






Phase 1 Desktop Study

Coity Sidings, Coity Road, Bridgend

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1.0 Introduction

Sanctus Limited (Sanctus) was instructed to undertake a Phase 1 contaminated land desk study by Kevin Archard on behalf of Cole Easdon Consultants (Client) at a site located off the B4181 Coity Road in Bridgend, nearest Postcode CF31 1RQ.

The purpose of the Phase 1 desk study was to assess the site's historical occupation and uses, identify potential sources of contamination that may have arisen through the site and surrounding area previous land uses and review the site's environmental setting. This information was used to develop a site conceptual model, identifying potential sources, pathways and receptors at the site that may represent significant pollutant linkages that would need addressing prior to its re-development.

The works included the review of historical maps of the area in question dating back to 1877, a review of environmental information collected from regulatory bodies and national agencies included within an Envirocheck Report obtained from Landmark Information Group presented in Appendix B, and a compilation of a site conceptual model and derivation of an overall risk rating for the site.

2.0 Site Features

2.1 Location and Setting of the Site

The site is situated between approximately 1 and 1.5km from Bridgend Town Centre. The centre of the site can be located by its National Grid Reference 290600mE, 180940mE and covers an area of approximately 6ha.

The site is bounded on its:

- North and North-Eastern side by Residential properties and playing fields associated with the Litchard Junior School;
- South-Eastern Boundary by an Electricity Sub-Station and Allotments before playing fields and Residential properties.
- South-Western side by a cemetery;
- Southern Boundary is Coity Road with commercial/industrial units and residential properties;
- Western side by the Maesteg railway Line and Windmill rail station;

A location plan of the site is included in Appendix A and historical maps in Appendix B (Landmark Envirocheck Report: Reference 30599036_1_1, dated 19th March 2010).

2.2 Description of Site

An unaccompanied site reconnaissance was undertaken by a representative of Sanctus on the 24th March 2010.

The site comprises a kilometre long, thin stretch of land (100m at its widest point) which was formerly a section of the Great Western Railway Llynfi Valley Line, used mainly as a Minerals railway. A large portion of the site was the Coity Sidings coal store (Such sidings may have been used for marshalling, stabling, refuelling, storing, loading and unloading vehicles).

The site has mainly been reclaimed by nature since the dismantling of the railway and coal storage yard during the 1990s, although there is still some evidence of coal stockpiles on which the vegetation has become established. A section in the south-west corner of the site is being used as a builders storage yard.

A site walk over was conducted and a brief description of the site, travelling from the south of the site northwards, is included in section 2.2.1 below, photograph plates are included in Appendix C and a Site plan showing the locations and directions the photographs were taken is included in Appendix A.

2.2.1 Site Walkover

Access was made directly from the B4181 Coity Road signposted Jewson Builders Merchants, (see plate 1). On the eastern side of the road onto the site was a gate allowing car access towards the south eastern area of the site, (see plate 2), directly in front of this gate was railway tracks showing evidence of the former railway, (see plate 3).

Continuing onto the site, past the Builders Merchants entrance, boulders have been placed across the path in two layers in front of a metal security fence (see plates 4 and 5) preventing vehicle access any further onto the western edge of the site. However pedestrian access is easily made to the right of the metal fence allowing the fly tipping of general household waste (see plate 6).

The gate described earlier (see plate 2) allows entry to vehicles along the eastern boundary of the site (see plate 7) along this road was further fly tipped material and a shack built in the undergrowth (see plate 8). Another gate and fence crosses the road preventing any further access to vehicles and pedestrians (see plate 9).

Continuing up the western edge of the site, along the pedestrian footpath through overgrown vegetation either side (see plate 10), the cemetery is visible through the

undergrowth to the west of the path (see plate 11). Continuing up this path 140m the electricity sub-station comes into view to the eastern side (see plate 12).

The path bends around to the east, towards the middle of the site, at the back of the sub-station (see plate 13 and 14) where the undergrowth becomes less thick. A road allowing vehicle access to the east of the sub station and onto the site runs up the eastern edge (see plate 15 and 16).

Continuing along the path running roughly up the middle of the site after 100m (north of the sub-station) what looks like an abandoned pond partially filled with fly-tipped materials including a rusty shopping trolley and wheel-barrow (see plate 17), a fence with planted conifers is adjacent to the pond (see plate 18).

Heading north the vegetation either side of the path became thicker and inaccessible to people (see plate 19), A further 100m north of the sub-station can be found Windmill Railway Station (see plate 20). The site crosses over Wind Mill Lane (see plate 21) and continuing north becomes less vegetated on the western/railway boundary for the next 150m (see plate 22)

The site then became relatively thin running up along the railway fence with increased vegetation and an embankment along the eastern boundary (see plate 23) the end of the site is formed by a railway fence across the path (see plate 24)

During the site walkover several potential hazardous materials were considered, including, but not exclusively asbestos containing materials, Japanese Knotweed, drug paraphernalia, evidence of wartime munitions and fortifications and any hydrocarbon or potential chemical contamination. None of the above was identified however due to the thick vegetation on the site this cannot be guaranteed. It should be noted that Japanese Knotweed growing season is between April and November so if any is present on site it would not have been visible at the time of the reconnaissance.

2.3 Adjacent Properties

Maesteg railway Line and Windmill rail station is operational with regular trains running past the site. Jewsons Builders yard is still active on site, allotments are being used, school and playing fields are in constant use, cemetery is in use, Substation is in use and the B4181 Coity road to the South is a busy route with commercial and residential buildings in use.

2.4 Proposed Development

Sanctus understands that the site is currently allocated for mixed use development, most likely a mix of residential, business and a park and ride facility. As indicated, part of the site consists of existing industrial premises held under a long ground lease by a third party, currently occupied by Jewson.

2.5 Environmentally Sensitive Areas

The Landmark Envirocheck Report (Appendix B) indicated that there are no sensitive land uses were located within 1km of the site;

3.0

Geology, Hydrogeology and Hydrology

3.1 Geological Setting

The British Geological Survey (England and Wales) 1:50 000 Series, Sheet 262, “Bridgend” indicates that the site is underlain by superficial Devensian, Glaciofluvial sand and gravel deposits underlain by Hettangian-Rhaetian St Marys Well Bay Member Limestone and Mudstone interbedded bedrock.

The following BGS lithological descriptions are provided;

Devensian, Glaciofluvial sand and gravel deposits	- These deposits are associated with glacial action and laid down by the glacial meltwaters issuing from, or flowing beneath, ice sheets. Glaciofluvial sand and gravel deposits exhibit considerable lateral variations in thickness, composition and particle size distribution. They generally contain more clay and frequently contain a larger amount of over-sized materials than river sands and gravel.
Hettangian-Rhaetian St Marys Well Bay Member Limestone and Mudstone interbedded bedrock	- Thinly interbedded limestone (laminated, nodular, or massive and persistent) and calcareous mudstone or siltstone (locally laminated). Individual limestones are typically 0.10-0.30m thick. In some areas, intervening mudstone units with relatively few limestone beds.

3.2 Geological Hazards

The British Geological Survey (BGS) has indicated that the site is located in a radon affected area, as between 5 and 10% of homes are above the action level.

The BGS further indicate that basic radon protection measures are necessary in the construction of new dwellings or extensions.

The Coal Authority describes the site as, “in an area, which may not be affected by coal mining”.

The BGS have indicated that the site has no potential for Compressible Ground Stability Hazards, a very low risk of Running Sand Ground Stability Hazards and no hazard potential for shrinking or swelling clay ground stability.

The BGS has also indicated that the site has no ground dissolution hazards, very low hazard potential landslide ground stability hazards and no collapsible ground stability hazards, with no shallow mining hazards.

3.3 Hydrogeology

Information on groundwater was obtained from the Environment Agency Groundwater Vulnerability Map, Sheet 36, Mid Glamorgan (Scale 1:100,000) and the Indicative Floodplain and Sensitive Land Use maps supplied within the Envirocheck report.

The Environment Agency has classified the underlying geology as a Minor Aquifer (Variably permeable). These can be fractured or potentially fractured rocks, which do not have a high primary permeability, or other formations of variable permeability including unconsolidated deposits. Although not producing large quantities of water for abstraction, they are important for local supplies and in supplying base flow to rivers.

The site was not located within a Nitrate Vulnerable Zone for groundwater, as classified by the Department for Environment, Food and Rural Affairs (DEFRA).

The site is not recorded as being located within a groundwater Source Protection Zone (SPZ) and no SPZ's were noted within 2km of the site.

One groundwater abstraction license was recorded within 1km of the site. The license was recorded some 611m south of the site with the license being held by Bridgend Rugby Football Club. The abstraction license number is 21/58/42/0010 for use for spray irrigation.

3.4 Hydrology

One watercourse that had been classified by the Environment Agency for River Quality is recorded within 1km of the site; the River Ogmore which lies between 126m and 540m running north-south to the west of the site and has been classified by the Environment Agency GQA Classification as exhibiting a Grade B (Good) chemical quality.

Six Discharge Consent Permits have been recorded within 1km of the site however it is unclear as to whether any of these discharges are still taking place and likely that only one is, at 305m from site, operated by Dwr Cymru Cyfyngedig discharging Public Sewage: Storm Sewage Overflow into the River Ogmore. The closest discharge consent was recorded on the site and was operated by Graham Reeves Ltd until 1st May 1995 for unspecified discharge type onto the nearby land.

The Environment Agency Indicative Floodplain Map (included in Appendix B) indicated that the site occupied land that is not at risk of flooding from rivers or sea without defences, (Zone 3).

4.0

Historical Map Review

Landmark Information Group supplied maps dating from 1877 to 2009. Pertinent details from these maps are commented on; the detailed review is based on Ordnance Survey data provided by Landmark.

The site history, from 1877 onwards, was compiled from the historical maps included in the Envirocheck Report supplied by Landmark Information Group (Reference 30599036_1_1, dated 19th March 2010), attached as Appendix B. A review of information from these maps is given below with all distances noted relating to the centre of the main body of the site:

4.1 Detailed Review

1877 Glamorganshire Map (Historical Town Plan, Scale 1:2,500)

Site: The site is occupied by farms and fields with no buildings. A road tunnel is present, towards middle of the site, beneath the railway.

Surrounding area: The GWR Llynfi and Ogmore Section railway which runs along the western boundary is already present, this comprises a railway embankment in the northern section of the site.

1885 Glamorganshire Map (County Series, Scale 1:10,560)

Site: The site appeared unchanged.

Surrounding Area: The surrounding area appeared unchanged.

1899/1900 Glamorganshire Map (Historical Town Plan, Scale 1:2,500)

Site: Coity junction and sidings have been constructed along with the Great Western Railway Llynfi Valley Line which goes straight through the site including an engine shed, associated buildings and signal posts.

Surrounding area: The railway along Western boundary is now called GWR Llynfi Branch, Cemetery including mortuary chapel have been built to south-west of site.

1919 Glamorganshire Map (Historical Town Plan, Scale 1:2,500).

Site: The site is still Coity junction and sidings engine shed is now labelled as goods shed.

Surrounding Area: The railway along Western boundary is now called GWR Bridgend and Abergwynfi, Newtown Nurseries has been built to south-west of site.

1921 Glamorganshire Map (County Series, Scale 1:10,560).

Site: New Signal Post constructed in the northern part of site.

Surrounding Area: The surrounding area appeared unchanged.

1938 Glamorganshire Map (County Series, Scale 1:10,560).

Site: Additional Signal Post constructed in the northern part of site.

Surrounding Area: Roads and houses built to west of the middle of the site

1940 Glamorganshire Map (County Series, Scale 1:2,500).

Site: An Electricity Pylon has been built towards middle of the site.

Surrounding Area: Allotment gardens along the south-west boundary of the site have been created, adjacent to the allotments has been the construction of lots of new dwellings, new housing has also been constructed towards the western edge of the middle of the site.

1947-1947 Historical Aerial Photography (Scale 1: 10,560).

Site: Possible stockpiled materials on the site (Coal).

Surrounding Area: Many more dwellings have been constructed to both the east and west of the site with some industrial/commercial units appearing to the south.

1952 Glamorganshire Map (County Series, Scale 1:10,560).

Site: The site appeared unchanged.

Surrounding Area: More dwellings constructed to the east, west and south of the site with some industrial/commercial units appearing to the south.

1964 Glamorganshire Map (County Series, Scale 1: 10,000).

Site: Another Goods shed has been constructed near to the existing shed in the south of the site.

Surrounding Area: No significant change in land use was recorded within the surrounding area.

1964-1988 Glamorganshire Map (Additional SIMs, Scale 1:1,250).

Site: The site appeared unchanged, remaining as Coity sidings.

Surrounding Area: Railway to south of site is now dismantled, Electricity sub-station and playing fields are noted to the west of the middle of site. Litchard county infants school constructed to the west of the northern part of the site, more dwellings constructed to east, west and south of the site.

1972-1974 Glamorganshire Map (Ordinance Survey plan, Scale 1: 10,000).

Site: The site appeared unchanged.

Surrounding Area: Infant school extended and now a junior school; more dwellings constructed to east, west and south of the site.

1974-1988 Glamorganshire Map (Ordnance Survey Plan, Scale 1: 1,250).

Site: Coity sidings and railway dismantled 1985-1988, now labelled as coal yard, with start of vegetation growing. Former storage sheds in south of site now being used as builders yard. Embankments and mounds still occupy some of northern part of site.

Surrounding Area: No significant change in land use was recorded within the surrounding area.

1991-1993 Glamorganshire Map (Large Scale National Grid Data, Scale 1:1,250).

Site: Still predominantly being used as a coal yard with the builders yard in the southern part.

Surrounding Area: No significant change in land use was recorded within the surrounding area.

1996 Glamorganshire Map (Large Scale National Grid Data, Scale 1:1,250).

Site: Coal yard becoming smaller.

Surrounding Area: No significant change in land use was recorded within the surrounding area.

1999-2009 Glamorganshire Map (10k Raster Mapping, Scale 1: 10,000).

Site: The site continues to be used less for coal storage and left derelict apart from the builders yard in the south of the site.

Surrounding Area: No significant change in land use was recorded within the surrounding area.

4.2 Summary

The site had been operated as the Coity railway sidings from 1885-1899 for nearly a century, until circa 1985-1988. A railway line has been running along the western edge of the site since the earliest available maps (1877). Little change to the sites land use occurred during the years. The Great Western Railway Llynfi Valley Line was dismantled in the 1960s, but the sidings remained in use up until the late 1980s before becoming a coal storage yard.

The goods storage buildings became a builders yard which remains in use to the present day. The coal storage yard was left to nature in the 1990s and is frequented by dog walkers and pedestrians along footpaths through thick vegetation.

The surrounding area has been in constant development since the earliest maps (1877). The growth has been of the town of Bridgend on all sides of the site with residential, commercial and some industrial including schools and a hospital

4.2.1 Anecdotal Evidence

Anecdotal evidence was gathered during site reconnaissance from local members of the public who were using the tracks through the vegetation for dog walking. Stories including, munitions being transported through Coity sidings during war time, changing of locomotion engines from steam to diesel, evidence of wartime bombing (unexploded bombs, or spillages caused by explosions) and the coal storage yard, were expressed.

5.0 Regulatory Information

This information was compiled from an Envirocheck Report supplied by Landmark Information Group (Reference 30599036_1_1, dated 19th March 2010), attached as Appendix B. All distances noted are from the centre of the main body of the site.

5.1 Waste

5.1.1 Registered Waste Transfer / Treatment / Disposal Site

There is one registered waste transfer site license recorded within 1km of the site. The nearest registered Waste Transfer Site, operated by Broughshire Ltd, is located 873m north-east of the site. The site is licensed to receive scrap metal.

There are two registered waste treatment / disposal sites within 1km of the site. The nearest is 386m east of the site and is operated by Bridgend and district NHS Trust and is authorised to accept clinical waste. The other registered waste treatment / disposal site is 509m south of the site and operated by J & E J Bulger and is in the scrap yard category, authorised for scrap metal and whole batteries.

5.1.2 Waste Management License

Two licensed waste management facilities were recorded within 1km of the site, one of which is recorded as surrendered. The closest operational site, a metal recycling site (mixed), is located 832m east of the site.

5.1.3 Landfill

The Local Authority held records of one recorded landfill site within 1km of the site. The nearest recorded landfill site was Bridgend County Borough Council Tondu Road Landfill which is located 696m west of the site.

Two historical landfill sites were recorded within 1km of the site; the closest was held by Datewin Construction Limited, Bridgend some 780m south-east of the site.

A reference number (EAHLD14904) was provided for the site and it is recorded that waste was first input to the site on 31st December 1985 and last input date 31st December 1988. Deposited waste included inert, industrial and household waste. The other historic landfill site is the Tremains Tip, which is located 967m south of the site. A reference number (EAHLD14490) was provided for the site and it is recorded that waste was first input to the site on 31st December 1960 and last input date 31st December 1974. Deposited waste included inert, industrial and household waste.

5.1.4 Integrated Pollution Controls

The Environment Agency held records of seven pollution prevention and control incidents within 1km of the site, the closest was recorded some 547m north-west of the site relating to Penyfai Service Station on Tondu Road Bridgend which started on 2nd March 1999.

5.2 Pollution

5.2.1 Pollution Incidents to Controlled Waters

The Environment Agency held records of forty eight pollution incidents to controlled waters within 1km of the site. The closest incident was recorded as a Category 3 – Minor Incident 70m north of the site which involved a deliberate act of mud/clay/soil pollutant directly discharged on 19th August 1994.

A Category 1 – Major Incident was recorded 70m north of the site which involved a deliberate act of light oil being directly discharged on 19th August 1994.

A further forty incidents were recorded within 1km of the site. Of these incidents thirteen were recorded as Category 2 – Significant Incidents, the nearest was 105m north of the site. The remaining twenty seven incidents were Category 3 – Minor Incidents.

5.3 Prosecutions relating to Authorised Processes

Dumping of illegal waste (rubble and building waste) 869m south-east of the site was recorded on land at Princes Way, Brackia, Bridgend which led to prosecution on 26th January 2000.

5.4 Prosecutions relating to Controlled Waters

Allowing fuel oil to escape into nearby watercourse 945m south of the site at Nant Ponsannau, Dunrave Place, Bridgend led to prosecution on 31st January 2005.

5.5 Registered Radioactive Substances

Fifteen radioactive substances were registered within 1km of the site, all existing between 340m and 363m east of the site, at the Abertawe Bro Morgannwg University NHS Trust hospital. Authorised by the Environment Agency, Welsh Region from 31st March 1991

5.6 Hazardous Substances

No records relating to installations handling hazardous substances (NIHHS) or were identified within 1km of the site.

No records of any Hazardous Substance Consents or Enforcements were identified within 2km of the site.

5.7 Control of Major Accident Hazards Sites (COMAH)

No COMAH site are located within 2km of the site.

5.8 Contemporary Trade Entries

Contemporary trade entries indicate that there were 128No active companies within 1km of the site. The entries include a number of industrial uses including garages, breakers, manufacturers, printers and waste management operations.

Jewsons builders merchant is located onsite, an Inactive printers and air purification manufacturers are located within 100m of the site.

An obsolete fuel station is located 214m to the west of the site. There were two further fuel stations between 543m and 716m from the site respectively. The closest operating fuel station is the Texaco operated Penyfai Service Station located on Tondu Road, Bridgend.

6.0 Conceptual Model

The conceptual model represents the environmental setting of the site and identifies potential sources of contamination, pathways for the contamination to be brought into contact with potential receptors and the receptors themselves for the contamination to impact upon.

The conceptual model allows the identification of pollutant linkages that may be significant and would require further investigation at the site.

6.1 Potential Sources

The following potential sources of contamination were identified or suspected at the site, or within the surrounding area (off site);

- Unknown materials used in storage sheds and stockpiles on site, most likely coal;
- Anecdotal evidence of munitions being transported through Coity sidings during war time.
- Onsite engineering including changing of locomotion engines from steam to diesel;
- Anecdotal evidence of wartime bombing (unexploded bombs, or spillages caused by explosions);
- Underground fuel storage tanks;
- Former vehicle and oil storage on site;
- Historic spillages/leakages of petroleum hydrocarbons;
- Potential for Made Ground at the site;
- Potential asbestos containing materials in buildings and stockpiles (from roofing tiles or train brake linings etc), and
- Identified former stockpiles of coal with the potential for the generation of ground gas within the surrounding area.

6.2 Potential Pathways

Migration of potential contaminants may occur at the site at the present, during construction/maintenance works or following the proposed development via the following pathways;

- Dermal contact with contaminated soil,
- Ingestion of contaminated soil,
- Inhalation of indoor and outdoor dust/fibres,
- Inhalation of indoor and outdoor ground gas and/or volatile vapours,
- Leaching/mobilisation of contaminants within soils,
- Transport of contaminated soil on vehicles / plant

6.3 Potential Receptors

Receptors that could potentially be impacted by contamination at the site could include;

- Current site occupants, including any maintenance workers,
- Construction workers for proposed development,
- Future site occupants following the proposed development,
- Occupants of adjacent properties and the properties themselves,
- Current and proposed buildings and the site and associated underground services,
- Groundwater, although the local geology is classified as a minor aquifer.

6.4 Tabular Conceptual Model

A simplified version of the conceptual model for the site is presented on the following page.

Source	Pathway	Receptor
Soil contamination associated with former and current land use and presence of Made Ground at the site, including the possible presence of asbestos within the soils.	Dermal contact with soils	Current site occupants, maintenance workers, future site residents
	Ingestion of contaminated soil	Current site occupants, maintenance workers, future site residents
	Ingestion of produce grown within contaminated soil	Future site residents
	Leaching / mobilisation into underlying groundwater	Groundwater and possible onward migration to surface water bodies
	Inhalation of indoor and outdoor dust/fibres	Current site occupants, maintenance workers, future site residents
Spillages/leakages of petroleum hydrocarbons, especially from underground storage tanks or locomotives including any damage during wartime bombing.	Dermal contact with soils	Current site occupants, maintenance workers, future site residents
	Ingestion of contaminated soil	Current site occupants, maintenance workers, future site residents
	Ingestion of produce grown within contaminated soil	Future site residents
	Leaching / mobilisation into underlying groundwater	Groundwater and possible onward migration to surface water bodies
	Inhalation of volatile vapours	Current site occupants, maintenance workers, future site residents
	Flow down gradient from spillage/leakage	Soil at site
Ground gas generation from Made Ground at the site, from the identified stockpiles of coal in historical maps.	Inhalation of ground gas and build up of ground gas within buildings	Current site occupants, maintenance workers, future site residents, construction materials, buildings

7.0 Qualitative Risk Assessment

Based on the findings of the contaminated land desk study, detailed in the preceding sections including the historical map review and the site reconnaissance a qualitative risk rating can be given to the identified receptors, along with an overall risk rating for the site.

Identified Receptor	Risk Rating	Justification
Human Health (current and future site occupants)	High	Historic industrial land use at the site with potential for soil contamination within any Made Ground encountered, including the storage and usage of petroleum hydrocarbons. Possible presence of asbestos containing materials.
Groundwater	Low - Medium	Site is recorded as situated on a Minor Aquifer and is not within a Source Protection Zone. Closest groundwater abstraction recorded 611m to the South for sprinkler use.
Surface Water	Low	No surface water features were recorded on site the nearest being the River Ogmore which lies between 126m and 540m running north-south to the west of the site.
Buildings and Foundations	High	BGS indicate that the site is located radon affected area, as between 5 and 10% of homes are above the action level. The BGS further indicate that basic radon protection measures are necessary in the construction of new dwellings or extensions. The site is recorded by the Coal Authority as being in an area which may not be affected by coal mining. Risk of migration of ground gas and leachate from the landfills within the surrounding area is low due to distance and local geology. The BGS have indicated that the site has no potential for Compressible Ground Stability Hazards, very low hazard Running Sand Ground Stability Hazardous and no hazard potential for shrinking or swelling clay ground stability. The BGS has also indicated that the site has no ground dissolution hazards, very low hazard potential landslide ground stability hazards and no collapsible ground stability hazards, with no shallow mining hazards. Due to the former land use as railway sidings and

Buildings and Foundations (cont.)	coal storage yard there is a risk of hydrocarbon contaminated soils as well as vegetation covered stockpiles of coal material with the ability to create large amounts of ground gas including the potentially very dangerous Methane.
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Overall the site is deemed to exhibit a Medium to High risk rating, generally relating to the past conditions and potential future land uses.

8.0 Conclusions

From the preceding sections the following conclusions regarding the environmental setting of the site can be made;

- The site is situated between approximately 1 and 1.5km from Bridgend Town Centre. The site can be located by its National Grid Reference 290600mE, 180940mE and covers an area of approximately 6ha.
- The site is underlain by superficial Devensian, Glaciofluvial sand and gravel deposits underlain by Hettangian-Rhaetian St Marys Well Bay Member Limestone and Mudstone interbedded bedrock.
- BGS indicate that the site is located radon affected area, as between 5 and 10% of homes are above the action level. The BGS further indicate that basic radon protection measures are necessary in the construction of new dwellings or extensions.
- The Environment Agency has classified the underlying geology as a Minor Aquifer.
- The site is not situated within a source protection zone; the closest groundwater abstraction is located some 611m to the south.
- One watercourse that had been classified by the Environment Agency for River Quality is recorded within 1km of the site; the River Ogmore which lies 126m south-west of the site and has been classified by the Environment Agency GQA Classification as exhibiting a Grade B (Good) chemical quality.
- The Environment Agency Indicative Floodplain Map (included in Appendix B) indicated that the site occupied land that is not at risk of flooding from rivers or sea without defences, (Zone 3).
- No licensed surface water abstractions are recorded within 1km of the site.
- The site had been operated as the Coity railway sidings from 1885-1899 for nearly a century, until 1985-1988. A railway line has been running along the western edge of the site since the earliest available maps (1877). Little change to the sites land use occurred during the years. The Great Western

Railway Llynfi Valley Line was dismantled in the 1960s, but the sidings remained in use up until the late 1980s before becoming a coal storage yard. The goods storage buildings became a builders yard which remains in use to the present day. The coal storage yard was left to nature in the 1990s and is frequented by dog walkers and pedestrians along footpaths through thick vegetation. The surrounding area has been in constant development since the earliest maps (1877). The growth has been of the town of Bridgend on all sides of the site with residential, commercial and some industrial including schools and a hospital

- Underground and above ground fuel storage tanks, with associated fuel dispensers, diesel and steam locomotives, coal and munitions stockpiles were likely to have been located at the site.
- Asbestos containing material including roof sheets, building cladding and train break lining was likely to be used on site.
- A Category 1 – Major Incident was recorded 70m north of the site which involved a deliberate act of light oil being directly discharged on 19th August 1994.
- An overall Medium to High risk rating has been assigned to the site, primarily resulting from the former land uses and the perceived risk that they pose to the proposed end-users of the site.

9.0 Recommendations

As the site has been assigned a Medium to High risk rating it is recommended that a non targeted ground investigation and associated chemical testing is undertaken to assess the potential pollutants linkages identified at the site. The investigation should be undertaken in general accordance with the relevant British Standards, namely BS5930; 1999 – Code of practice for site investigations, and BS10175; 2001 – Investigation of potentially contaminated sites – Codes of Practice.

The most significant sources of contamination identified at the site would be if quantities of Made Ground were encountered or if spillages/leakages of petroleum hydrocarbons had occurred. The main potential receptors identified include construction workers, future site occupants, and the proposed buildings.

Chemical analysis undertaken on samples obtained from the site should comprise commonly encountered and wide ranging potential contaminants including heavy metals, Polyaromatic hydrocarbons, petroleum hydrocarbons and asbestos.

The results of the chemical analysis would be utilised to assess the potential risk posed by the ground conditions at the site to the identified receptors. The waste classifications of material analysed would also be determined, should it need disposal from site.

Due to the identification of the coal stockpiles within the site, and the anecdotal evidence of munitions and parked locomotives present on the site, it is recommended that ground gas monitoring is undertaken. The gas monitoring would quantify the ground gas regime at the site and determine whether any gas protective measures are deemed necessary for the proposed development. Volatile vapour monitoring should also be undertaken if any hydrocarbon contamination is identified during the ground investigation or gas monitoring boreholes due to the likely storage of petroleum hydrocarbons at the site in the past.

For any buildings at the site, it is recommended that reference be made to any onsite asbestos registers prior to the undertaking of any demolition works. The register will identify the types and locations of asbestos at the site. Should no register be present for the site we would recommend that a Type 3 Full Access Sampling and Identification Survey be undertaken. This would to allow an assessment of the condition and location of asbestos containing materials across the site.

Japanese Knotweed regularly spreads along railway corridors. We recommend a survey is carried out to identify any Japanese Knotweed as well as other invasive species when the next growing season begins.

It is recommended that the approval of the above recommendations is sought from representatives of both the Local Authority and Environment Agency prior to the commencement of any works at the site.