JPA
JOYNES PIKE
& ASSOCIATES LTD
CONSULTING ENGINEERS

The Genesis Centre
Science Park South
Birchwood
Warrington WA3 7BH
Tel: (01925) 826333
Fax: (01925) 826444
info@joynespike.co.uk
www.joynespike.co.uk

Your Ref:

Our Ref: JMJ/kj/234080.03347

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Wainhomes (North West) Ltd
Unit 7 Harvard Court
Quay Business Centre
Winwick Quay
Warrington
Cheshire. WA2 8LT

For the Attention of Mr D Gray

By Fax & Post

Dear David

Re: Cheadle Road, Leek

We have completed the first phase of fieldwork at the site and are pleased to provide our preliminary findings in advance of the final report. The purpose of this letter is to report the initial findings of the fieldwork. It should be noted that this information is provided in good faith in advance of the receipt of any test results. Therefore, these findings may be subject to change.

Site Description

Site Features

The site has been a dye works for the last eighty odd years and was closed in the autumn of 2001. It covers some 7.7 hectares in total but can be split into three areas:

The northern most area is heavily overgrown with trees and contains four settling ponds, although only one of these has standing water present the others are filled with sludge. This area was also used as a landfill and is believed to have had hazardous waste deposited within it although details are unknown. The landfill is also known to be gassing and gas precaution measures have been adopted in nearby houses. We understand that this landfill may also have a license attached to it. A foul sewer crosses this northern part of the site running east to west.

The middle area comprises a main production building which has gradually been extended to cover an area of 170m by 130m. This original building was constructed on piles and has suspended floor slabs, with an under floor void up to 2m present throughout. The integrity of the building and concrete construction is suspect with obvious signs of differential settling apparent, widespread extensive concrete corrosion and collapse of the suspended ground floors in localised small areas. The main offices at the southern end of the building originally had additional floors to those

currently present but these were removed to mitigate the ongoing settlement. Two later steel portal framed clad production and storage units were added to the west and north west of the main building in the last 15-10 years.

The sites main high voltage electricity supply is still live and enters the sites eastern boundary via a brick sub station then via underground cable beneath the new boilers running in a westerly direction adjacent to the factory's northern boundary where it enters the sites via an external transformer compound.

The drainage within this building is suspended beneath the floor slabs but was inadequate and poorly maintained and evidence that chemicals from the factory processes overflowed or bypassed the drainage is widespread. The drainage passes into settling tanks and an effluent treatment works with the sediment pumped to the settling lagoons situated to the north. Inspection of the treatment works and settling tanks reveals obvious areas of neglect and concern with effluent leaking in places. The effluent works is still running to treat the water that passes through the drains from the roof which was originally included to dilute the process waste effluent.

Two large redundant (30m by 30m and 20m by 35m) concrete settling/filter tanks are situated in the middle area the larger one adjacent to the current effluent works and the second situated to the east of the factory building.

Anecdotal evidence indicates that the factory had failed its discharge consent for the last two years of its operation and was being fined by the Environment Agency which hastened its closure.

Leek Brook was diverted to flow beneath the factory as an original supply for water but was later superseded by onsite borehole supplied water. The culverted brook has an overflow channel next to it which was originally cleaned to prevent silting however lack of maintenance has lead to this becoming blocked and in times of flood the brook now overflows beneath the factory floor.

Localised chemical storage throughout the factory was widespread, haphazard and totally unbunded, the main storage area was in the north east corner again unbunded. Numerous above ground chemical storage tanks (some bunded) were present adjacent to the western and northern sides of the factory, some but not all of these have been removed. Presently the site still contains large quantities of harmful, corrosive and dangerous chemicals stored in a variety of containers.

The factory was originally supplied by a large (estimated at 30m by 30m) coal fed boiler house situated to the south west of the main factory and joined via a large walk through underground service duct. The boiler house was demolished however we understand the service duct is still in place. Some of the waste ash from these boilers was spread around the site. This was replaced by a diesel fired boiler house in the 1970s supplied dual fuel gas by above ground bunded diesel tanks, which was positioned to the south west of the main building. Anecdotal evidence indicates that these bunds were breached and fuel lost on occasion. These boilers were replaced by modern coal fired boilers installed in the last two years of the sites operation and situated to the north east of the main factory building. Coal was delivered by HGV and

Ground Conditions

Published information indicates the site to be underlain by River Alluvial deposits, which in turn are underlain by Sherwood Sandstone. The River Terrace deposits are classified by the Environment Agency as a Minor Aquifer with the underlying Sherwood Sandstone classified as a Major Aquifer. No Groundwater abstraction wells are located within the vicinity of the site although the site does lie within a groundwater total catchment area.

The site was investigated by twenty four trial pits spread across the external areas of the site and fourteen window sample holes all but one of which were positioned within the main process building and drilled through the suspended floor slab.

The exploratory holes generally confirmed the published geology with the natural strata encountered comprising very soft silty organic clays with bands of peat and sand encountered in the majority of the holes to depths of up to 7.0m bgl, the clays were often highly plastic. The clay strata was found to overlie medium dense becoming dense red brown clayey Sand and Gravels at depths of 5.50m plus in some of the window sample holes in the middle of the main building. Although the dense Sands and Gravels were encountered at shallow depths circa 0.50m bgl in the trial pits in the south western parts of the site. The sandstone bedrock was encountered in one location at a depth of 0.35m bgl in the eastern part of the site adjacent to the road.

Made Ground was encountered in all of the exploratory holes on the site. It varied between brick demolition rubble which was spread over the southern and western parts of the site conjectured to be from the demolition of the upper floors of the main building and boiler house to black ash and cinders which was also spread over the southern and western areas of the site. Made Ground comprising reworked very soft silty clays and peat's with occasional brick and wood fragments was also encountered in some of the exploratory holes in the western parts of the site and beneath the main building to maximum depths of 3.50m where they were terminated on obstructions possibly concrete.

Generally the depths of made ground on the site confirmed the belief that the site had been levelled by means of tipping and filling the areas to the west adjacent to the River Churnet where the fill was found to be generally deepest.

Groundwater was generally encountered at depths of between 1.00m to 2.50m as perched layers emanating from within the sands and peat layers within the Clays although discreet groundwater inflows were noted emanating from within the Made Ground in the trial pits along the western boundary of the site.

Contamination

Given the sites history numerous contaminative sources and past industrial use it was considered that soil and groundwater contamination may be widespread. This conclusion has been generally confirmed by the visual and olfactory evidence gained from the first phase of the investigation, although as yet the degree of impaction has not been clarified as the laboratory results are not yet available.

the waste ash removed off site also via HGV. These recent boilers appear in good condition and may have a resale value.

A large (30m by 25m) steel clad concrete water tower estimated at 16m high is sited just to the south of the main works. This also exhibits widespread concrete corrosion. A water softening plant is positioned beneath this tower and also a canteen. The original water abstraction well bored to a depth of approximately 30m lies beneath this tower along with a second later well positioned just to the south.

The area to the south of the main factory was used for car parking which was extended over the original boiler house area. This car parking extends up to a maintenance / site engineering workshop lying to the south. A now dismantled above ground fuel oil storage tank was positioned to the immediate west of the workshop with underground diesel and petrol storage tanks lying to the east. Both of these storage areas are known to have leaked.

A detached brick two storey 1930's style gatehouse lies adjacent and to the east of the site entrance. A gas supply enters the site between the gatehouse and the water tower. Externally it is understood that the site is supplied by a single small bore (circa 30mm) diameter water supply which enters the site adjacent to the gatehouse. The sites remaining water demands were met by its on site boreholes.

The southern area of the site is heavily overgrown with trees and shrubs this area is also known to have been used as a landfill. Evidence suggests that waste material and fire damaged stock were burned in pits in this area. Underground air raid shelters are also believed to be present in this area although JPA were unable to identify their location during the site works due to the heavy undergrowth.

A surface water and a foul sewer cross this part of the site trending in a southeast to north west direction the surface discharge enters the River Churnet which bound the site to the west although the foul runs in a northerly direction to the west of the factory building and joins the other sewer run to the north of the affluent treatment area. Both these sewers have been known to become blocked in recent times.

Anecdotal evidence also suggests that unlicensed farm slurry has been deposited via an unregulated outfall into a depression within this southern area. Although JPA could not confirm its presence and positively identify this depression at the time of the site visit due to the density of the vegetation.

The River Churnet, likely to classified as a Main River, borders the site to the west with the culverted Leek Brook flowing beneath the sites main buildings into the River Churnet. The extreme western part of the western area of the site falls with a 1 in 100 year flood of the River Churnet.

When the results of the laboratory analysis are available we will be able to more accurately determine the likely risks the site poses to these receptors and estimate the likely reaction of the regulators. However based on the sites apparent contaminant conditions and ground conditions we estimate that a clean cover layer alone will be insufficient to mitigate the risks to human health from this site and a combination of "dig and dump" (sludge beds), cover layers and possible in-situ pump and treat remediation techniques will be required for hydrocarbon impacted soils and groundwater's such as the areas near the large above ground diesel tanks.

To accurately determine the remedial clean up targets and demonstrate to the regulators that the site has been effectively investigated further investigations will be required together with Quantitative Risk Assessments the results of which can be presented to and agreed with the regulators.

At present to mitigate the risk to controlled waters during remediation it is considered that the course of the Leek Brook which is known to flood the site beneath the main building, may have to be altered through the site and placed within a new concrete culvert prior to the start of the remediation of the areas immediately adjacent to its current course. However this is an initial suggestion and will have to be confirmed with Environment Agency prior to implementation.

Geotechnical Requirements.

At this stage it is considered that the majority of the proposed development will have to be piled or placed on raft foundations on re-engineered ground. Due to the very soft nature of the near surface soils geo-textile grids and matting is likely to be required even during the demolition phase of the works.

Highways are likely to require the use of geogrids or other improvement techniques. The site is obviously technically challenging, however the size of the site lends itself to a phased development approach, where the more contaminated areas can be dealt with while development is proceeding on other areas.

The northern employment area is least environmentally sensitive, and lends itself to a managed ground gas system. The central part of the site at the moment is considered to be most contaminated and will require extensive remediation works. The southern area whilst not being straight forward is probably most suited to a traditional cover type remediation. Again the size of the site means that a development could be on-going while remediation is taking place in the other areas. The programming of these works will need careful consideration with the final approved scheme.

Yours sincerely
For and on behalf of Joynes Pike and Associates Limited

J Jacob
Senior Geo-Environmental Engineer
jjacob@joynespike.co.uk

In general the majority of the window sample holes exhibited chemical odours (which may represent SVOC and VOC contamination) in the upper 2-3m of near surface strata with WS7 and WS12 being more strongly contaminated. WS12 was apparently impacted with a Tetrachlorethene dry cleaning fluid used on site, this chlorinated solvent is a Dense Non Aqueous Phase Liquid (DNAPL), indicating that it sinks below the water table and can prove difficult to remediate.

The sludge Lagoons were tentatively investigated and sampled in this investigation the material that these contain is considered to be contaminated on appearance and odour with oxidisation and colour change on contact with air taking place, again scheduled laboratory analysis will aid classification of this material.

The trial pits situated along the sites western boundary encountered localised buried white powder contamination, diesel contamination within the groundwater adjacent to the large fuel storage tanks and brown foaming effluent emanating from within the Made Ground adjacent to the effluent treatment works.

The area around the effluent treatment works and settling tanks can also be expected to be contaminated, in addition to the area in the vicinity of the settling tanks to the east of the building where tin was known to be used.

The ashy Made Ground is also likely to contain elevated heavy metals although thought likely to be in lower concentrations than those present in the sludge lagoons.

The groundwater is also likely to be impacted with VOC's, SVOC's and metals although the degree of this impaction will not be known until further testing has been carried out. A limited number of water samples were obtained during this investigation.

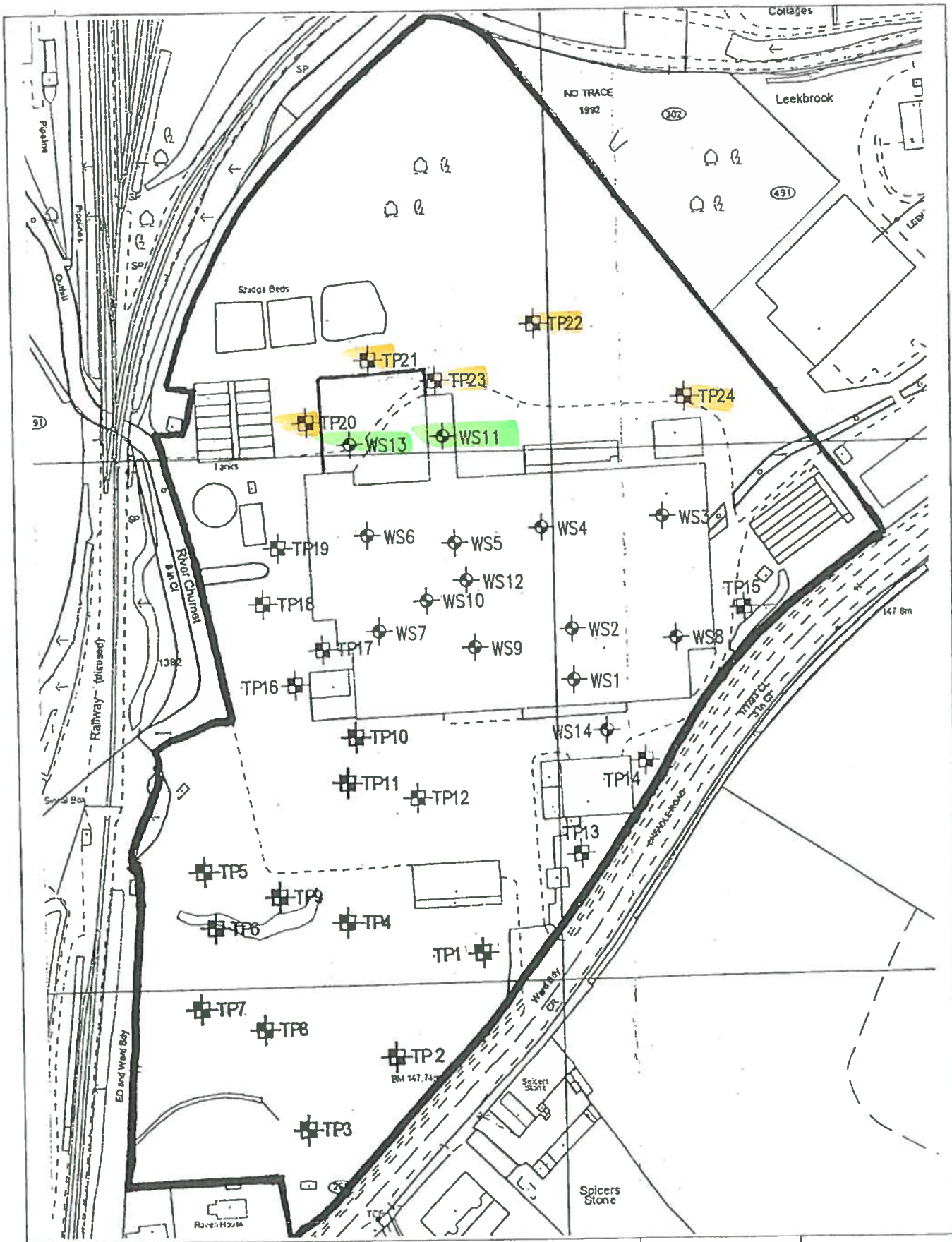
The fuel storage tanks adjacent to the workshop area also represent sources of hydrocarbon contamination. This investigation did not investigate areas immediately adjacent to these sources and this area should be further targeted.

Other areas of concern are the landfilled areas in the north and south of the site although this investigation did not encounter obvious contaminated soils apart from ashy Made Ground.

The buildings on site including the oil fired boiler house are also considered likely to contain large amounts of asbestos and a Type 3 asbestos survey will be required prior to demolition.

Environmental Liabilities

At present the risks to human health of the site end users is considered to be relatively high from the contamination present on site through dermal contact, ingestion and inhalation of dust. In addition, the risks to groundwater and surface waters of Leek Brook and the River Churnet are also considered to be high and the cessation of the current works operation may not be sufficient to mitigate and write off this risk in a justification to the Environment Agency.



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DRAWING DETAIL: EXPLORATORY HOLE LOCATION PLAN	PROJECT TITLE: CHEADLE ROAD, LEEK	DRAWING NUMBER: 234080/02	REVISION