoside Sandstone Coal. The coal is not under the site, outcropping to the south of the site on the opposite side of Thurlstone near Rose Cottage. There is an extrapolated fault position to the west of the site trending in a north western direction in the Middle Coal Measures. The structure within the Coal Measures is a graben type structure, step faulting which displaces strata downwards in a north easterly direction. Most of the faulting occurred prior to the deposition of the later geology in the Hercynian mountain building period. The whole area was re-modelled in the last ice age some 18,000 years ago to leave valleys and rolling hills on the Eastern Pennines.

## **MINING ACTIVITY**

The coal seams are beneath the Grenoside Rock and the Penistone Flags and there has been no coal mining under the site as the productive coal seams are higher up the geological horizon in the Penistone Flags and they are thin seams ranging from 8 inches (200 mm) to 12 inches (300 mm).

## **QUARRYING ACTIVITY**

There has been some quarrying in the Grenoside sandstone, the nearest being at Hornthwaite and in Stottercliffe wood to the south on the valley side which will have been used to build Penistone and Thurlstone.

## **WASTE DISPOSAL ACTIVITY**

There has been waste disposal by landfill to the north and east in the land that was the former Thurlstone Sewage works and in the wood near to Work Bank Lane. The sites are shown on the Envirocheck report on page 3 but there are no records on the report to state what type of waste was tipped. The sites are situated within 250 metres from the site and due to the geology, the topography and the date when waste was tipped, are unlikely to present a gas risk to the mill.

## **HYDROLOGY**

The hydrology is based on the River Don which runs from the higher ground to the west fed by run off from the South Pennines. The river is fed from streams and springs around Thurlstone Moor and there is a reservoir at Dunford Bridge called Winscar and Windleden reservoirs.

There are abstractions from waterbores in the Grenoside Rock to the south and west, and a spring is shown on the 1871 geological map near to the row of stone built terrace houses on the road to the mill. Boreholes have been drilled in the sandstone for abstraction but they are over 250 metres away to the west and south. The River Don runs past the site and has been recorded as flooding in 1965 to a level of 199.78 on the downstream side of the weir and 199.43 metres aod at the eastern end of the site near the footbridge. The area is indicated as being within a 1% chance of flooding in 100 years or 1 in 100 in any one year. The records show that the site has not flooded since 1965 even though there have been flooding events in 2002, 2007 and 2008. The Pennine moor to the east is covered in peat which will hold water run off to release it through the cover material over time. There are also the reservoirs which will store any water run off to be released via the overflow in times of heavy rain after filling. There is flatter and lower land to the east of the site where the sewage farm was and an area of flatland to the north east. The flood zone map has been prepared using the data available and the topography and the river is in a watercourse which is up to 2 metres deep near the mill, except where the footbridge is at the eastern end of the site. A flood risk assessment has been undertaken for the site, and development has been finalised for 24 apartments. A flood risk modelling exercise has been undertaken to assess the risk, and the site has not flooded at all in living memory. The river catchment was modelled and found that the properties should have a floor level of 200.6m aod.

## **HYDROGEOLOGY**

The hydrogeological system will be based on the aquifers beneath the site. The sandstone and the siltstone underneath the site will provide storage and pathways for groundwater recharge. The groundwater levels are likely to be perched within the Grenoside Rock due to the mudstone beds between the beds of gritty sandstone. The local system will have been affected a little by the quarrying and landfilling activity to the south. A greater effect will have been the Penistone to Manchester Railway which will have cut through the gritstone to the south along the valley side. The site itself is on a sandstone bed which will provide the potential for a perched aquifer as water is stored and travels through the joint sets and fractures in the stone beds. The fault to the west will arrest water flow from the west and that is the reason for there being springs along the fault line. The strata on the eastern side of the fault is dipping east by north east so water flow will be in that direction feeding into the River Don downstream. The site is covered with drift which could either be sand and gravel or clay silt drift. It is clearly seen in the bank to be a clay type material, hence the mill owner being able to build a pond in the river to direct the water through the mill for power, as shown on the 1871 geology map and the 1852 edition of the County Sheet in Appendix A.

The quality of the groundwater may have been affected in the past by the industry in the town which were mainly woollen mills shown on the first edition maps, refer to Appendix A. There are some tenters around the area on the early edition maps which clearly proves that the area was processing woollen fleeces. The site itself was a chicken processing plant in the 1920s to 1975, and any contamination from this use should have degraded biologically or have been flushed away by the river or the groundwater flow. The existing use is within enclosed buildings on a sealed and drained surface so the risk to groundwater will be low, especially when one considers the clay drift.

The site is underlain by sandstone, but the water table is likely to be at least 3 metres beneath the site at the level of the river. Groundwater does exist at depth through the evidence of wells and springs, but is unlikely to be contaminated for use on this site.

## PHOTOGRAPHS

Photograph number 1 in Appendix B shows the entrance to the site and the river with the sandstone retaining wall on the right hand side for Manchester Road and the river bank adjacent and parallel to the road into Hoyle Mill. The riverbed is at least 3.5 metres below the road at this point. There are some drain pipes from Manchester Road through the retaining wall that discharge into the river.

Photograph number 2 shows the terrace houses on the road into the mill set back from the river and with car parking on the river bank.

Photograph number 3 shows the weir with a sluice and the sandstone spillway in the foreground. The wall supporting the Manchester Road can be seen on the left of the photograph with the clay bank.

Photograph number 4 shows the weir and the river bank on the mill side and the height of the bank is at least 2.5 metres.

Photograph number 5 shows the flatland at the rear of the mill with the wood and Walk Bank Lane in the background.

*Photograph number 6 shows the east side of the flatland and the side of the mill yard.*

Photograph number 7 shows the river bank outside the showroom and the retaining wall on the far side of the River Don. The bank is 2.5 to 3 metres above the water level.

Photograph number 8 shows the old original mill building on the right hand side of the photograph and the newer additions in brick and the glass shop at the far end. The yard and the road through is drained and sealed with tarmac.

Photograph number 9 shows the original mill building on the northern boundary with a loading bay and new toilets. There is a garden area to the side with vigorous plant growth and the site is sealed and drained.

Photograph number 10 shows the workshop and the strips of PVCU racked ready for use to manufacture windows and doors. The workshop has a painted concrete floor and is totally enclosed. The building is relatively new and will reduce or prevent any contamination by severing any pathway. The manufacturing process is within the confines of the building and as can be seen in the photograph vans can enter the building.

Photograph number 11 shows the joiner's shop which is situated in the old stone built mill shown in photograph number 9. The area is enclosed and the machines are all fitted with dust collection equipment.

Photograph number 12 shows the other side of the joiner's shop with the dust extractor and the concrete floor.

Photograph number 13 shows the sub station for the complex and the fence around it. The transformer is on a sealed base and there are no signs of leakage or spillage. The Electricity Company have a policy of regular maintenance of sub stations which involves checking the cooling oil and testing it for contaminants such as PCBs. The oil used to cool the sub station does not produce PCBs as it was phased out some time ago by the company.

## **CONTAMINATION ASSESSMENT**

It is clear that the site has been used as a woollen mill from 1850 until 1920 when extensions were added and the property became a food processing area and a chicken processing plant. There has been some re-development when the site became a UPVc window factory, with the erection of extensions which expanded to include a manufacturing shop and a glass store with a parking area. The latter use has been as a window and door manufacturer and the factory has been managed in a professional and diligent manner to reduce contamination to the environment with a designated area for materials and waste. The writer has passed this site on numerous occasions since 1990 and is aware that the site has changed little in that time. The present use has existed on the site since 1978.

There has been the continued storage of materials and vehicles on the site since 1920 with a manufacturing unit since 1978. The previous use will have prevented contamination simply by its use as a food processing business and the present use does not have the potential to produce contamination. The rear of the yard has been used to store materials and store waste material from the work undertaken by the fitting and maintenance teams, but it is kept in skips or cages. The recent use has been to assemble windows and doors which has required the use of machines and lathes for wood working and the assembly of the PVCU units which has included gluing the parts with adhesive.

The area is sealed and drained with tarmac and concrete with drains on site routing water from the yard to a foul sewer. The area near the front of the old mill on the river bank is not sealed and drained and consists of soil cover over the clay bank and sandstone. There is vigorous plant growth which would illustrate the exposed area has not been used for the operations on site and hence the area has not been subjected to the possible contaminative uses. The site where it is sealed and drained has been used for manufacturing.

The area around the access is sealed and drained and the access to the workshop is clean and there is no evidence of contamination with hydrocarbons associated with oil, fuel and cleaning agents around the workshop or the parking area near the shop and store.

There is a possibility there could be contamination on the land due to the chicken processing activity, but this is unlikely as the use of the buildings as a processing unit ceased in the early 1970s. The later use of the land as a manufacturing, storage and maintenance depot for the company's workforce for the replacement window and door, conservatory business could have introduced components to the site that may have a potential to cause pollution if not handled properly.

The contamination may be related to the wood treatment, adhesives, cleaning agents and oils brought to the land in fuel, lubricating oils, heating oil, waste, resins, weed treatment, timber treatment products, paints and solvents.

The present use of the site and the past history can provide information on the potential for contamination on the ground and in the substrata.

This information can provide the type of contaminant that may be found on site and a site investigation can be designed to ascertain the degree of contamination and how the material if contaminated above the trigger levels or estimated tolerable intake can be treated.

The Department of Environment published Industry Profile notes based on research undertaken on contaminated land. This report has considered the profiles for the manufacture of the joinery products and the former use as a chicken processing unit and the nearby land in the risk assessment.

The machinery and parts may be cleaned using solvents, thinners or additives which will have been used in the machine shop and preparation and coating area for the wood. Bonding materials have been used on site such as epoxy adhesives and the resins to assemble the windows and conservatories.

## **RISK ASSESSMENT TOOLS FOR THE POTENTIAL FOR CONTAMINATION**

In order to interpret analytical results, it is common practice to compare them with the various guidelines published across the UK and within Europe. These guidelines act as an aid and are by no means definitive and any judgement must be based on a source-pathway-target analysis. The early guidelines included the UK Interdepartmental Committee on the Redevelopment of Contaminated Land (ICRCL) published in Guidance Note 59/83, UK Water Supply (Water Quality) Regulations (1989), The Groundwater Regulations 1999 and the soil and groundwater guidelines published by the Dutch authorities as Dutch Intervention Levels.

The ICRCL and Dutch Intervention Guidelines have now been superseded in the UK by the Contaminated Land Exposure Assessment (CLEA) guidelines and the Contaminated Land Reports, the TOX values and Soil Guideline Values (SGVs) issued by the Environment Agency in March 2002 and updated and revised since then, the latest being July 2009.

These guidelines have been published by DEFRA and the Environment Agency/NHBC on the contamination due to historical use and a site inspection. The risk assessment is based on a conceptual model for the site which assesses the contaminants and how they would affect a receptor if there is a pathway from the source of contamination.

The ICRCL value was used to provide the most appropriate guidance in the UK but it did not conform with Part 2A of the Environmental Protection Act that required a scientific basis for the assessment of contamination for harm to human health, groundwater and land.

New guidance has been issued by DEFRA that has superseded the ICRCL guidance. DEFRA have published the CLR reports 1 to 11 and the Environment Agency and the NHBC have published joint guidance in R&D publication 66. The Agency have also published Soil Guideline Values the contaminants in soils such as Arsenic, Mercury, Nickel, Chromium, Selenium and Lead for the harmful effects on humans.

These documents together with the list in the reference are primarily intended as a guide to site re-development. The DEFRA guidance provides for a risk assessment of the potential for contamination on the previous use of the site and provides guidance on a systematic approach to site investigation.

## **SITE CONCEPTUAL MODEL THEORY**

The Environment Agency and DEFRA now use a risk based assessment for the re-development of sites for housing. The guidance is issued in the Contaminated Land Report Number 10 "*The Contaminated Land Exposure Assessment*" model known as "CLEA" which uses a model that investigates the contaminants and the effect they will have on human health at various degrees of exposure.

The re-development of the site should consider the risk of these contaminants in the soils or play areas and provide a solution for severing the source, i.e. the contaminant from the source, in this case a human, usually children. The Environment Agency published the Contaminated Land Report number 11, Model Procedures for the Management of Contaminated Land published in September 2004.

In CLR 10 the model uses the parameters of tolerable daily soil intake (TDSI) and compares this with the estimated daily intake (EDI) of a particular contaminant. The model correlates all the contaminants likely to be on site via each pollution pathway for the site and this is the total estimated daily intake (TEDI). This will consider the various pathways such as:-

- i. Airborne dust from the play areas and gardens in dry weather
- ii. Surface water run off from the site
- iii. Groundwater pollution and the issues of water from springs down flow gradient
- iv. Ingestion of the contaminants through the soil or food grown on the land

The TDSI considers the site and the background levels from land around the site. The TEDI considers the effect on the human being from all sources and if it exceeds the TDSI then some action is necessary on the site to reduce the risk of the contaminant below the TDSI.

The system is site specific by using the data on each contaminant and solving the equations to arrive at a solution where the TEDI is below or equals the TDSI. This is seen as a more robust system than the ICRCL Guidance as that guidance was a general approach to contamination.

It is important to produce a robust phase 1 risk assessment and assess what contaminants there could be on site to design the site investigation through a conceptual model.

In CLR 11 the report deals with the management of data to provide a risk assessment on the information gathered and the conceptual model which will provide a basis for the options to implement a remediation strategy for the site before it is developed. The model reviews the risk assessments based on the information and whether further risk assessments are required to provide options for appraisal if there may be an unacceptable risk associated with the site and these need to be managed.

The options for remediation are considered for the site and each option run through a three stage process to provide the option for the cost effective remediation of the site and manage the risks to the environment. The three stage procedure is a phase 1 report, a phase 2 site investigation, a remediation strategy and further investigation.

The material should be sampled after the buildings have been demolished so that any *contamination can be assessed and then if the material is relatively uncontaminated it can be crushed and used on site for the project.*

The design of the site should incorporate encapsulating the hardcore and concrete on site under the houses over site concrete and in the sub base for the access road so that any contaminants in the soil do not have a pathway to transfer contamination to the surface of the development or to the ground to surface off site at the river.

The geological map shows the site to be underlain by sandstone beds above the Lower Coal Measures mudstone. The Grenoside Rock and Penistone Flags are not a major aquifer even though there may be some groundwater due to the fault to the west and north and the offshoot faults to the north. The sandstone to the south on the plinth around Harthill may be a major local aquifer in the region and in the locality and the quality of water may not have suffered due to the industrial past along the river bed and the quarrying around the south of the site on the valley side.

The processes will have been wool washing and wool scouring, which will have long since biodegraded.

*Lighter oils could have soaked into the substrata under the yard soil if there had been spillage or leaks from the drums as the site was a mill, a chicken processing plant and a UPVc window manufacturer. Usually the cap of the sandstone bed is weathered which forms brown mottled clay which in general is impermeable. The site is also covered with a thin veneer of clay drift. If this is the case, then the contamination will be on the surface and in the cover material and the pathway to the deeper strata will never have formed due to the clayey subsoil. This has not been proven on this site as all the site is sealed with tarmac or concrete and intrusive investigations will damage the sealing properties of the material and introduce a pathway for contaminants to flow into the strata below and into the watercourse.*

## **THE CONCEPTUAL MODEL FOR THE SITE**

The site has been investigated by non-intrusive techniques to ascertain the substrata and the types of material used on the site. It is clear that the land has been used as a mill and the material tipped in the western side of the site where the mill race and pond was will have been filled with rubble from the main mill building when it was demolished in the early part of the 20<sup>th</sup> century. The rest of the site is on sandstone or mudstone along the side of the river and the site is sealed.

The old mill buildings are built in sandstone walling with hand dressed walling on the inner and outer leaf, other buildings have been built in red brick. The roof of the mill is sandstone tiles and the brick buildings have asbestos sheeting as does the glass workshop on the river bank side. The portal frame buildings are roofed with steel sheets and the skin is concrete block with concrete floors. The buildings and yard are drained to the foul sewer through a series of gullies on the site. There is material stored throughout the buildings consisting of wood, cardboard, plastic and consumables. The old mill buildings have been converted into offices and showrooms and these are stocked with paper, books, electrical office equipment, and parts. The machine shop is relatively clear, apart from the lathes and drilling machinery on the shop floor and the portal frame building where the windows were made and despatched.

Near the access to the site is a substation transformer that is within a metal fenced compound and sealed with tarmac and drained into the sewer. In the past, transformers were filled with oils that had PCBs, but these were phased out many years ago.

The site investigation has ascertained the depth of the strata below the site, and suggested the construction of the site to include setts which will have been covered over with tarmac and concrete.

The underlying strata has not been tested for permeability as it could provide a pathway for water or any other liquid if the liquid can find a pathway from the surface to the underlying sandstone. The geological plans and the river bank has been inspected to assess the potential pathway for groundwater or surface water contamination due to rainfall percolating through the uncovered areas or flowing over the hardstandings to the river.

#### Receptors on the site

The proposals are to build a small complex of 12 houses along the river bank and a copy of the plan and section is enclosed with this report. The receptors will be the people who live in the houses and the flora and fauna around the site. There is also the potential for any pollutant to reach controlled waters by the run off from site or percolation through the strata once the tarmac and concrete have been lifted.

The pathways for any contaminant are the air, water and strata that may convey contaminants from the site or to the site from the surrounding land use.

The receptors are the people who will live in the houses and here one must consider children playing in the garden and people growing vegetables.

The groundwater is a receptor, and there is potential for pollution of the minor aquifer from contamination either from the existing use or from the past from historical use. It could also be contaminated during remediation through percolation through the strata of rainwater flushing through the materials or fuels and equipment brought onto site.

The flora and fauna that may be stressed due to contaminants and phytotoxic metals in the soils.

The building materials have also been identified as a receptor from any contamination that may exist on site, due to the materials used presently on site. The contaminants may attack the alkathene water supply pipes, the gas supply, electric cables, concrete, bricks, blocks and mortar from elevated levels such as sulphates.

#### **METALS**

The site has no record of any materials being brought onto site to lift the levels, but the early plans show the river has been excavated out to provide a pond and a mill race for power from 1850 to 1900. The pond is likely to be demolition material from the mill when it ceased spinning wool and there may be ash on site due to the site probably using steam power which could contain elevated levels of arsenic above the 10 mg/kg permitted for house and gardens in ICRCL 59/83 and under CLEA 20 mg/kg. The soils have not been sampled and the applicant is waiting for the grant of planning permission as the site is a manufacturing unit and an intrusive site investigation will damage the hardstanding and the drainage. There may be elevated levels of metals including levels of lead, zinc, nickel and copper.

There may be elevated levels of arsenic associated with any coal ash and arseno-pyrite in the *exposed coal field and there may be some hydrocarbon contamination*. However, the amount of material in the site is thought to be small and can be removed to a landfill site if need be. The strata beneath has not been disturbed as shown in the photographs of the weir and the site has remained the same for over 180 years.

Heavy metals are ubiquitous in most natural materials and the environment receives metals from other sources such as mining, agricultural materials, fossil fuel combustion, industry and waste disposal.

Pollution from metals can be long lasting in soils due to the relatively strong absorption of many metals onto the clay colloids in soils and the contamination may last hundreds of years. In general, the toxicity problems will occur in the more acidic environments hence the mine water clean up programme in the western side of the exposed coalfield in Yorkshire. The presence of mudstone within the substrata precludes the acidic forming environment. The oils from the transformer will have been handled in an appropriate manner and the operation of changing oil or testing it should have adopted good practice in the handling of any oil.

Plant uptake from metals in the soil depends on the root uptake and the absorption and the sensitivity of the organisms to metals in the soil. Plants are a good indicator of the type of *contaminants on site and if there is little or no vegetation or it is stunted, then the soil is phytotoxic*. The soil is not hazardous to mammals or health of humans but stunt plant life and there are limits set for growing vegetables. Plant growth on site is vigorous and there is no sign of stunted growth.

## **GENERAL INFORMATION**

The Soil Guideline Values have been revised and published in July 2009. The levels of some contaminants have changed and the discussion below is based on the SGVs prior to July 2009.

### **ARSENIC**

The soil guideline value for arsenic is 20 mg/kg dry weight soil in SGV1. There is an explanation for slightly elevated levels around the coalfields. The material was used on the railways for engineering works prior to ballast being placed for the track, the ash was used as a sub base for tarmac and setts used to build roads and parking areas. The construction work may include fine ash as this was common in the early 19<sup>th</sup> century to level the land prior to laying flags and setts.

### **CHROMIUM**

SGV 4 gives levels of the metal as a function of land use and the limit for housing with gardens is 130 mg/kg. The levels on the site are unlikely to be above the SGV as there has not been an historic use of chrome on site. There is unlikely to be any harm to human health.

### **NICKEL**

The Soil Guideline Value for Nickel (SGV 7) gives a value of 50 mg/kg for the land use proposed in this development, and the pH range for the SGV is similar to that found on site. The sample analysis will provide detail of the nickel content of the tipped material and the sub base, but there is no historical use of nickel on site so it is unlikely that there will be any harm to human health for the residents of the houses with gardens.

## **SELENIUM**

The SGV 9 publication gives a value of 35 mg/kg and it is likely none will be detected on site there is no risk to human health from selenium.

## **LEAD**

SGV 10 discusses lead contamination and its effect on children and plant uptake. The values for the proposed development in SGV 10 is 450 mg/kg and the site has no history of using lead. The works may have used paints and primers, but lead based paints were being phased out in the 1960s before this site was opened. It is unlikely that lead contamination within the soils will be harmful to human health.

## **MERCURY**

The soil guideline value for Mercury is 8 mg/kg for the houses with gardens and the soils sampled on site are likely to contain less than 1 mg/kg. As there has been no historical use of mercury on site, it is unlikely that there will be harm to human health on the re-development of this site for housing.

## **CADMIUM**

This metal is unlikely to be detected on site so the risk is very low or none to the health of humans.

## **ZINC**

Soil Guideline Values for zinc have not been issued yet so the ICRCL limit can be taken or a risk assessment based on the CLEA model in CLR 10. There may be levels above the guideline for plant growing under ICRCL 59/83 2<sup>nd</sup> edition. The site has not been used for the manufacturing until 1978 and the painting, treating and rust proofing process may use zinc based compounds. The metal is phyto-toxic and therefore affects plant growth in high concentrations. The plant growth on this site was vigorous and there was no evidence of stress or dieback. Zinc levels can be assessed by Generic Acceptance Criteria for metals using a statistical approach and comparing outliers with the background levels.

## **ORGANIC COMPOUNDS**

Because the site has been used to manufacture woollen cloth between 1830 and 1920 the likelihood of any contamination from this use is now very remote due the contaminants been organic and will have degraded biologically. Pesticides which can be associated with recent wool processing units were not used in the industry during the period this site was operational. The site was then added to with brick built extensions and tiled floors and used as a chicken processing unit. This use would have meant stringent control of the environment to prevent contamination of the food and the chicken produce and therefore the risk of any residual contamination is unlikely.

The most recent use as a window, door and conservatory manufacturer can introduce contaminants to the site such as preservatives, paints, dyes and adhesives. Cleaning fluids can also have the potential to contaminate the land and site has been assessed with these products in mind and the recent use.

The company moved to these premises we understand in 1978 and there would have been fairly good management procedures in place to reduce the risk of spills and disposal of waste products. The area is sealed and drained and the site has a dedicated drainage system to the foul water mains. The buildings themselves are either tiled or have concrete floors and because of the nature of the business the amount of materials used the likelihood of contamination is considered to be low. The wood and the PVCU will not in itself cause contamination, it is more likely to be the agents used to preserve, stick or seal the product.

As the operation is undertaken inside a closed building with concrete floors and drainage system the pathway for any pollution is restricted.

Each product can be looked at in turn:-

Spent oil is thought to be carcinogenic and would require careful handling and disposal from the site. It can affect the biological characteristics of soils so that there is a reduced nitrogen level in the soil, the nitrogen is used by the microbial population in the soil as the population increases. The microbes eventually breakdown the soils that contain oil and after a period of time there may be improved soil structure.

Any oil contaminated soil in the area is identified then the degree of the contamination can be assessed by sampling the material and comparing the levels against the CLEA model or the Waste Acceptance Criteria for landfill sites in the guidance issued by the Environment Agency. If the contamination in the excavation waste is considered too high for the intended use, the soil can be remediated biologically or be removed to a landfill site and used for cover in the landfill. The soil can be analysed for hydrocarbon levels and if there are low levels of contamination, the soil can be encapsulated on site to sever the pathway from the PAH contamination to the receptor. The type of hydrocarbon contamination can be assessed by banding the samples to consider the source of the hydrocarbons.

Phenols apply to aromatic compounds that have an antiseptic odour and they are associated with industrial processes such as the manufacture and use of solvents, paints, adhesives, preservatives and cleaning fluids. The use of the site for a window and door manufacturer and store together with the maintenance could have a potential phenol contamination. There is also a possibility of solvent use for car and van maintenance and cleaning.

There is no evidence to show that these materials were not handled correctly and there is no reason to believe they were split or used to clean up. The use of the site for wood and PVCU manufacture was only recent and good practice under the appropriate legislation such as COSHH and HSW Act should have been paramount.

The accident book was examined in the office and there were no incidents of spillage in the book in the workshop or despatch area. There were accidents relating to injuries due to cuts and scrapes, but none due to accidental spillage.

There was no evidence of hydrocarbon contamination either in the mill or in the workshops. The only area that could be affected is around the waste disposal point and it is recommended that a sample of soil is taken and analysed prior to removal of the soil after removal of the tarmac cover.

## OTHER ASSESSMENT

No gas measurements were taken to assess methane or carbon dioxide levels. It is not considered that the site will be affected by gas emissions from landfill sites or coal mining. The site is situated on an outcrop of sandstone and the waste sites are either situated higher up the valley side on the south side or in the wood near Work Bank Lane and there are no coal seams underneath. The landfill sites were likely to be filled with ash refuse. A gas risk assessment can be undertaken on grant of planning permission with a spike test or boreholes.

There is a potential for asbestos contamination albeit in small amounts in the areas where the roofs have been covered and the storage of guttering and sheets used in the early 60s and 70s on site. Handling to ensure that the sheets are *not broken* and they are stacked separately for disposal will be important.

The buildings have corrugated cement bonded asbestos sheeting on the roofs and this will have to be removed in whole sheets, dampened down and wrapped in heavy gauge plastic sheeting and stacked separately in a skip for disposal to a site that can accept asbestos sheets. Asbestos sheeting is classified as *stable non-reactive hazardous waste* and the facilities for handling this type of waste are now limited due to the introduction of the Landfill Regulations (England and Wales) Regulations 2002.

## CONTAMINATION RISK ASSESSMENT

Based on the concentrations of compounds identified by ground investigations on other sites with similar material, a qualitative risk assessment has been undertaken. A conceptual model has been built up for the site based on the geology, surface watercourses, the topography and the layout of the houses in the proposed development.

There is potentially a pathway to groundwater as the underlying clay subsoil associated with weathered soils over the sandstone has a coefficient of permeability of  $1 \times 10$  to the minus 8 metres per second which is fairly impermeable. The clay will allow water to percolate to the deeper strata if it becomes saturated and a head of water is formed above the sandstone.

The inspection of the clay cover in the river bank on this site, when considered with soils on sites of similar geology illustrates that any surface water percolating through the soil will be arrested by this clay and will percolate through the soil and any loose material in a lateral direction until it issues at the surface.

The site is sealed and the fall is to the road in the middle of the buildings which has drainage gullies and pipe work to the combined sewer. The soil and sub base material on the site will increase the residence time of the rainwater within the soil and any hydrocarbon contamination will have broken down over time many years ago.

The water usually has a pH between 7 and 8 so the metals within the soils will be stable and it is unlikely they will leach out unless the pH falls to the acid range of below 6, this is unlikely due to the type of material the site is built on.

The risk sources, pathways and targets have been identified with an assessment of the notes to the *health of workers* and the public at the site.

| <b>RISK ASSESSMENT – SUMMARY OF FINDINGS</b>                            |                      |
|-------------------------------------------------------------------------|----------------------|
| <b>RISK DESCRIPTION</b>                                                 | <b>RISK CATEGORY</b> |
| On-site contamination                                                   | M                    |
| Contamination to be present in Significant Quantities of Concentrations | L                    |
| Potential for harm to human health                                      | L                    |
| Potential for On-Site Migration of Contaminants                         | L                    |
| Potential for Contamination of Controlled Waters                        | L                    |
| <b>OVERALL RISK</b>                                                     |                      |
| Key: L - Low Risk<br>M - Medium Risk<br>H - High Risk                   | L                    |

**Table 1:** Contamination Risk Assessment

Based on the information obtained from the walk over and preliminary geological investigation the risk category for on site contamination is low and the overall risk is low.

It is not thought that there will be any heavy metal contamination except in areas where there has been any ash used a sub base and within the material in the tipped area to level the site where the mill pond and race were, refer to the 1850 first edition County Sheet.

Elevated levels of hydrocarbons could be associated with the land as the garage area may have been used to change oils and maintain vehicles. The owner of the business informed the writer that the vehicles are taken to a garage and workshop and no maintenance was carried out on site. There is no evidence of pollution on the yard concrete due to fuel deliveries and there are no tanks on site which hold fuel. It is unlikely that there will be any contamination from fuel storage and the site has followed relatively good practice with regard to light maintenance of vehicles.

The site has been used as a manufacturing site for windows, doors and conservatories and these use materials for staining, adhesives and cleaning which uses solvents and paints.

There is no potential for phenol contamination around the mill and extension buildings and the portal frame buildings have concrete floors and the materials on site used on the assembly of products have been handled in the proper manner according to the site procedure manual and accident book.

The site is drained and sealed and the potential for groundwater contamination from this site in the past will have been reduced due to the concrete floors in the buildings, the tarmac and concrete cover outside and the drains that would route any spillage to the sewer system.

The groundwater table is likely to be 2 to 3 metres below the site in the sandstone on top of the coal measures mudstone. The water will flow rapidly through the sandstone to the river to the south thereby flushing the sandstone regularly.

The area was industrialised all along the river valley with mills and sewage works and there will have been contamination in the past around the area due to these works. There is now a large distribution yard upstream at Plumpton Mill where wagons are parked and loaded.

The water should not be contaminated underneath from operations on this site as the operations are severed from the groundwater due to the hard surfaces and the clay subsoil which will inhibit flow to the ground from the surface. The quarrying to the south undertaken between the 1840s and the 1880s is unlikely to have caused any contamination due to the type of operation for mining sandstone in that period.

The railway had a potential to contaminate the land under the bed and via migratory pathways from the track to the ground. It is unlikely there will be any contamination on site due to the railway operations as the site has been built up since the railway was constructed in the 1830s. The railway was closed in 1980 and the bed is now part of the Trans Pennine Trail.

The landfill sites are unlikely to cause an impact on the site as they were tipped and closed in the early 1980s and are at a higher horizon at Stotter Cliffe or on River Drift which will be impermeable. The sites are too far away to present landfill gas problems and the waste was probably non-biodegradable as most refuse was ash before the 1970s.

It is clear that there should be no harm to the site workers due to the past use of the site and other than wearing personal protective clothing and following good site practice the workforce should be safe. Particular care should be taken when disposing of any oil and removing the scrap from the site. An asbestos survey should be undertaken prior to any demolition but we could not see any asbestos used for lagging during our walkover. As previously mentioned in this report, the cement bonded asbestos sheets should be removed whole and double wrapped in plastic.

The wood that is stored within the site should not cause any harm to the demolition workers but they must be aware of the consequences of unsafe working conditions when removing the wood and other heavy goods.

The demolition workers must wear masks and goggles when clearing the area as there are products in the shop that could be detrimental to the respiratory systems of humans without a proper risk assessment.

The site periphery has not been disturbed since the yard was covered with tarmac or concrete and the area is growing grass so it is unlikely there will be any contamination on the periphery of the yard to the north, west and east and along the river bank.

## **CONCLUSIONS OF THE DESK TOP STUDY AND SITE INVESTIGATION**

The site has been used as a woollen mill and then a chicken processing plant until the 1970s. The mill and the portal frame buildings have been used by a window and door manufacturing business up to the present date and the buildings have been kept tidy to ensure materials are not damaged and are kept fit for purpose.

A low risk potential for contamination has been identified in the desk top report due to the recent use and the former use as a chicken processing plant. The site investigation has used the conceptual model to assess the risk to the receptors on re-development of the land for housing.

The receptors are the groundwater, the air and neighbours to the site, as it is redeveloped. There are also the residents to consider of the houses if they are built on site and how the past use of the land and the surrounds may affect the health of the residents in the new development. A conceptual model of the site has been produced to ascertain the pathways for contamination and whether the pathways have been formed or severed on the site.

The pathways for ground contamination for the most recent use has been severed as the site is sealed and drained. There are some cracks in the concrete and the tarmac has been repaired in places, but overall the site is sealed and the pathway will have been severed from the surface to the target which is groundwater in the sandstone.

The air and the surrounding environment can be receptors due to the dust arisings from the site during operation and re-development. The dust can be deposited in a short distance from the site and residents can take the dust into their houses on their footwear. The dust is re-activated when the occupants clean the house with a vacuum cleaner or brush. Over time the intake of heavy metals into the body can increase due to inhaling the dust.

The site is drained and sealed and the buildings are enclosed so any potential for dust arisings when the site is re-developed for housing is minimal. The materials on site underneath the tarmac and concrete do have a potential to cause dust during demolition as the soils and ash are fine. If heavy metals or aromatic, volatile hydrocarbons are evident, then the combined potential with dust arisings is increased as the site is re-developed.

The demolition of the site should consider the site clearance and to prevent dust arising by good site practice such as damping down in dry weather. The hardstandings should be protected until all the buildings have been dismantled to provide a base to crush or load the rubble from.

The recyclable materials in the buildings can then be dressed, such as the stone and the slates, crushed and recycled such as the bricks and concrete for use on site. The tarmac can be lifted and the planings re-used for the roads and the concrete can be lifted and crushed for secondary aggregate.

It is essential that the land is re-assessed for contamination after planning permission is granted as intrusive investigation in a working manufacturing unit is impractical so as to be clear for the housing development during demolition to refine the conceptual model.

The contamination is expected to be low in the site and the site investigation should be mainly centred around the filled in mill pond which it is believed would have been filled with the demolished woollen mill situated on the site between 1850 and 1920. There should be no potential contamination to the groundwater as the clay matrix on the surface is impermeable.

It is unlikely that there will be any contamination to the quality of the surface water issues near the river attributable to this site as there is no record of pollution and the ph of the materials is between 7 and 8.2 which is neutral.

The metals are unlikely to leach out of the ash and bricks so the material can be used to re-profile the site access. However, there may be elevated levels of sulphate up to 3% so the foundations and mortar underground will have to be sulphate resisting if not bedded onto the sandstone or stiff clay.

The geological publications show that the site is not affected by any faulting directly beneath the site, and it is a thick sandstone bed that exists under the soil which is drift, so there should be no requirement for special foundations or re-design of the housing due to constraints on the developable areas. The presence of faulting could be ascertained in the site excavations but it is not considered to be a problem on the site as the tectonic activity occurred in the Hercynian Orogeny which occurred 200 million years ago.

## RECOMMENDATIONS

The area is proposed for residential development and this land use is the most sensitive to ground contamination and associated issues of blight. The planning policy is to re-develop brown field sites for other uses and a degree of remediation of the site is a serious option to release this previously developed land and ease the pressure on green field sites being developed.

The made ground from our initial investigation comprises of fine soil, excavation material, builders rubble and coarse brick that could contain some ash and tarmac planings near the top of the site.

The depth of the fill is unlikely to exceed 1 metre in the pond area and the cover over the remainder of the site is thinning out to the boundaries on the east and south. The fill should be removed to the clay undersoil and screened, crushed and stockpiled on site for use. The material on site should be excavated and the demolition material from the buildings crushed to provide Type 6F2 aggregate and soil which can be used on the development of the site as sub base. The material should be assessed using CLEA and GAC.

Prior to any demolition of the buildings, all the wood and other biodegradable material on the site should be disposed of separately to the demolition rubble. The wood can be separated and then sent to a timber recycling centre or the beams in the mill buildings recovered and re-used. Any scrap should be removed to an authorised metal recycler and the old machines sold for re-use or scrap.

Any tanks should be emptied and then removed, the office and portal framed buildings cleaned out and the floors cleaned prior to the buildings being taken down and the asbestos sheets stacked and removed by an authorised carrier of asbestos.

The mill should be demolished by a contractor who is an expert in reclaiming old materials for which they may pay a credit note towards the whole demolition. The stone walling, joists, floor boards, roof joists, roofing slates and coping stones can all be re-used.

Once the site is cleared, the site can be sampled to assess the contamination in the sub strata after demolition. The sampling programme is restricted at the present time by the buildings and the concrete and tarmac hardstanding. Samples can be obtained from the whole of the site to assess the potential for contamination which will allow a more confident appraisal of the conceptual model. It is unlikely to be able to take samples from the sub strata until planning permission is granted as the land still has a use as a storage and manufacturing unit.

A sampling programme should also concentrate on the fines in the crushed material from the demolition to ensure that the contaminants are not being concentrated as the material is screened and processed for filling and compaction.

The site investigation and sampling programme can be designed when the positions and types of housing have been confirmed, but it is known that there could be 12 houses evenly spaced from the boundary of the site along the river bank. The garden areas should be assessed fairly comprehensively to assess contamination and provide soil cover.

The rubble when it is screened can be used to fill the access road area along the northern boundary of the site and the turning circle.

The site investigation will assess the possible degree of contamination and the treatment required if any. If the material is above the guidelines for housing the encapsulation or removal of the material can be verified because there is light yellow buff stiff clay and then sandstone beneath as substrata. The in situ geology of drift and solid consists of broken stone or brown plastic clayey subsoil beneath which will delineate the depth of any soil cover.

Trial pits can be excavated in the area to assess the subsurface geology and assess the potential for sub surface pollution. If there is a potential for contamination from the material, it can be used as sub base or base for the over site concrete in the houses. The concrete and the plastic membrane will encapsulate the material and sever the link to the receptor. Consideration should be given to the levels of sulphates in the material prior to using the material near to concrete.

It is recommended that once the site has been cleared of the buildings and in the open space and garden areas then photographs and a site inspection is undertaken to confirm that the fill has been removed. The foundations of the houses and garages should be below the clay subsoil on the bedrock or stiff clay depending on the inspection by the building control officer.

The site can then be backfilled with screened recycled material in the hard landscaping areas, and the areas where the gardens are to be can be re-profiled with the fines and then covered with clean sandy clay soils and imported topsoil. It is recommended that the topsoil is *purchased from a reputable source and sampled for contamination or inspected as it is being excavated to ensure it is fit for purpose.* There are two suppliers nearby who between them should be able to supply from their quarries or diverted from the inert landfill site.

A further report can be submitted to the Environmental Health Department on the site investigation, the method of sampling and the positions of the soil samples can be agreed prior to completion of the development. The results will be supplied to the Environmental Health Department and a decision made on whether further sampling is required from trial pit excavations and/or any remediation that is required.

A verification report of the work undertaken to remediate the site can be prepared and submitted before any of the houses are occupied.

## **FLOOD RISK ASSESSMENT**

A flood risk assessment has concluded that the site is within a flood risk area and the Environment Agency's flood risk map shows the site within zone 3 which is designated as having a 1% chance of flooding. The last known flood event was in 1965 when the levels rose to 199.43 on the downstream side of the weir. There was no flooding of the mill or the chicken processing plant recorded. A topographical survey is included in the flood risk assessment that has been prepared for the site. Stormwater should be able to go to ground via a soakaway or into the nearby watercourse and river. A flood modelling exercise has been undertaken by JBA Consulting and the levels of the buildings should be set 600 mm above the levels.

## **ROAD DESIGN**

As the north end of the site has been formed to provide a loading bay and this material will be removed down to the sub base level, it is advisable that some of the crushed and screened hardcore is laid and rolled into the undersoil to provide a base for the sub base of graded stone or secondary aggregate prior to tarmac being laid. The concrete hardstandings on site can be used as a sub base if they are crushed and graded.

## FOUNDATION AND SULPHATE RESULTS

Based on the type of material on site, no special measures should be required on construction of the foundations in sulphate resisting cement, but further information should be collected when trial pits or the foundation trenches are excavated.

## LIMITS OF LIABILITY AND USE OF THIS REPORT

This report has been prepared by the Cromwell Wood Estate Company Limited for the sole use of the client and his professional advisor on matters dealing with the past use of the land and detailed application for re-developing the site for 12 houses to be submitted to Barnsley MDC. The report may also be used to accompany an application to the NHBC for registration. It may not be copied or relied upon by any third party who may subsequently advise the client or undertake his own investigation without prior consent of Cromwell Wood Estate Company Limited. It is recommended that any other potential developer consult with the writer of this report prior to undertaking any site investigation work as the contents of this report cannot be relied upon for the design of a site investigation.

Signed

A handwritten signature in black ink, appearing to read 'J Carlon', written in a cursive style.

Eur Ing John Carlon B.Eng (Hons) C.Eng C.Env MIMM MRICS MIQ MCIWM  
Chartered Environmental Surveyor

For the Cromwell Wood Estate Company Limited  
Mining Engineers and Surveyors

December 2009

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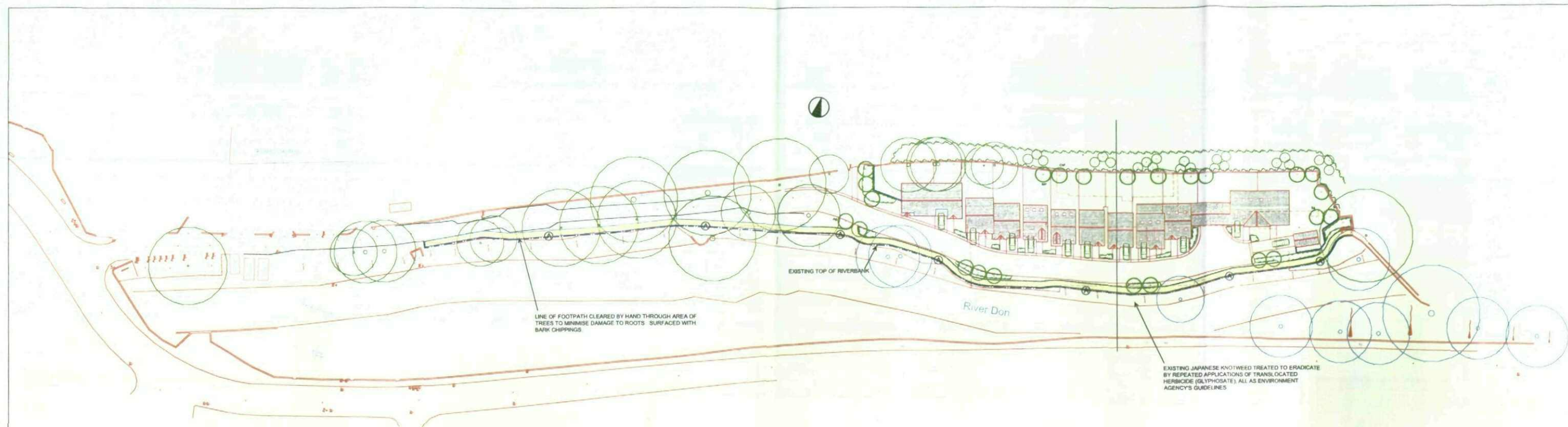
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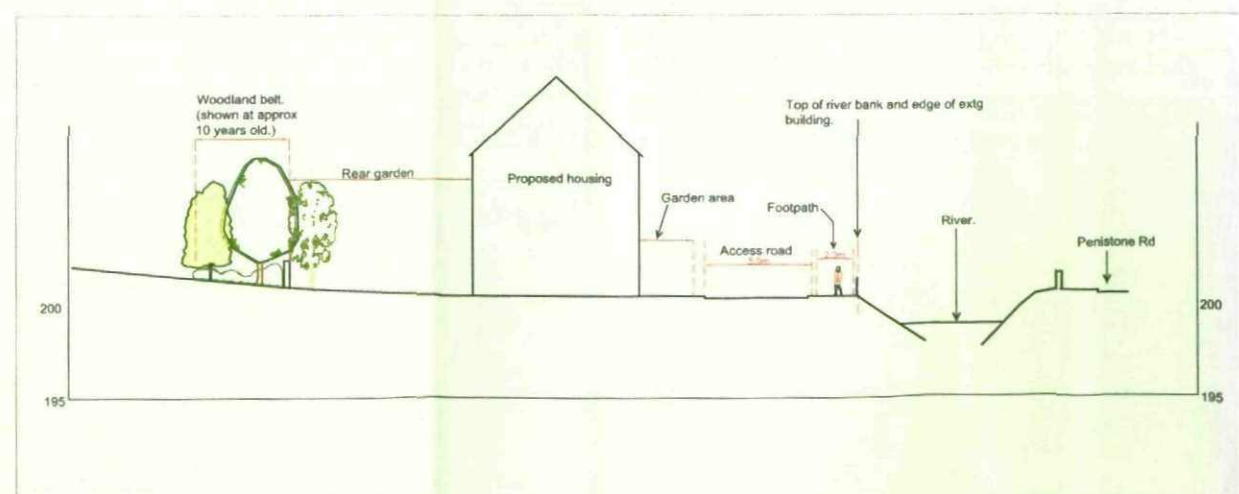
# APPENDIX A



#### REFERENCE

- Existing trees to remain. As surveyed.
- Existing trees to remain. Approx size and position only.
- Proposed standard trees. 10-12cm girth.
- Proposed ornamental shrub planting. For details see dwg no H/T/163/2a.
- Proposed native tree and shrub mix. For details see dwg no H/T/163/2a.
- Proposed grass seeding. BSH mix A22, or similar, sown @ 35gms/m<sup>2</sup>.
- Proposed 1m high ms railing painted black gloss. 2 horizontal rails, 50mm diam, on posts at 1.8m centres. (A) represents access points of removable sections of railing.
- Proposed informal footpath, 1.5m wide surfaced with bark chippings.
- Existing building footprint.

#### TYPICAL SECTION THRU RIVER scale 1:200



Rev A. 18 Nov 09. Amendments to comply with new layout, architects dwg no 0961/110 rev A

*cf* landscape design

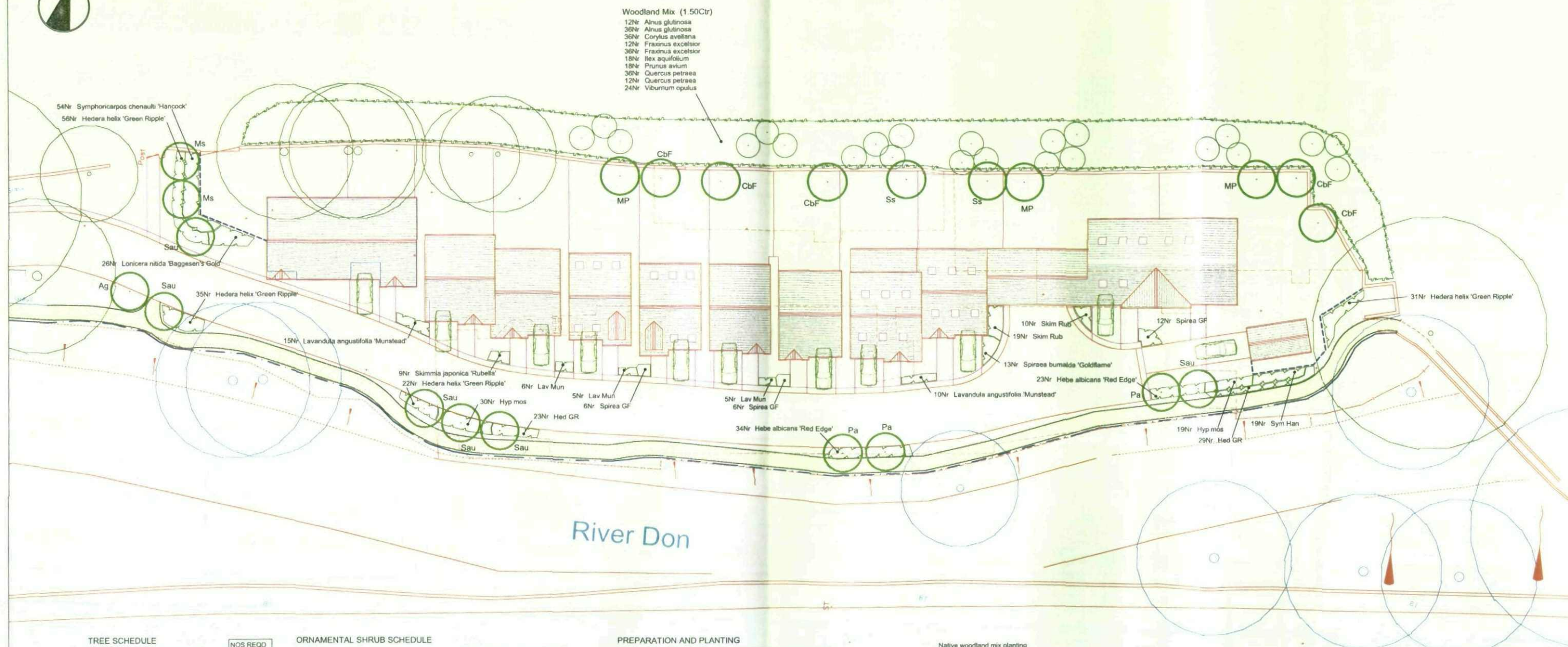
Oslington, Hasley Road, Ossett, West Yorkshire WF1 1LN  
Tel 01924 281144. Mobile 07796 315348. e-mail c@cflandscape.co.uk

client  
Mr J Hutchins

project  
Proposed residential development at  
Hoyle Mill,  
Thurstone.

drawing title  
Outline Landscape Proposals

|                     |                |                 |                          |
|---------------------|----------------|-----------------|--------------------------|
| scale<br>1:500 @ A1 | date<br>Dec 05 | drawn by<br>CTF | checked by<br>H/C/163/1A |
|---------------------|----------------|-----------------|--------------------------|



#### TREE SCHEDULE

| SPECIES                                     | Ht in m     | NOS REQD |
|---------------------------------------------|-------------|----------|
|                                             | Girth in cm |          |
| Alnus glutinosa (Ag)                        | 30-35       | 1        |
| Carpinus betulus 'Fastigiata' (CbF)         | 10-12       | 5        |
| Malus 'Prostrata' (MP)                      |             | 3        |
| Malus sylvestris (Ms)                       |             | 2        |
| Prunus avium 'Pena' (PaP)                   |             | 3        |
| Sorbus aucuparia (Sa)                       |             | 6        |
| Sorbus aucuparia 'Sheenwater Seedling' (Ss) |             | 2        |

Foundation design of new buildings shall accommodate proposed tree planting in accordance with NHBC guidelines.

#### ORNAMENTAL SHRUB SCHEDULE

| Nr  | Plant Name                         | Abb'n    | Ht in cm | Container | Density/m² |
|-----|------------------------------------|----------|----------|-----------|------------|
| 57  | Hebe albanica 'Red Edge'           | Heb RE   | 20-40cm  | 3L        | 4.00       |
| 196 | Hedera helix 'Green Ripple'        | Hed GR   | 40-60cm  | 2L        | 5.00       |
| 49  | Hypocymus moserianum               | Hyp mos  | 30-40cm  | 3L        | 4.00       |
| 41  | Lavandula angustifolia 'Munstead'  | Lav Mun  | 20-40cm  | 3L        | 4.00       |
| 26  | Lonicera nitida 'Baggesen's Gold'  | Lon BG   | 30-40cm  | 3L        | 4.00       |
| 38  | Skimmia japonica 'Rubella'         | Skim Rub | 30-40cm  | 3L        | 4.00       |
| 37  | Spiraea bumalda 'Goldflame'        | Spira GF | 30-40cm  | 3L        | 4.00       |
| 73  | Symphoricarpos chenaulti 'Hancock' | Sym Han  | 40-60cm  | 3L        | 4.00       |

#### NATIVE WOODLAND MIX

| %age  | Nr | Plant Name         | Ht (cm)   | Root | Form       |
|-------|----|--------------------|-----------|------|------------|
| 15.00 | 36 | Alnus glutinosa    | 40-60cm   | B    | Transplant |
| 5.00  | 12 | Alnus glutinosa    | 175-200cm | B    | Feathered  |
| 15.00 | 36 | Corylus avellana   | 40-60cm   | B    | Transplant |
| 15.00 | 36 | Fraxinus excelsior | 40-60cm   | B    | Transplant |
| 5.00  | 12 | Fraxinus excelsior | 175-200cm | B    | Feathered  |
| 7.50  | 18 | Ilex aquifolium    | 40-60cm   | C    | Transplant |
| 7.50  | 18 | Prunus avium       | 40-60cm   | B    | Transplant |
| 5.00  | 12 | Quercus petraea    | 175-200cm | RB   | Feathered  |
| 15.00 | 36 | Quercus petraea    | 40-60cm   | B    | Transplant |
| 10.00 | 24 | Viburnum opulus    | 40-60cm   | B    | Transplant |

#### PREPARATION AND PLANTING

All plant material shall conform to BS3936 Parts 1 and 4 and BS 4428  
Topsoil to comply with BS3882, 1994  
Organic matter to be proprietary shrub planting compost, or approved compost derived from recycled organic matter  
Slow release fertiliser to be 'Enmag' or similar.

##### Standard tree planting

- Trees shall be planted into pits of an appropriate size to accommodate the root system without restriction and shall be secured to a machine rounded stake using 1 no. tree tie with rubber spacer. Finished height of stake shall not exceed 1/3 height of staked tree above ground.  
Tree pits to be back-filled with imported topsoil mixed with compost at a ratio of 3 parts soil to 1 part compost.
- 

##### Ornamental planting

- Shrubs to be planted into 300mm depth of high quality topsoil complying with BS3882, 1994
- Organic matter to be spread over planting area and cultivated into soil to a min 400mm depth.
- Shrubs to be planted into prepared soil in pits large enough to accommodate full rootball.
- Finished beds to be lightly forked over and dressed with 75mm depth coarse forest bark mulch.

##### Native woodland mix planting

- Transplants to be pit planted into 300 x 300 x 300mm diam pits dug into existing soil. Backfill for each pit to be 1 part compost: 3 parts topsoil, with slow-release fertiliser added at 50gms per pit.
- Feathered trees to be planted at 3m centres in groups of 3-6, into pits 600 x 600 x 600mm, backfilled with 1 part compost: 3 parts topsoil with 100gms slow release fertiliser added per pit.
- All trees to be staked with 75mm diam round stake secured by 1 no tree tie with rubber spacer. Finished height of stake shall not exceed 1/3 height of staked tree above ground.
- All shrubs and trees to be fitted with rabbit protection. Spiral guards supported by a stout cane or stake, mesh shrub guards supported by a stout cane for bushier species. Alternatively, rabbit proof fencing erected around the whole area of planting.

##### AFTERCARE - 5 YEARS

- Keep ornamental shrub areas free from weeds by means of 3 herbicide applications per year or by hand weeding.
- In native woodland planting keep an area 600mm diam around each plant free from weed growth by means of 3 herbicide applications per year.
- Annually apply a slow release fertiliser to each plant in spring in the first three years.
- Replace all failures in the first year.
- Replace all failures to achieve 80% stocking rate in subsequent years.
- Prune all damaged or broken branches. Hard prune all shrubs after planting and in year 3.
- Top up mulch annually to 75mm depth.

#### NOTE

Drawing to be read in conjunction with dwg no H/T/163/1a

Rev A, 18 Nov 09. Amendments to comply with new layout.  
architects dwg no 0961/110 rev A

cf landscape design

Thurston, Hoyle Mill, Thurstone, Wiltshire, Wiltshire, Wiltshire  
Tel: 01924 241144 Mob: 07900 111340 e-mail: cml@cflandscape.co.uk

Mr J Hutchins

Proposed residential development at  
Hoyle Mill,  
Thurstone.

Landscape Details

1:200 @ A1 Dec 05 CTF H/C/163/2a

# FACTORY LAYOUT

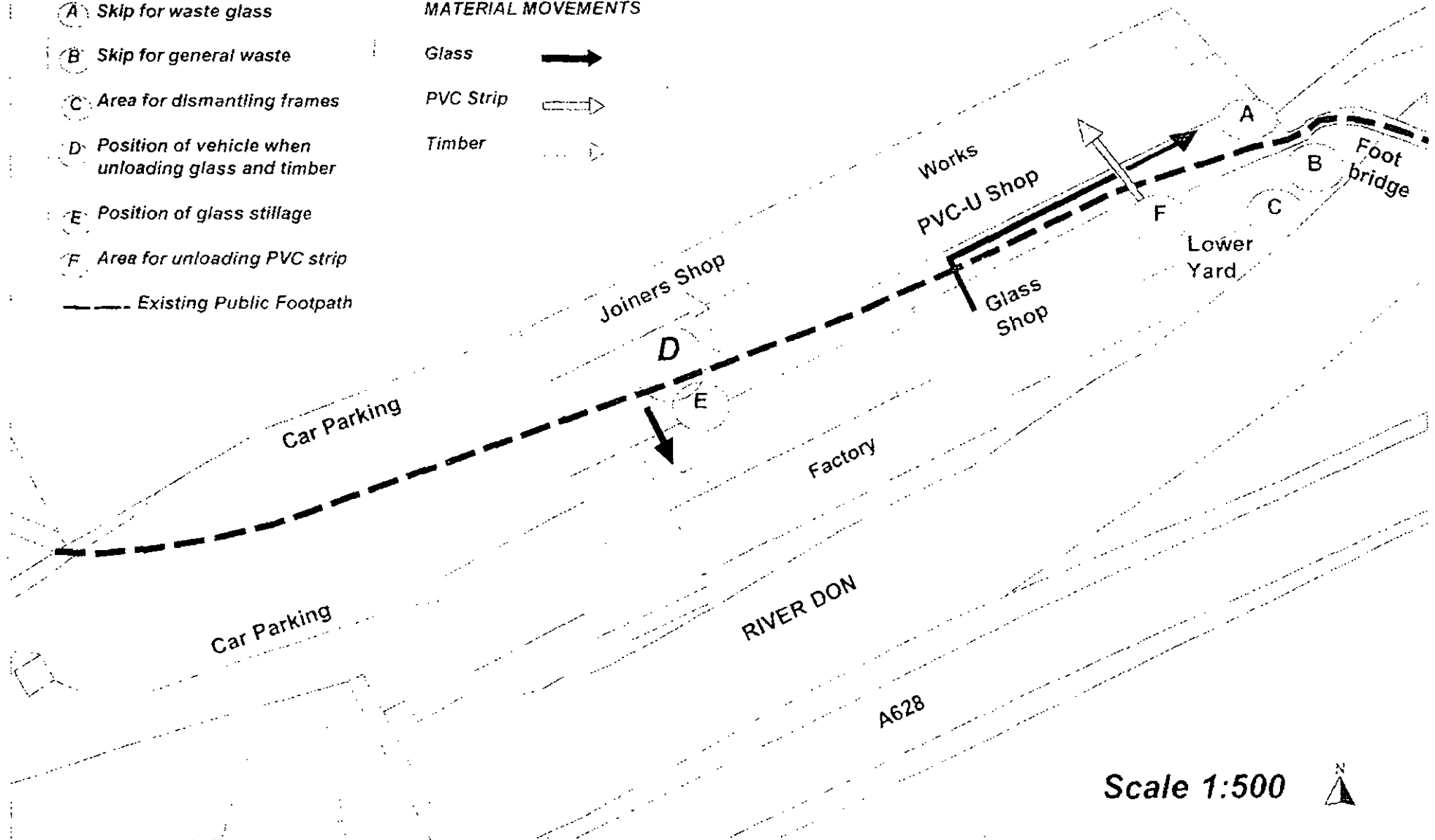
- (A) Skip for waste glass
- (B) Skip for general waste
- (C) Area for dismantling frames
- (D) Position of vehicle when unloading glass and timber
- (E) Position of glass stillage
- (F) Area for unloading PVC strip
- Existing Public Footpath

## MATERIAL MOVEMENTS

Glass →

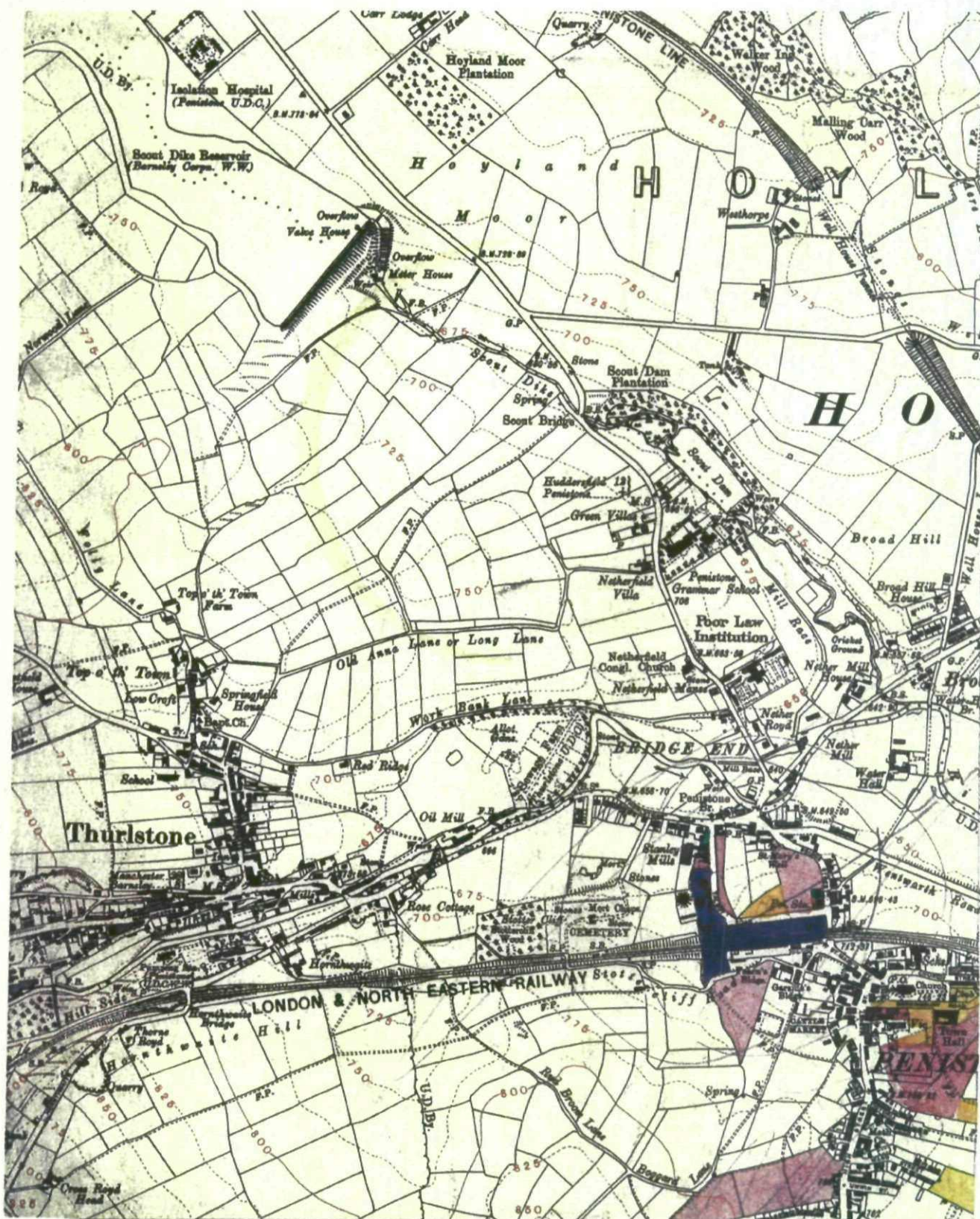
PVC Strip →

Timber →



Phase 1 Audit  
Geological Plan





|                                               |                           |                  |                  |                                                                                                                                                            |          |
|-----------------------------------------------|---------------------------|------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Client Name<br><b>South Yorkshire Windows</b> |                           | Drawn by<br>RS   | Checked by<br>JC | Site centre OS Grid Coordinates                                                                                                                            |          |
| Site Name<br><b>Hoyle Mill</b>                |                           | Drawing No       | Date<br>07/05    | Scale<br>0" = 1 Mile                                                                                                                                       | Revision |
| Project Title<br><b>Site Investigation</b>    |                           | Client's Address |                  | Agent's Address<br><b>FENNELL GREEN &amp; BATES</b><br>25 Smyth Street<br>Wakefield<br>West Yorkshire<br>WF1 1ED<br>Tel: 01924 372107<br>Fax: 01924 360009 |          |
| Plan Title<br><b>Historical Map 1932</b>      | Environment Agency Ref No |                  |                  |                                                                                                                                                            |          |



|                         |  |                    |  |
|-------------------------|--|--------------------|--|
| Geological Map 1854     |  | Date               |  |
| South Yorkshire Windows |  | 11/05              |  |
| Hoyle Mill              |  | SCALE: 6" : 1 Mile |  |
| FENNELL GREEN & BATES   |  | drawn by           |  |
| 25 SMYTH STREET         |  | RS                 |  |
| WAKEFIELD               |  |                    |  |



|                      |                              |      |                    |
|----------------------|------------------------------|------|--------------------|
| Historical Plan 1855 |                              | Date | 11/05              |
| Hoyle Mill           | FENNELL GREEN & BATES        |      | SCALE: 6" : 1 Mile |
|                      | 25 SMYTH STREET<br>WAKEFIELD |      | drawn by<br>RS     |

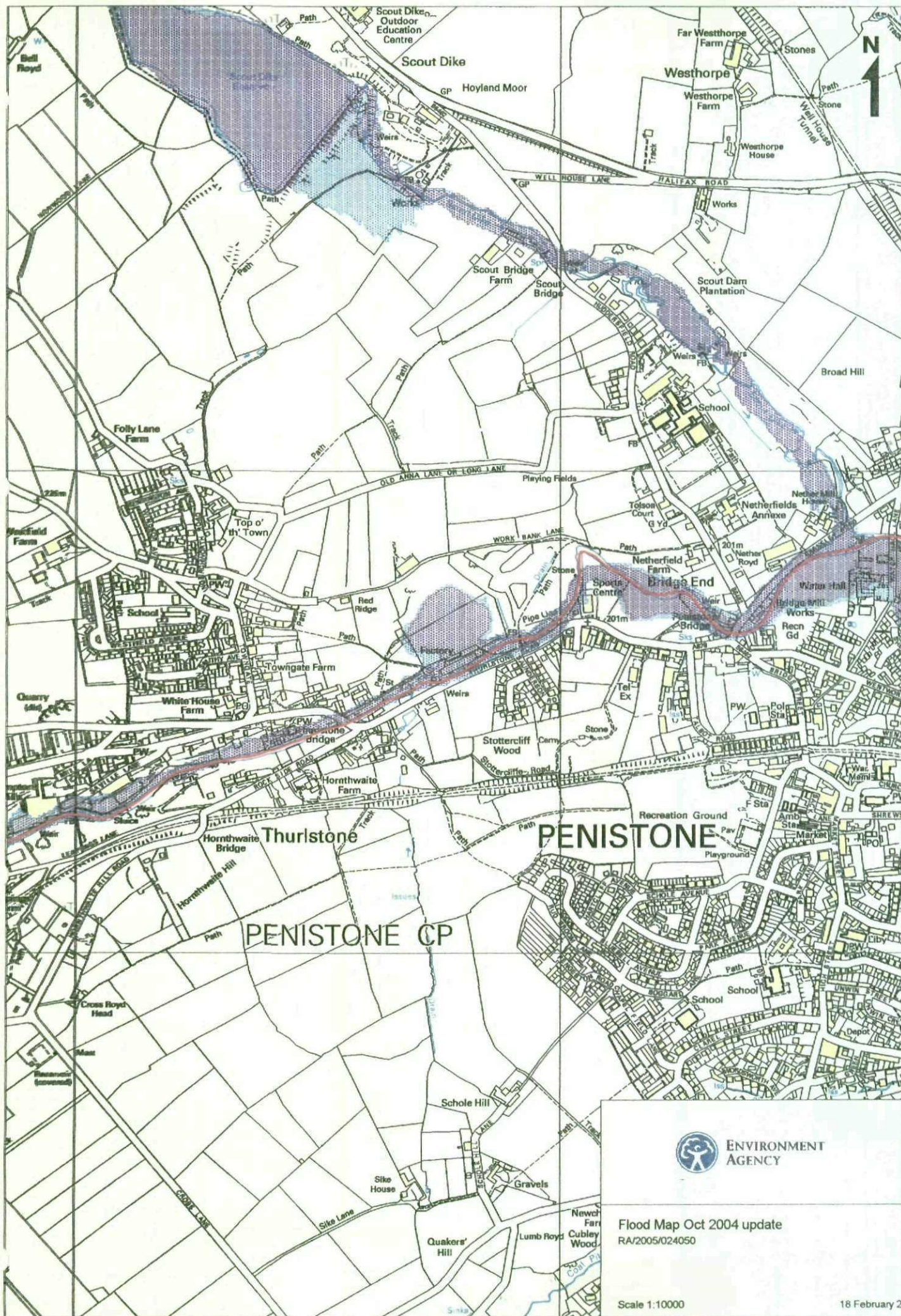


Historical Plan 1888

|          |          |
|----------|----------|
| Date     | 11/05    |
| SCALE:   | 1:50,000 |
| drawn by | RS       |

South Yorkshire Windows  
Hoyle Mill

FENNELL GREEN & BATES  
25 SMYTH STREET  
WAKEFIELD



ENVIRONMENT  
AGENCY

Flood Map Oct 2004 update  
RA/2005/024050

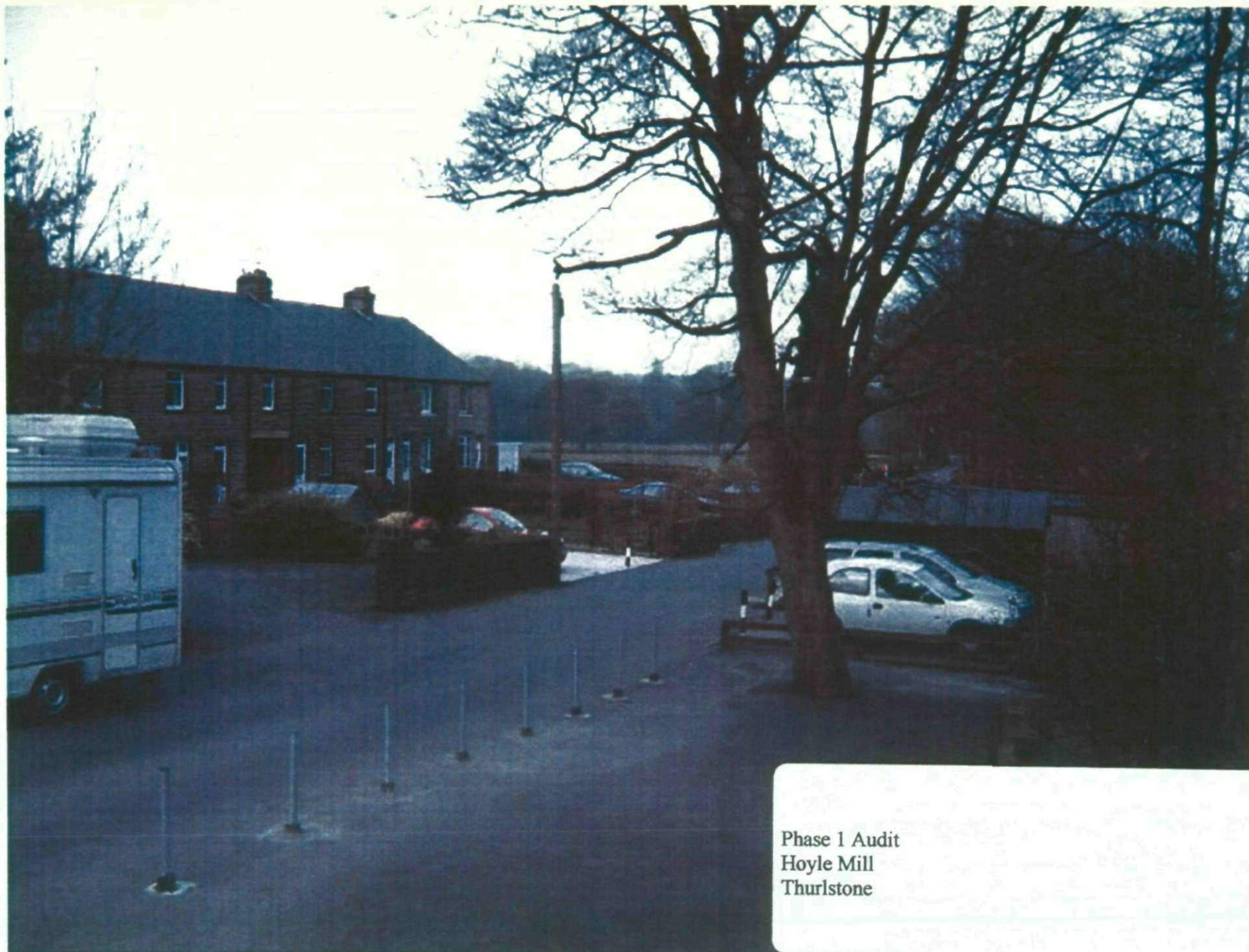
Scale 1:10000

18 February 2005

## APPENDIX B



Phase 1 Audit  
Hoyle Mill  
Thurlstone



Phase 1 Audit  
Hoyle Mill  
Thurlstone



Phase 1 Audit  
Hoyle Mill  
Thurlstone



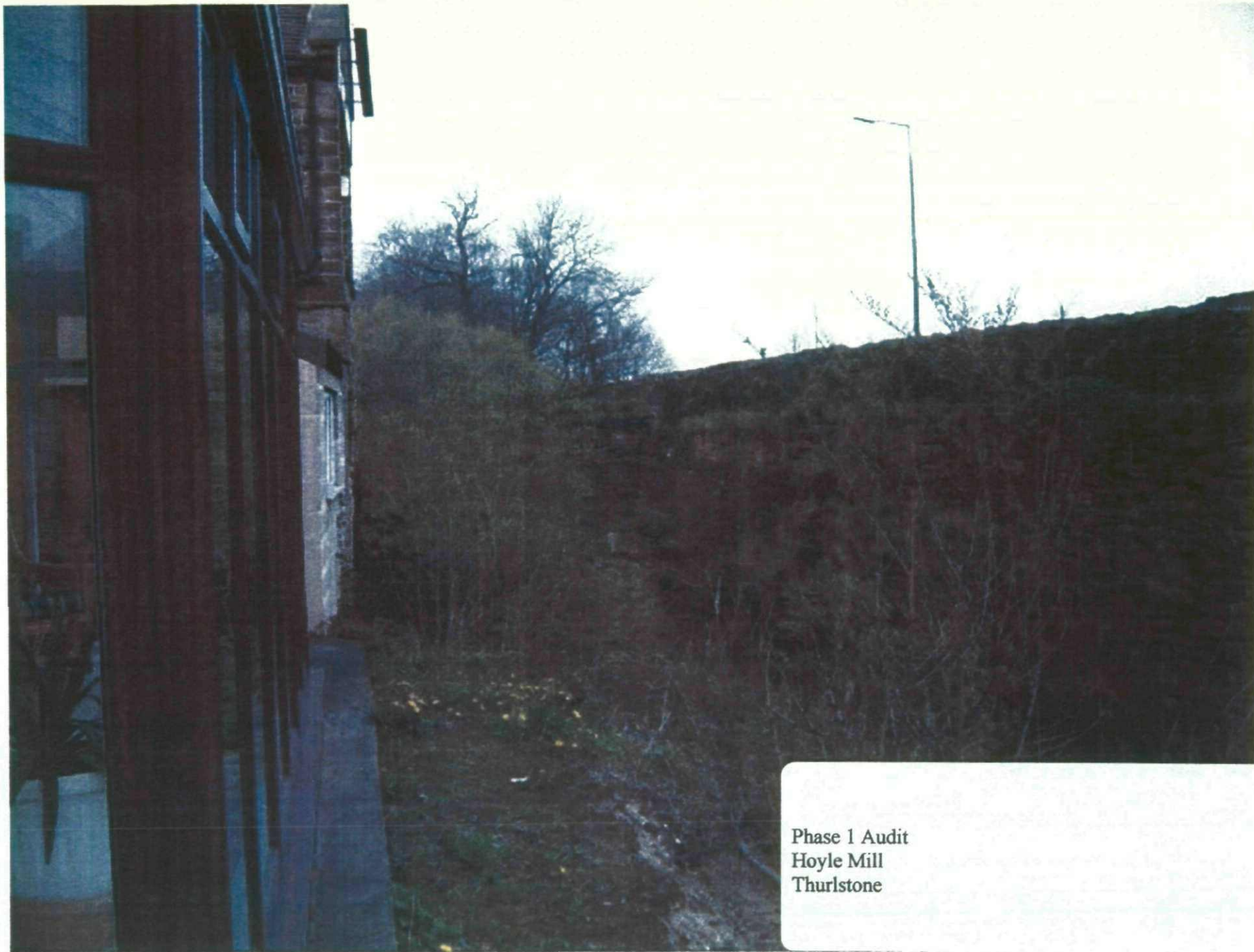
Phase 1 Audit  
Hoyle Mill  
Thurlstone



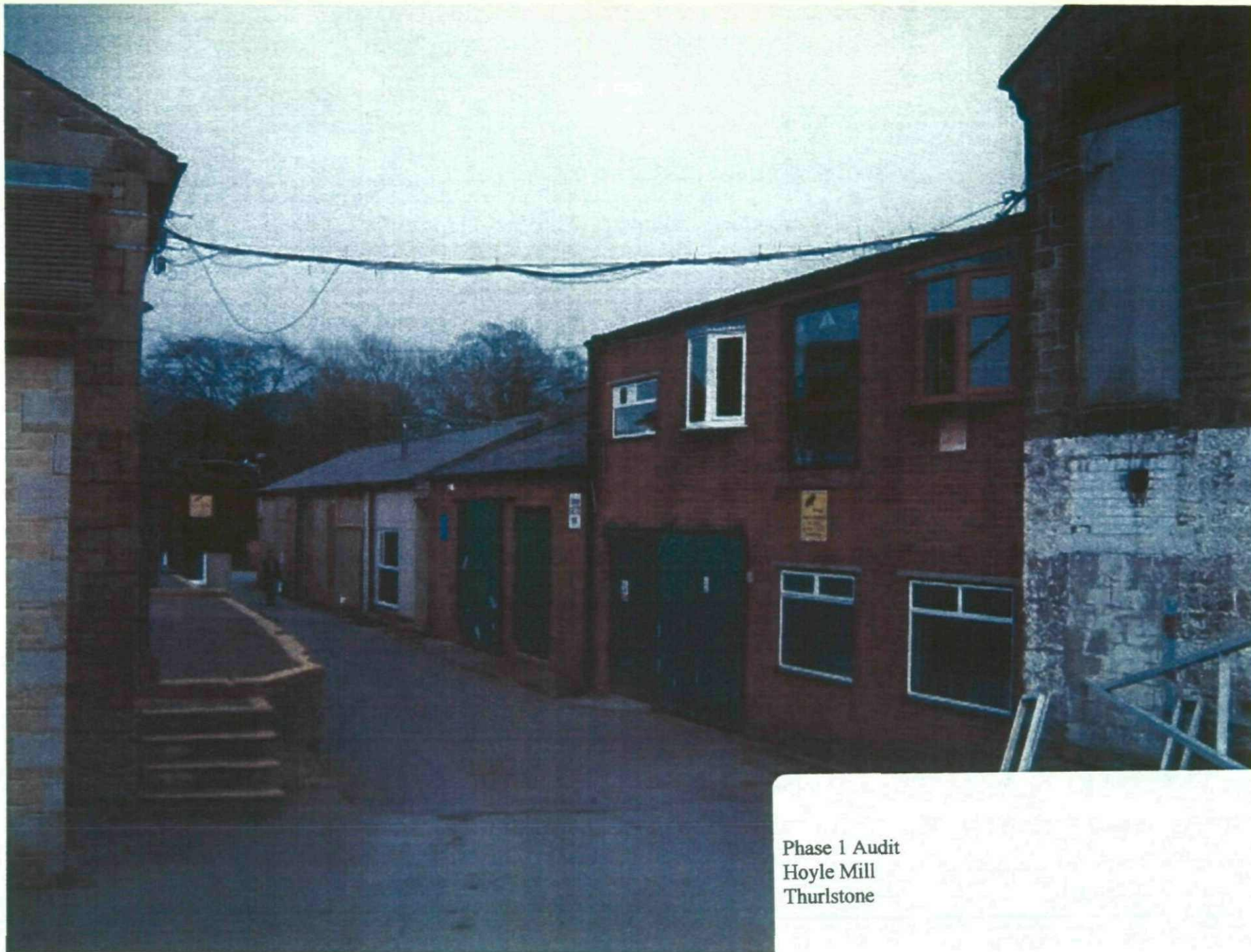
Phase 1 Audit  
Hoyle Mill  
Thurlstone



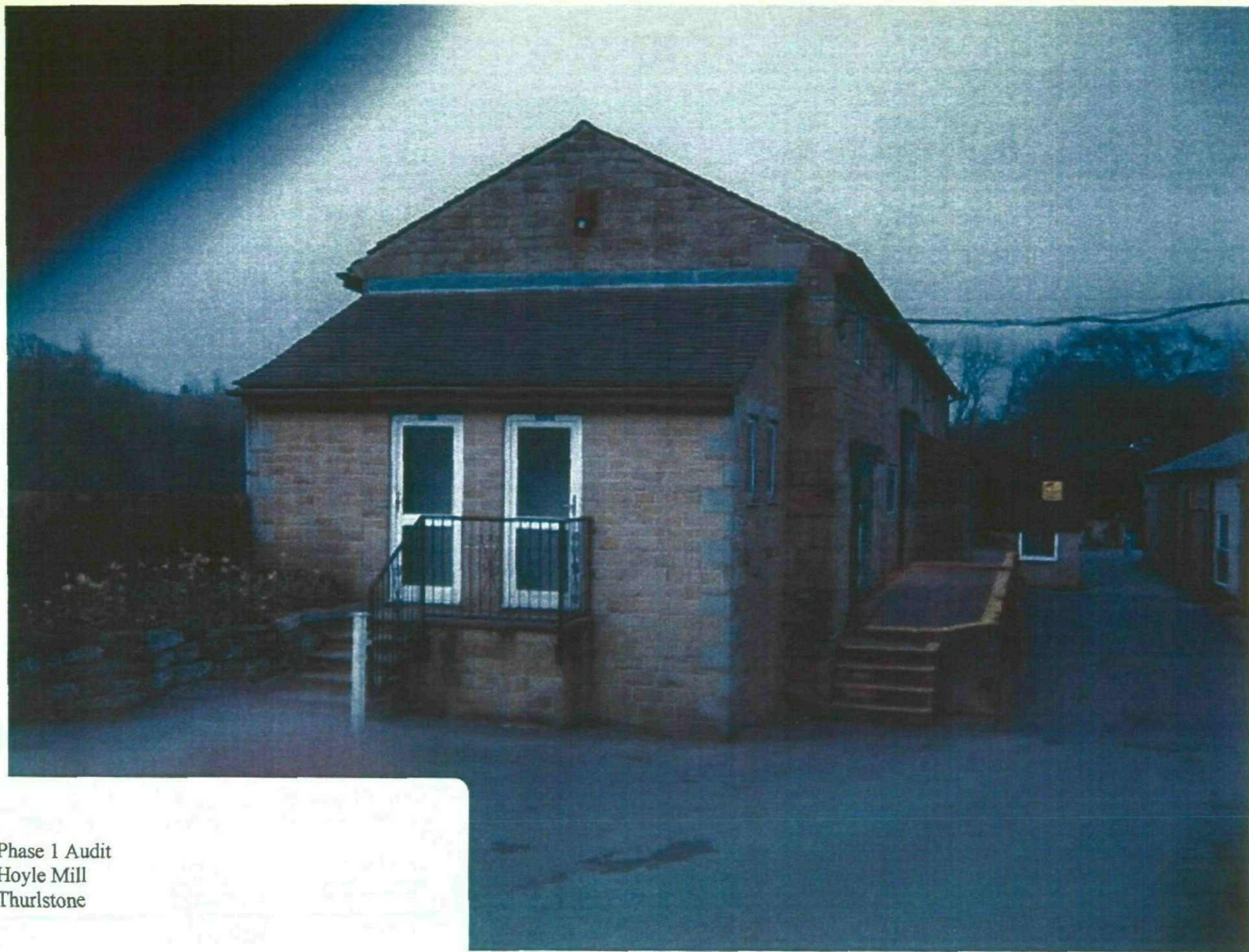
Phase 1 Audit  
Hoyle Mill  
Thurlstone



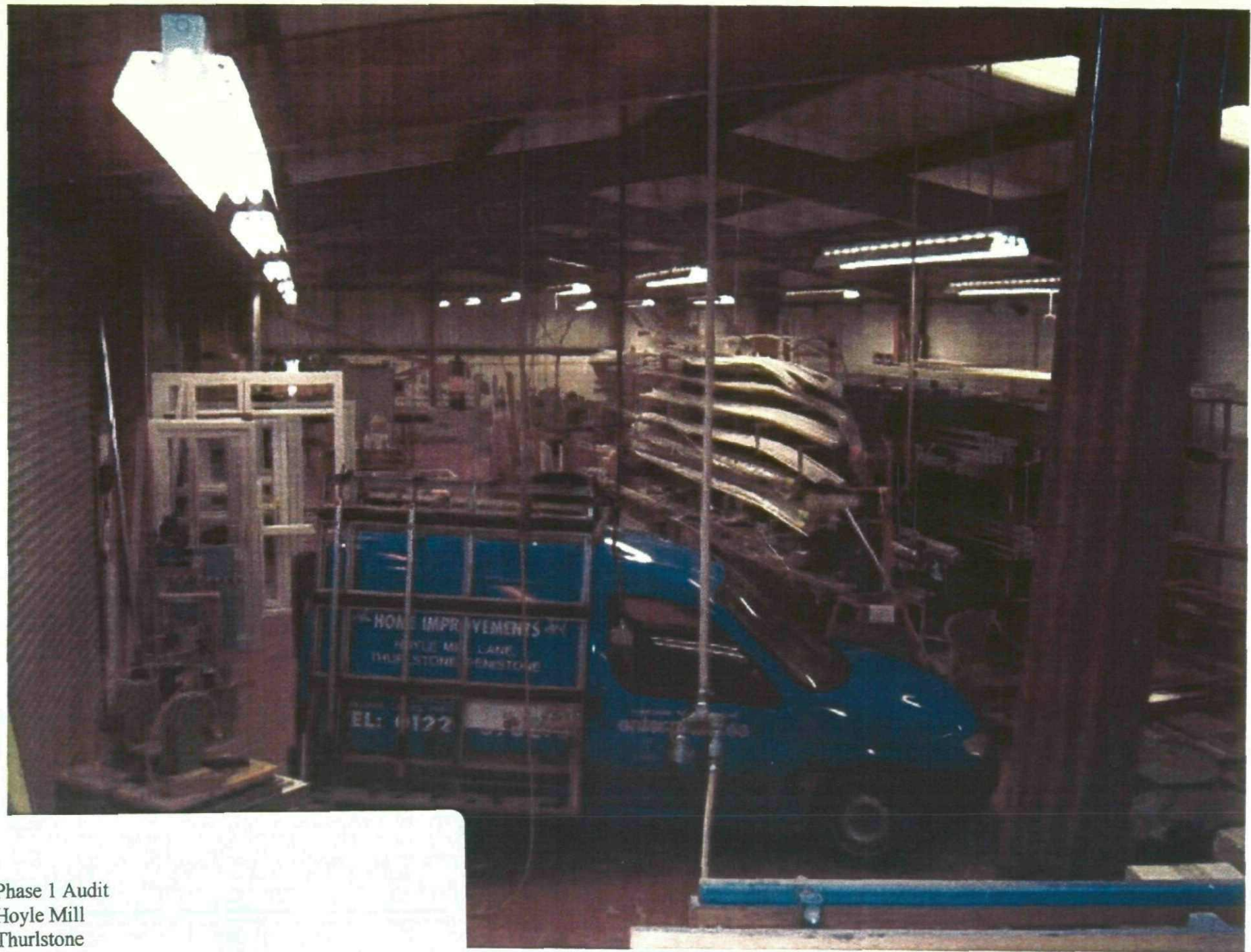
Phase 1 Audit  
Hoyle Mill  
Thurlstone



Phase 1 Audit  
Hoyle Mill  
Thurlstone



Phase 1 Audit  
Hoyle Mill  
Thurlstone



Phase 1 Audit  
Hoyle Mill  
Thurstone



Phase 1 Audit  
Hoyle Mill  
Thurlstone



Phase 1 Audit  
Hoyle Mill  
Thurlstone



Phase 1 Audit  
Hoyle Mill  
Thurlstone

## APPENDIX C



in association with



## Professional Opinion on environmental risk

# PASSED

In the professional opinion of Wilbourn Associates the level of environmental risk associated with the information disclosed in the Envirosearch Residential report RS8817701\_1\_1 dated 1 February 2005 for

**South Yorkshire Windows  
Hoyle Mill  
Thurlstone  
Penistone  
South Yorks**

- 1) is unlikely to have an adverse effect on the value of the property as compared to similar properties in similar locations or on its use as a domestic dwelling;
- 2) is not such that the property would be designated "contaminated land" within the meaning of Part IIA of the Environmental Protection Act 1990.

This professional opinion does not extend to Parts 3 and 4 of the associated Envirosearch Residential report and should always be read in conjunction with the full text of that report. No physical site inspection or survey has been carried out or is proposed.

**Philip E. Wilbourn BSc FRICS  
Chartered Environmental Surveyor**



This professional opinion forms part of the Envirosearch Residential report and is subject to the associated Terms and Conditions of Business in force from time to time. Further information on the datasets examined in formulating this professional opinion is included in the Envirosearch Residential Practitioner Guide.

**OTHER FACTORS:** Please note that Parts 3 and 4 of the associated Envirosearch Residential report disclose:

- 3.1 An area which may be affected by coal mining activity
- 3.2 An area of Low to Moderate Shallow Mining Hazard
- 3.3 An area of Subsidence Hazard
- 3.4 a) An area affected by radon
- 4.2 A Fluvial Indicative Flood Zone

A client may want these matters to be investigated before proceeding further. Please refer to the relevant section in the report.

Supplied By:



**A report on the site history and other  
environmental factors affecting:**

**South Yorkshire Windows, Hoyle Mill, Thurlstone, Penistone, South  
Yorks**

**National Grid Reference (site): 423750 403580**

**Report Reference**  
RS8817701\_1\_1

**Date**  
1 February 2005

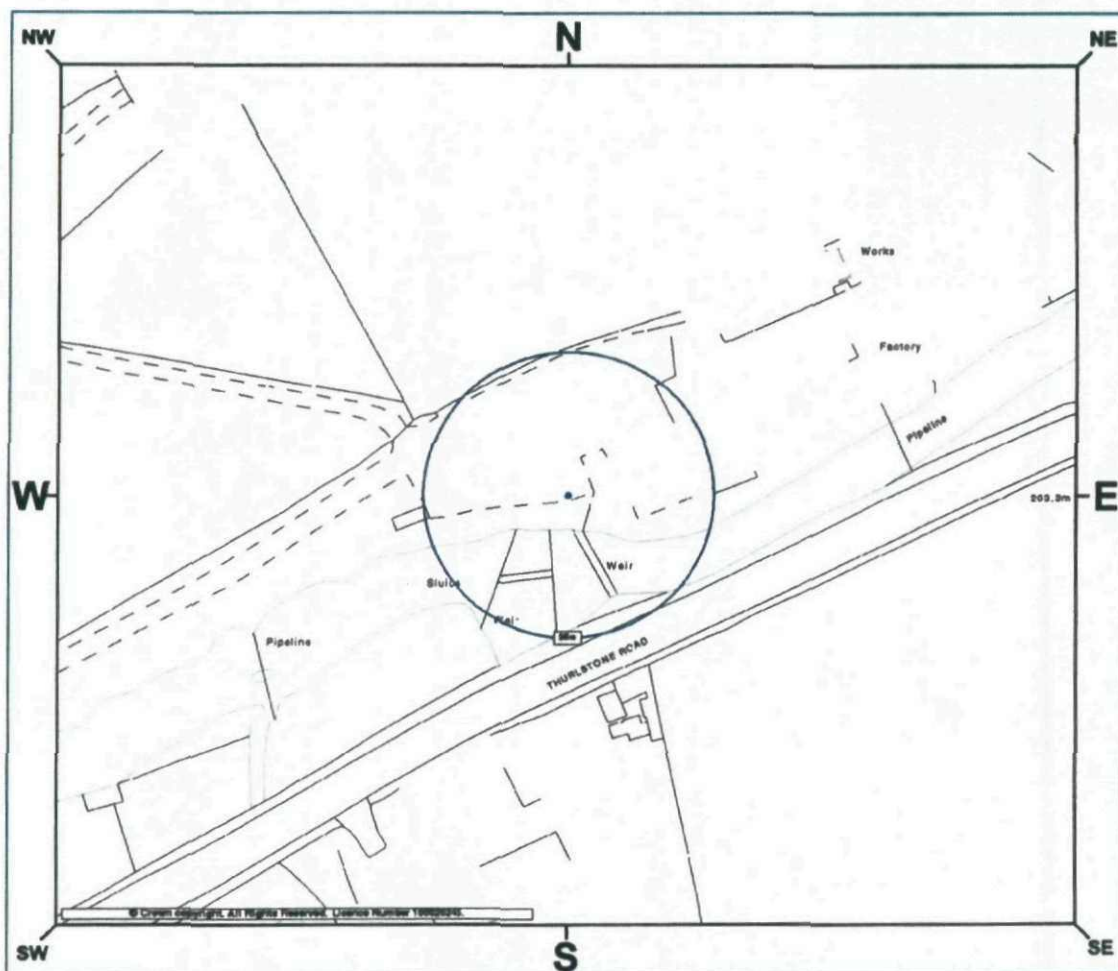
**Prepared For**  
Cromwell Wood Estate Company Ltd, 59 Oakenshaw Lane, Butterfield House, Wakefield, West  
Yorkshire WF2 6NJ

**Customer Reference**  
SY010205\_ESR

**A Landmark Information Group Product**

Recommended by  
The Society of Licensed Conveyancers





**Site**  
South Yorkshire Windows  
Hoyle Mill  
Thurlstone  
Penistone  
South Yorks

**Grid Reference**  
Easting 423750  
Northing 403580

**CONTENTS OF THE REPORT** - *The Report is divided into five sections***Maps**

The accurate large-scale Ordnance Survey map confirms the location of the subject property. Please note any descriptive text that may be relevant. The second Location Map is a street map of the neighbourhood, showing 25, 250 and 500 metre radii centred on the property. The Information Map shows the location of any features reported under parts 1, 2.2, 2.3, 2.4, 4.3 and 4.4. The Flood Map shows flood data up to a radius of 500 metres.

**Enquiries and Replies**

Main report findings, with information covering three distinct bands of 25 metres, 250 metres and 500 metres. Part 1 of the report provides information up to 500 metres. Part 2 provides information up to 250 metres. Part 3 and Part 4 provide information on an area within 25 metres of the centre of the search unless otherwise stated. The identification of an environmental factor in the report does not necessarily mean that it poses any direct or indirect threat to the subject property.

**Useful Contacts**

Contact details of useful organisations that should be able to provide further information.

**Please contact our helpdesk on 0870 606 1700 or email [info@landmark-information.co.uk](mailto:info@landmark-information.co.uk) if you require assistance.**

**Useful Information**

This provides a short guide to assist anyone reading the report to understand the information it contains. Detailed guidance notes are contained in the Practitioner Guide which is available free of charge. Please contact your agent or email [info@landmark-information.co.uk](mailto:info@landmark-information.co.uk) to obtain a copy.

**Insurance**

Houses registered between 1 April 1999 - 31 December 2002 and covered by the NHBC Buildmark scheme probably have insurance against certain costs if contamination occurs within ten years of their construction. From 1 January 2003, NHBC will only provide this cover if building control has been carried out by NHBC Building Control Services Limited.

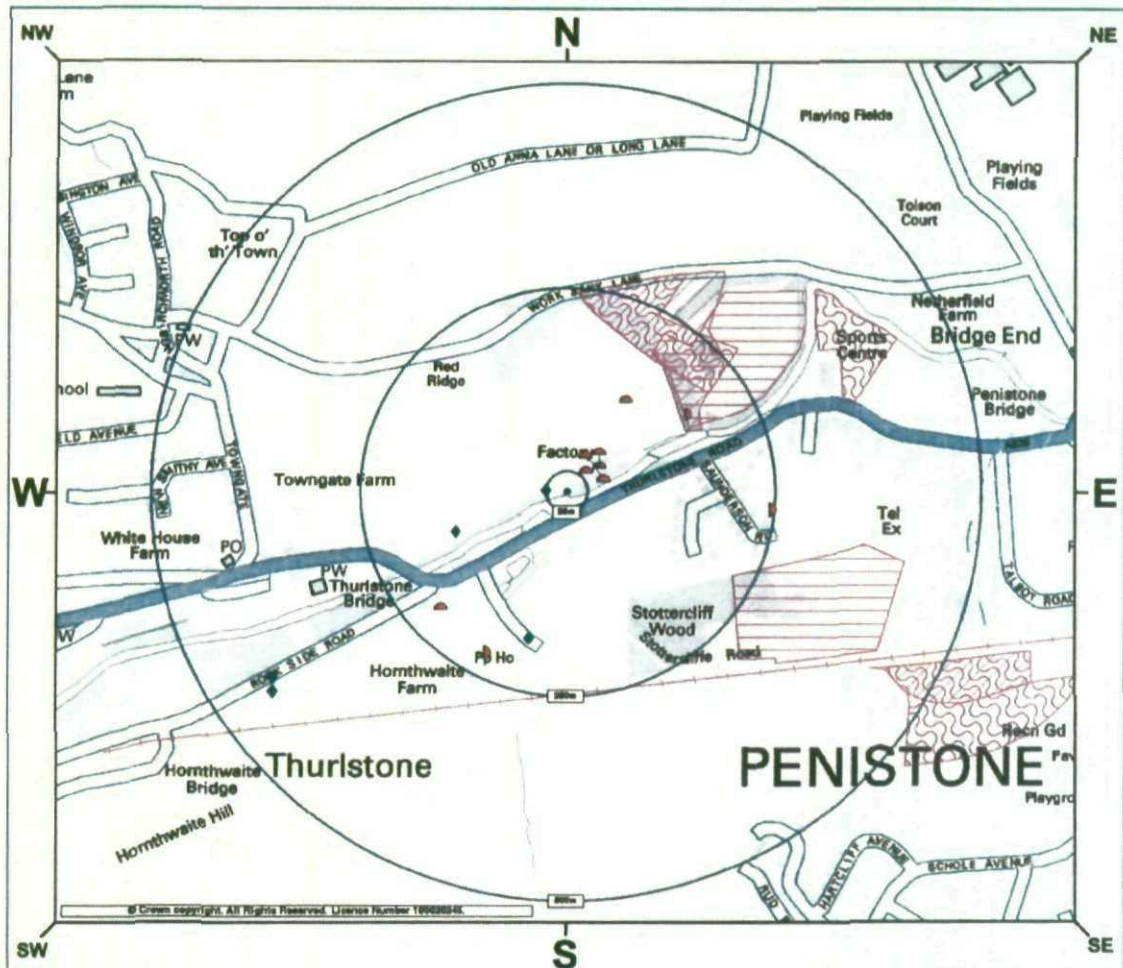
**THE PURPOSE AND SCOPE OF THE REPORT**

The report is designed to satisfy the concerns raised by the Law Society warning card and has been prepared to assist conveyancing professionals who may be advising clients when they sell or buy a property, obtain a mortgage, seek further mortgage advice, or commence any building works. It is designed to bring information to their attention and help them decide whether they need to seek any further specialist advice. As the report is so detailed, this information can cause concern, but professional advisors will see that further action is suggested on all issues that have been identified.

**LIMITATIONS**

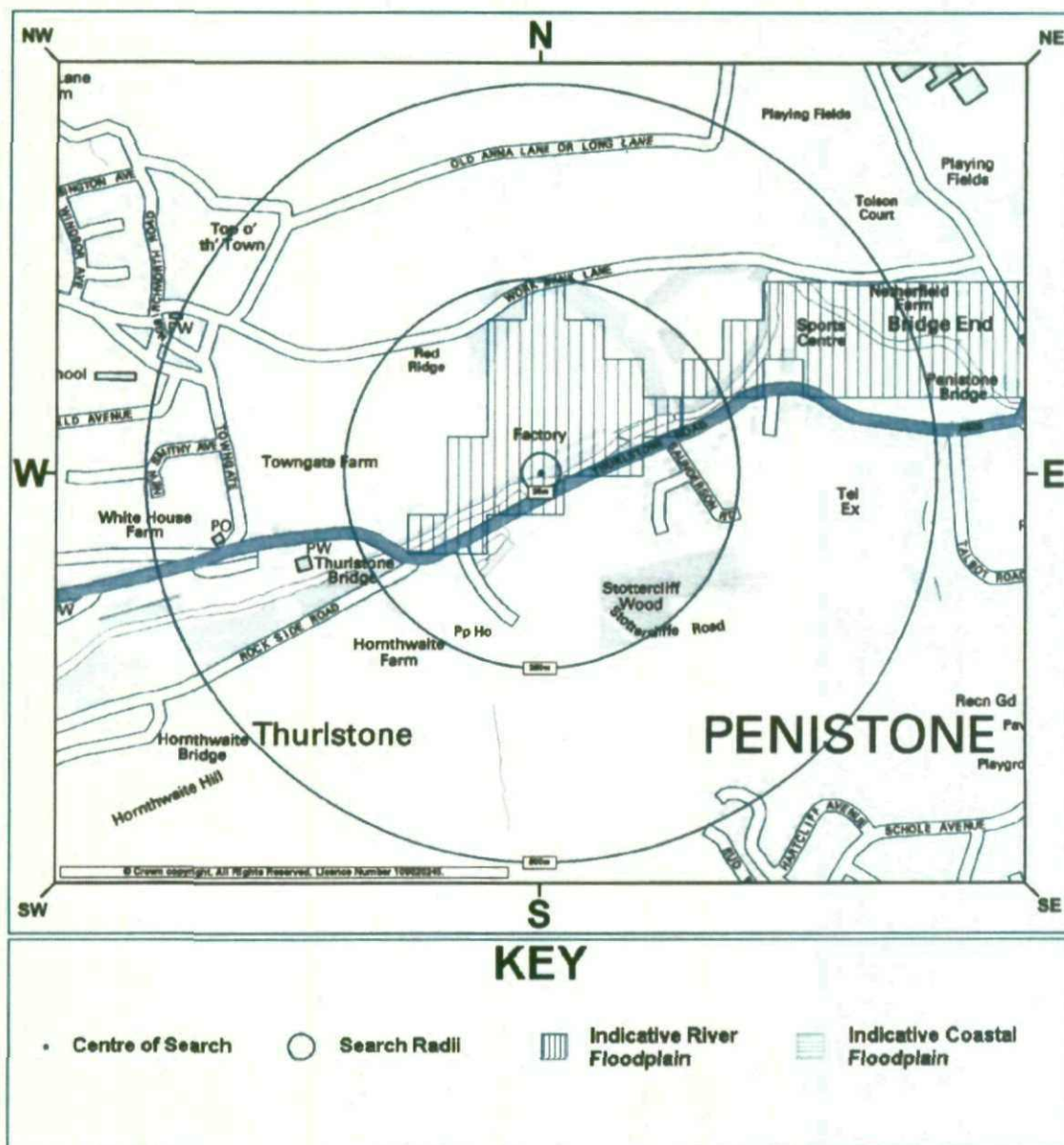
This report has been published by Landmark Information Group Limited ("Landmark") and is supplied subject to our Terms and Conditions of Business, which will have been brought to your attention. It has been prepared on the understanding that it is to be used for an individual residential property transaction and should not be used or relied upon in a commercial property transaction. This report is neither a guarantee of the physical condition of the subject property nor a substitute for any physical investigation or inspection. The information in Envirosearch Residential is derived from a number of statutory and non-statutory sources (see The Practitioner Guide for details). Whilst every effort is made to ensure the details in the report are correct, Landmark cannot guarantee the accuracy or completeness of such information or data, nor identify all the factors that may be relevant. If you are a private individual using this report Landmark recommends that you discuss its contents in full with your professional advisor. The methodology for risk assessment and the conclusions drawn therefrom are the responsibility of Wilbourn Associates.

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| General |                                                          | KEY    |                                                              |
|---------|----------------------------------------------------------|--------|--------------------------------------------------------------|
| •       | Centre of Search                                         | Q1.2   | Waste Transfer, Treatment or Disposal Site                   |
| ○       | Search Radius                                            | Q1.2   | Point Location of Waste Transfer, Treatment or Disposal Site |
| Part 1  |                                                          | Q1.3a  | Discharge Consent                                            |
| Q1.1a   | Potential Landfill Buffer                                | Q1.3b  | Radioactive Substance                                        |
| Q1.1a   | Registered Landfill Site                                 | Q1.3c  | Industrial Process                                           |
| Q1.1b   | BGS Recorded Landfill Site                               | Q1.4   | Regulated Air Pollution                                      |
| Q1.1b   | Point Location of BGS Recorded Landfill Site             | Q1.5   | Storage of Hazardous Substance                               |
| Q1.1c   | Licensed Waste Management Facility (Landfill)            | Q1.6   | Enforcement, Prohibition or Prosecution                      |
| Q1.1c   | Licensed Waste Management Facility (Locations)           | Q1.7   | Contaminated Land Register Entry or Notice                   |
| Q1.1d   | Local Authority Recorded Landfill Site                   | Q1.7   | Point Location of Contaminated Land Register Entry or Notice |
| Q1.1d   | Point Location of Local Authority Recorded Landfill Site |        |                                                              |
|         |                                                          | Part 2 |                                                              |
|         |                                                          | Q2.2   | Potentially Contaminative Use (Point Feature)                |
|         |                                                          | Q2.2   | Potentially Contaminative Use (Line Feature)                 |
|         |                                                          | Q2.2   | Potentially Contaminative Use (Area Feature)                 |
|         |                                                          | Q2.3   | Potentially Infilled Land (Point Feature)                    |
|         |                                                          | Q2.3   | Potentially Infilled Land (Line Feature)                     |
|         |                                                          | Q2.3   | Potentially Infilled Land (Area Feature)                     |
|         |                                                          | Q2.4   | Historical Tank or Energy Facility                           |
|         |                                                          | Part 4 |                                                              |
|         |                                                          | Q4.3   | Mast or Pylon                                                |
|         |                                                          | Q4.3   | Overhead Transmission Line                                   |
|         |                                                          | Q4.4   | Telecommunication Base Station                               |

(Please refer to the Useful Information Section)



**Please note:**

The Replies in Part 4 (Sections 4.1 and 4.2) relate only to the area within 25 metres of the centre of the search. This map shows flood data out to a search radius of 500 metres.

## Part 1- Standard Environmental Enquiries - Search Radius 500 metres

### 1.1 a) Does the relevant environment agency have records of any registered landfill sites?

|          |     |
|----------|-----|
| 0-25m    | No  |
| 25-250m  | Yes |
| 250-500m | Yes |

#### Registered Landfill Sites

A Gill, Adj. T.A. Centre, Thurlstone Road, Penistone, Sheffield, South Yorkshire,  
 Reference: WD20 B 261 MOD 3, Status: Cancelled, Positional Accuracy: Manually  
 positioned to the address or location, Boundary Accuracy: Not Applicable,  
 Distance to landfill point 395m - Please see Useful Information section

Bearing NE 25-250m

Bamsley M.B.C., Stottercliffe Road, Penistone, Sheffield, South Yorkshire,  
 Reference: WD20 B 60, Status: Cancelled, Positional Accuracy: Manually  
 positioned to the address or location, Boundary Accuracy: Not Applicable,  
 Distance to landfill point 510m - Please see Useful Information section

Bearing SE 250-500m

#### Comments

The Map indicates the approximate site location. For information on how landfills are reported in Envirosearch Residential please see the Useful Information section. You may wish to contact the relevant environment agency office regarding the exact location and full extent of a particular site.

The fact that landfill is identified does not necessarily mean there is cause for concern. For a particular site the relevant environment agency office may be able to provide further information about the site history, nature of the waste, presence of landfill gas, pollution incidents, residual contamination and remedial measures undertaken. If the property is situated on or adjacent to the site, you may wish to find out about any planning, building or other restrictions.

### b) Are there any BGS recorded landfill sites?

|          |     |
|----------|-----|
| 0-25m    | No  |
| 25-250m  | Yes |
| 250-500m | Yes |

#### BGS Recorded Landfill Sites

Thurlstone Road, ,PENISTONE, South Yorkshire, BGS Landfill Survey Site,  
 Positional Accuracy: Positioned by the supplier, Boundary Accuracy: Moderate

Bearing NE 25-250m

Stottercliffe Road, ,PENISTONE, South Yorkshire, BGS Landfill Survey Site,  
 Positional Accuracy: Positioned by the supplier, Boundary Accuracy: Moderate

Bearing SE 250-500m

#### Comments

The Map indicates the site location. The fact that landfill is identified does not necessarily mean there is cause for concern. For a particular site the relevant local authority may be able to provide further information about the site history, the nature of the waste, presence of landfill gas, pollution incidents, residual contamination and remedial measures. If the property is situated on or adjacent to the site, you may wish to find out about any planning, building or other restrictions.

### c) Are there any Licensed Waste Management Facilities?

|          |    |
|----------|----|
| 0-25m    | No |
| 25-250m  | No |
| 250-500m | No |

#### Comments

None

### d) Are there any Local Authority recorded landfill sites?

|          |     |
|----------|-----|
| 0-25m    | No  |
| 25-250m  | Yes |
| 250-500m | Yes |

#### Local Authority Recorded Landfill Sites

**Part 1- Standard Environmental Enquiries - Search Radius 500 metres**

Not Supplied, Reference: 117, Last Reported Status: Unknown, Positional Accuracy: Positioned by the supplier, Boundary Quality: Moderate

Bearing NE 25-250m  
**Contact** 1

Not Supplied, Reference: 33, Last Reported Status: Unknown, Positional Accuracy: Positioned by the supplier, Boundary Quality: Moderate

Bearing NE 250-500m  
**Contact** 1

Not Supplied, Reference: 10, Last Reported Status: Unknown, Positional Accuracy: Positioned by the supplier, Boundary Quality: Moderate

Bearing SE 250-500m  
**Contact** 1

**Comments**

The Map indicates the site location. The fact that landfill is identified does not necessarily mean there is cause for concern. For a particular site the relevant local authority may be able to provide further information about the site history, the nature of the waste, presence of landfill gas, pollution incidents, residual contamination and remedial measures. If the property is situated on or adjacent to the site, you may wish to find out about any planning, building or other restrictions.

The following list shows if local authorities covering the area of search have made landfill data available.

**Local Authority Landfill Coverage**

Barnsley Metropolitan Borough Council, - Has supplied landfill data

**Contact** 1

**Comments**

For further information regarding the availability of Local Authority Recorded Landfill data you may wish to forward enquiries to one or more of the contacts indicated above.

**1.2 Does the relevant environment agency have records of any registered waste transfer, treatment or disposal sites?**

0-25m No  
 25-250m No  
 250-500m No

**Comments**

None

**Part 1- Standard Environmental Enquiries - Search Radius 500 metres**
**1.3 a) Has the relevant environment agency consented to any discharges?**

|          |            |
|----------|------------|
| 0-25m    | <b>No</b>  |
| 25-250m  | <b>Yes</b> |
| 250-500m | <b>Yes</b> |

**Discharge Consents**

|                                                                                                                                                                                              |           |         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|
| Thurstone Road Off, THURSTONE, South Yorkshire, Sewerage Discharge, Reference: S/UD/91, Version: Not Supplied, Status: Not Supplied, Positional Accuracy: Located by supplier to within 100m | Bearing W | 25-250m |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|

|                                                                                                                                                                                                                                                                                                 |           |         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|
| Thurstone No 2 Cso Thurstone Road, Penistone, Sheffield, South Yorkshire, Sewage Discharge, Reference: Wra8207, Version: 1, Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995), Positional Accuracy: Located by supplier to within 10m | Bearing W | 25-250m |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|

|                                                                                                                                                                                                                                                             |           |         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|
| Wilson Pumping Station, Thurstone, Penistone, South Yorkshire, Trade Discharge, Reference: 1629, Version: 1, Status: Consent revoked: Discharge ceased (Water Resources Act 1991, Schedule 10 & 6), Positional Accuracy: Located by supplier to within 100m | Bearing S | 25-250m |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|

|                                                                                                                                                                                        |            |          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| Thurstone Windmill Lane, South Yorkshire, Sewerage Discharge, Reference: S/UD/91, Version: Not Supplied, Status: Not Supplied, Positional Accuracy: Located by supplier to within 100m | Bearing SW | 250-500m |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|

|                                                                                                                                                                                        |            |          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| Thurstone Windmill Lane, South Yorkshire, Sewerage Discharge, Reference: S/UD/91, Version: Not Supplied, Status: Not Supplied, Positional Accuracy: Located by supplier to within 100m | Bearing SW | 250-500m |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|

**Comments**

The Map indicates the approximate location. The environment agency's functions include granting of consents to discharge into watercourses. The presence of these discharges does not necessarily mean there should be a cause for concern. If you have a query about any of the details listed, you should contact the relevant environment agency office.

**b) Has the relevant environment agency registered/authorised the keeping/disposal of any radioactive substances?**

|          |           |
|----------|-----------|
| 0-25m    | <b>No</b> |
| 25-250m  | <b>No</b> |
| 250-500m | <b>No</b> |

**Comments**

None

**c) Has the relevant environment agency authorised any industrial processes?**

|          |           |
|----------|-----------|
| 0-25m    | <b>No</b> |
| 25-250m  | <b>No</b> |
| 250-500m | <b>No</b> |

**Comments**

None

**1.4 Are there any sites that are permitted to release discharges into the air?**

|          |           |
|----------|-----------|
| 0-25m    | <b>No</b> |
| 25-250m  | <b>No</b> |
| 250-500m | <b>No</b> |

**Comments**

None

**Part 1- Standard Environmental Enquiries - Search Radius 500 metres**

- 1.5 Are there any sites authorised by the Local Authority or Health and Safety Executive to store hazardous substances?**

0-25m **No**  
25-250m **No**  
250-500m **No**

**Comments**  
None

- 1.6 Are there any records of any enforcements, prohibitions, or prosecutions relating to enquiries 1.1 to 1.5?**

0-25m **No**  
25-250m **No**  
250-500m **No**

**Comments**  
None

- 1.7 Does the Local Authority have any Contaminated Land Register Entries and Notices?**

0-25m **No**  
25-250m **No**  
250-500m **No**

**Comments**  
None

**Part 2- Other Records Showing Land Use - Search Radius 250 metres**
**2.1 Are there any potentially contaminative industrial sites identified from current published surveys?**

|         |           |
|---------|-----------|
| 0-25m   | <b>No</b> |
| 25-250m | <b>No</b> |

**Comments**  
None

**2.2 Are there any potentially contaminative industrial sites identified from analysis of selected 1:10,000 scale and 1:10,560 scale historical Ordnance Survey maps?**

|         |            |
|---------|------------|
| 0-25m   | <b>No</b>  |
| 25-250m | <b>Yes</b> |

**Potentially Contaminative Industrial Uses (Past Land Use)**

|                                                                              |            |      |
|------------------------------------------------------------------------------|------------|------|
| Food processing - major, Date of mapping: 1894                               | Bearing NE | 41m  |
| Factory or works - use not specified, Date of mapping: 1989                  | Bearing NE | 46m  |
| Factory or works - use not specified, Date of mapping: 1907                  | Bearing NE | 48m  |
| Food processing - major, Date of mapping: 1938                               | Bearing NE | 50m  |
| Natural and man-made textile manufacture and products, Date of mapping: 1851 | Bearing NE | 51m  |
| Heap, unknown constituents, Date of mapping: 1989                            | Bearing NE | 133m |
| Sewage, Date of mapping: 1907-1955                                           | Bearing NE | 167m |
| General quarrying, Date of mapping: 1938-1989                                | Bearing SW | 209m |
| Cemetery or Graveyard, Date of mapping: 1894-1989                            | Bearing SE | 224m |
| Railways, Date of mapping: 1851-1955                                         | Bearing S  | 246m |

**Comments**

The Map indicates the location of potentially contaminative industrial past land uses with the relevant date of mapping. Any features identified have been obtained from the examination of Ordnance Survey maps dating back into the 19th Century. Old industrial sites may be potentially contaminative or may have produced contamination in the ground. The presence of a site does not necessarily mean there is any cause for concern. Refer to the Useful Information section for further information. If you wish to examine the Ordnance Survey maps these are normally available for public inspection at the local archive or local major library. Alternatively extracts of editions of Ordnance Survey Maps are available on [www.old-maps.co.uk](http://www.old-maps.co.uk)

**2.3 Are there any areas of potentially infilled land identified from analysis of 1:10,000 scale and 1:10,560 scale historical Ordnance Survey maps?**

|         |           |
|---------|-----------|
| 0-25m   | <b>No</b> |
| 25-250m | <b>No</b> |

**Comments**  
None

**Part 2- Other Records Showing Land Use - Search Radius 250 metres**

**2.4 Are there any Historical Tanks and Energy Facilities identified from analysis of selected 1:2,500 scale and 1:1,250 scale historical Ordnance Survey maps?**

0-25m      **No**  
25-250m      **Yes**

**Historical Tanks And Energy Facilities**

Tanks, Mapping Scale: 1:2,500, Date of Mapping: 1969      Bearing NE      173m

Tanks, Mapping Scale: 1:2,500, Date of Mapping: 1969      Bearing SW      220m

Electrical Sub Station Facilities, Mapping Scale: 1:2,500, Date of Mapping: 1969      Bearing E      247m

**Comments**

The Map indicates the location of Historical Tanks and Energy Facilities. Any features identified have been obtained from the examination of 1:2500 and 1:1250 Ordnance Survey National Grid black & white raster mapping published between 1943 and 1996. Historical Tanks and Energy Facilities may be potentially *contaminative or may have produced contamination in the ground. The presence of a site does not necessarily mean there is any cause for concern. Refer to the Useful Information section for further information. If you wish to examine the Ordnance Survey maps these are normally available for public inspection at the local archive or local major library.*

**Part 3- Mining, Subsidence and Radon**

- 3.1 Is the area within 25 metres of the centre of the search in an area that may be affected by past, current or proposed underground or surface coal mining activity?**

**Yes****Comments**

The property is in an area which may be affected by Coal Mining activity. It is recommended that a Coal Mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.

- 3.2 What is the risk of ground subsidence relating to shallow mining in the area within 250 metres of the centre of the search?**

**Low-Moderate****Comments**

The British Geological Survey has assessed the area of search as having a low to moderate likelihood of property damage from subsidence relating to shallow mining. The likely risk does not necessarily mean there is cause for concern. Inspection of the site may be required and a house buyers survey should be considered to test for signs of property damage that may relate to shallow mining.

- 3.3 What is the risk of natural ground subsidence in the area within 250 metres of the centre of the search?**

**Low-Moderate****Comments**

The British Geological Survey has assessed the area of search as having a low to moderate likelihood of property damage from subsidence. The likely risk does not necessarily mean there is cause for concern. Inspection of the site may be required to ascertain the specific ground type on which the property is built. A house buyers survey is advised to test for signs of property damage that may relate to such natural ground conditions. The proximity of trees and areas where trees have been removed should also be considered.

- 3.4 a) Is the area within 25 metres of the centre of the search in a radon affected area?**

**Yes****Comments**

The property is in an area where the National Radiological Protection Board (NRPB) have identified that more than 1% of properties are likely to be above the Action Level for Radon gas. This does not necessarily mean that the property is affected or that there is cause for concern. However, if you are concerned about Radon gas you may obtain a Postcode Sector based Radon assessment from the NRPB. This costs 22.80 pounds including VAT and can be completed in only a few days. The NRPB can also arrange for individual homes to be monitored. Monitoring individual homes takes approximately 5 months and costs 36.19 pounds including VAT. You should contact the NRPB if you wish to find out more about Radon, or if you wish to have a Postcode Sector assessment or have the property monitored.

- b) What level of radon protective measures for new dwellings or extensions to existing ones is required for the area within 25 metres of the centre of the search ?**

**No radon protective measures are necessary****Comments**

None

**Part 4- Flooding and Overhead Transmission Lines**

- 4.1 Is the area within 25 metres of the centre of the search in an indicative coastal floodplain?**

**No**

**Comments**

The Environment Agency has assessed the area within 25 metres of the centre of the search as not being within a natural indicative coastal floodplain. This position is confirmed by the flood map included at the beginning of this report. You should remain aware that localised flooding can still be possible. If you are concerned about flooding the Environment Agency should be contacted for further information.

- 4.2 Is the area within 25 metres of the centre of the search in a natural indicative river floodplain?**

**Yes**

**Comments**

The Environment Agency has assessed the area within 25 metres of the centre of the search as being within a natural indicative river floodplain, as marked on the flood map included at the beginning of this report. This does not necessarily mean there is a cause for concern. If you are concerned about flooding the Environment Agency should be contacted for further information.

- 4.3 Are there any overhead transmission lines, masts or pylons identified on Ordnance Survey digital maps within 250 metres of the centre of the search?**

**No**

**Comments**

None

- 4.4 Are there any actual or currently proposed telecommunication base stations within 250 metres of the centre of the search?**

**No**

**Comments**

Although no base stations have been identified from the site clearance database, it should be noted that only base stations that have a power level of above 17 dBW and/or are greater than 30 metres in height and are not confidential have been searched. Further information specifically in relation to mobile phone base stations can be found at <http://www.sitefinder.radio.gov.uk>

**Contact 1**

Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards  
Central Offices, Kendray Street, Barnsley, South Yorkshire S70 2TN  
Telephone 01226 770770 Fax 01226 772599

Website [www.barnsley.gov.uk](http://www.barnsley.gov.uk)

**Contact 2**

Environment Agency - National Customer Contact Centre (NCCC)  
Po Box 544, Templeborough, Rotherham S60 1BY  
Telephone 08708 506 506  
Email [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)

**Other Contacts**

The Coal Authority - Mining Report Service  
200 Lichfield Lane, Mansfield, Nottinghamshire NG18 4RG  
Telephone 0845 7626848 DX 716176 Mansfield 5  
Email [thecoalauthority@coal.gov.uk](mailto:thecoalauthority@coal.gov.uk)

National Radiological Protection Board  
Chilton, Didcot, Oxfordshire OX11 0RQ  
Telephone 01235 831600 Fax 01235 833891

Environment Agency - National Customer Contact Centre (NCCC)  
Po Box 544, Templeborough, Rotherham S60 1BY  
Telephone 08708 506 506  
Email [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)

Wilbourn Associates  
30 Jessops Riverside, 800 Brightside Lane, Sheffield S9 2RX  
Website [www.environmental-surveyors.com](http://www.environmental-surveyors.com)

Envirosearch Residential  
Imperial House, 21-25 North Street, Bromley BR1 1SS  
Telephone 0870 606 1700 Fax 0870 606 1701  
Email [info@landmarkinfo.co.uk](mailto:info@landmarkinfo.co.uk)  
Website [www.landmarkinfo.co.uk](http://www.landmarkinfo.co.uk)

**The Landmark website contains links to many of our data suppliers which may be of use.**

Please note that the Environment Agency/SEPA have a charging policy in place for enquiries.

Envirosearch Incorporates information from



The following explanatory notes may be of assistance to users of the Envirosearch Residential report. Practitioners are reminded that full guidance notes are contained in the Practitioners Guide.

#### Professional Opinion

A Professional Opinion in relation to Part IIA of the Environmental Protection Act 1990 is provided by Wilbourn Associates, a Chartered Environmental Surveyor. In many cases the report will be PASSED without referral however, in some cases, entries that may be of concern are revealed by the search, in which case the report is REFERRED free of charge for more detailed consideration, although this will not include a physical site inspection. After such referral the report may be PASSED or suggestions made of some FURTHER ACTION that could be taken, in the form of questions to ask of the appropriate authorities. When responses to these questions are received it is the responsibility of the client and their professional advisors to decide if they are happy to proceed.

The Professional Opinion page also notes positive responses from Part 3 and 4 of the report for easy reference. These parts are not included in the Professional Opinion risk model but should be taken into consideration by the client or practitioner.

#### Location Maps

The large scale Ordnance Survey location map may show features which are not necessarily otherwise included in the Envirosearch Residential report. You are advised to supplement the information contained in the report with the descriptive text shown on the map.

#### Part 1

##### Question 1.1 a

At present no complete national dataset exists for landfill site boundaries, therefore, a point grid reference, provided by the data supplier, is used for some landfill sites. The point grid references supplied provide only an approximate position, and can vary from the site entrance to the centre of the site. A point cannot properly define landfill boundaries therefore Landmark constructs a 250 metre "buffer" zone around the point to warn of the possible presence of landfill. The "buffer" zone is shown on the map as an orange hatched area. It may be helpful to note that the actual distance between the centre of the search and the landfill point provided by the data supplier is reported in the Enquiries and Replies section. For further information regarding landfill sites identified in the report, please contact the relevant agency or authority referenced in the Useful Contacts section. Where actual boundaries are available the landfill site area is shown on the map as a red hatched polygon.

You should note that landfills identified in this section may have a corresponding entry under Section 1.1c. However, due to limitations of the positional accuracy as explained above, these sites may not be coincidental when shown on the map.

##### Question 1.1 b

The BGS hold records of over 3,000 landfill sites that accepted waste prior to the Control of Pollution Act (COPA) 1974. These were not subject to any strict regulation or monitoring.

##### Question 1.1 c

Licensed waste management facilities cover current or recently current consents issued for landfill sites, waste transfer, treatment or disposal sites by the Environment Agency, under Section 64 of the Environmental Protection Act 1990 (Part II) and prescribed by Regulation 10 of SI No. 1056 of the Waste Management Licensing Regulations 1994.

##### Question 1.1 d

Local Authority landfill data are sourced from individual local authorities that were able to provide information on sites operating prior to the introduction of the Control of Pollution Act (COPA) in 1974.

Appropriate authorities are listed with an indication of whether or not they were able to make landfill data available. Details of any records identified are disclosed. You should note the following:

- if the response to 1.1d advises that the local authority 'Had landfill data but passed it to the relevant environment agency' it does not necessarily mean that local authority landfill data is now included in questions 1.1a and 1.1c.
- if no data has been made available, for all or part of the search area, you should be aware that a negative response to question 1.1d does not necessarily confirm that no local authority landfills exist.

##### Question 1.3 a

Identified discharge consents could be for storm water discharges, soakaways or septic tanks.

##### Question 1.3 b

If a radioactive substance licence has been identified the consent band will be given under enquiries and replies. Consents fall into one of four bands:

- |              |                                                                                                                                                                                                |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Band 1 and 2 | Nuclear licensed sites authorised by the Nuclear Installations Inspectorate e.g. nuclear power stations                                                                                        |
| Band 3       | Site registered/authorised to accumulate and dispose of radioactive materials, only non-nuclear operations are carried out on site e.g. hospitals                                              |
| Band 4       | Sites registered to keep and use radioactive material e.g. laboratories, universities, commercial premises using appliances such as monitoring equipment, alarm systems, tritium lighting etc. |

##### Question 1.3 c

Authorisations for industrial processes may be for organic or inorganic chemical processes.

**Part 2****Questions 2.2, 2.3 and 2.4**

The information provided in these questions relate to categories of potentially contaminative land uses that have been identified by the analysis of selected Ordnance Survey historical mapping. The published date (range of dates) of the map(s) and the distance from the centre of search to the nearest point of the feature is given. Further details of the extent of the site or its activities are not available. Should you wish to examine the Ordnance Survey maps these are normally available for public inspection at the local archive or local major library. Alternatively, extracts of editions of Ordnance Survey maps are available on [www.old-maps.co.uk](http://www.old-maps.co.uk)

**Question 2.3**

Potentially infilled land has been identified when a 'cavity' (a hole made by an extractive industry or natural occurrence e.g. pond) was indicated on an historic map but there was no evidence of its existence in the last available map for the area. No details of what may have been used to fill the cavity or exactly when or if it was filled are available from the mapping.

**Question 2.4**

The information provided in this section relates to the point location of historical tanks and energy facilities identified from the text on Ordnance Survey 1:1250 and 1:2500 scale mapping published between 1943 and 1996, based upon a predetermined list of abbreviations, e.g. *El Sub* (Electricity Sub-station) and *FStn* (Filling Station). The position of the point has been located at the centre of the identified text so that it would be within approximately 30 metres of the feature it was describing.

The features themselves are related to energy and petroleum storage and cover the following: tanks, petrol storage, potential tanks (at depots etc.), electricity sub stations and related features, gas and gas monitoring related features, oil related features and miscellaneous power features.

**NB:** It should be noted that the Ordnance Survey abbreviation for tank (tk) is the same as that for tracks. Therefore some of the captured text may relate to tracks and not tanks when the exact nature of the feature is not clear from the mapping.

**Part 3****Question 3.3**

This question relates to the risk from natural subsidence. The report shows the highest hazard identified from the five BGS Geo-Hazard datasets, which are: Swelling Clay Subsidence Hazards, Landslip Subsidence Hazards, Gulls and Cambering Subsidence Hazards, Ground Dissolution Subsidence Hazards and Compressible Ground Subsidence Hazards.

**Part 4****Question 4.3**

This question identifies the following features taken from Ordnance Survey Land-Line<sup>TM</sup> mapping: aerial ropeway, chairlift, high voltage electricity transmission lines, pipelines (suspended), ski lifts, electricity pylon, flare stack, lighting tower, radio mast. You should note that the information given in this section of the report relates only to that information shown on the Ordnance Survey map. Not all features may have been identified by the Ordnance Survey and therefore some information may not appear in the report.

**Question 4.4**

This question identifies telecommunication base stations from the site clearance register maintained by the Radio Communication Agency. It covers stations that are not confidential, have a power level of above 17dBW or are greater than 30 metres in height. Both actual and currently proposed sites are included. Base stations are not necessarily a free standing mast but might equally consist of an antenna attached to an existing building or other structure.

**General**

If, after reading the details in the Enquiries and Replies section regarding the sites identified in the report, you still require further information, please contact the relevant agency or authority indicated in the Useful Contacts section quoting the corresponding reference given in the text of the report.

The contacts in the Useful Contacts section may be able to provide further information relating to items identified in the report, however they are not in a position to advise how these might affect the value of a property. The findings of the report should be discussed with your professional advisor.