

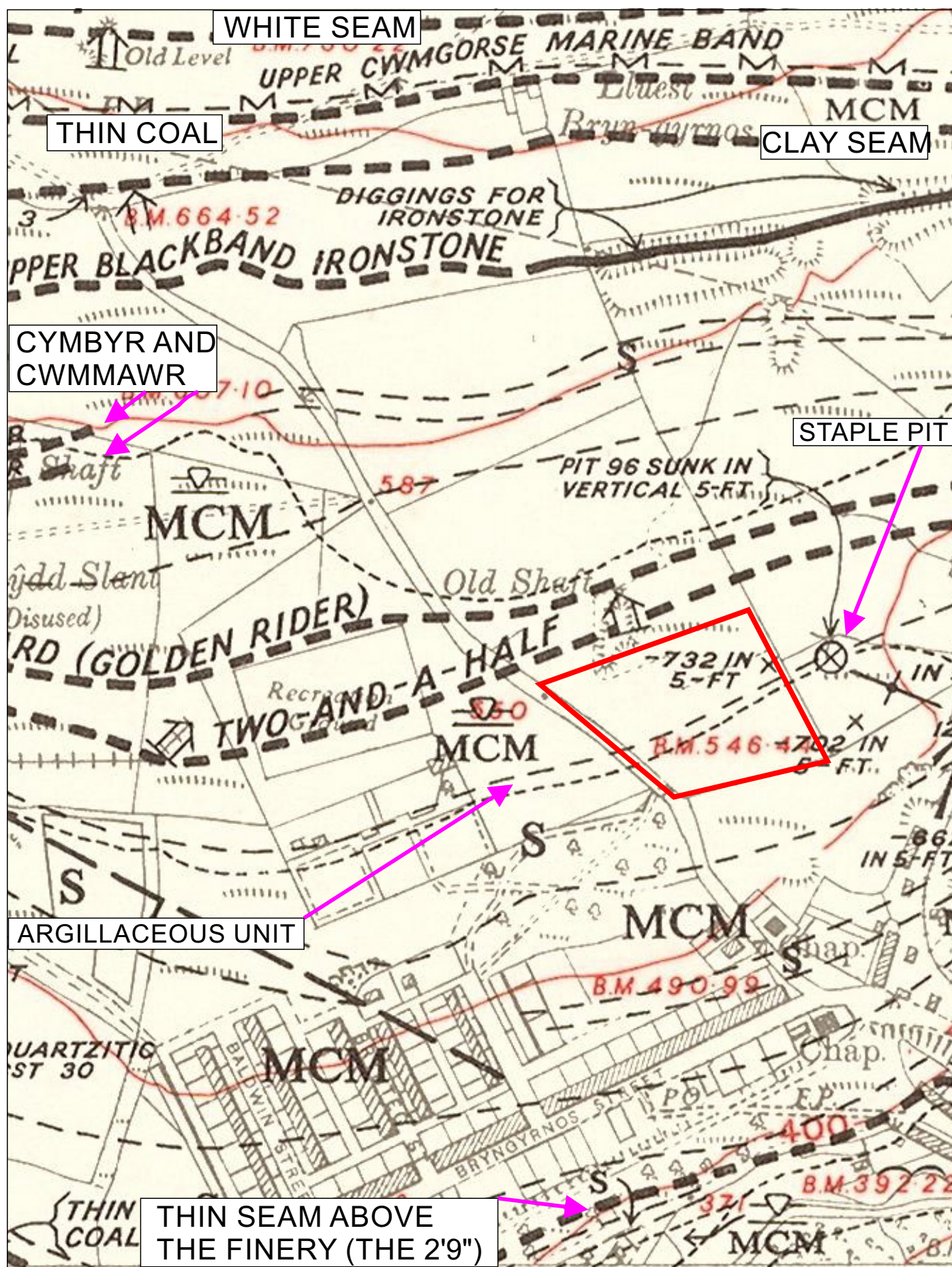


FIGURE 11
EXTRACT OF GEOLOGICAL SURVEY SHEET 25NE
WITH THE SITE HIGHLIGHTED IN RED.

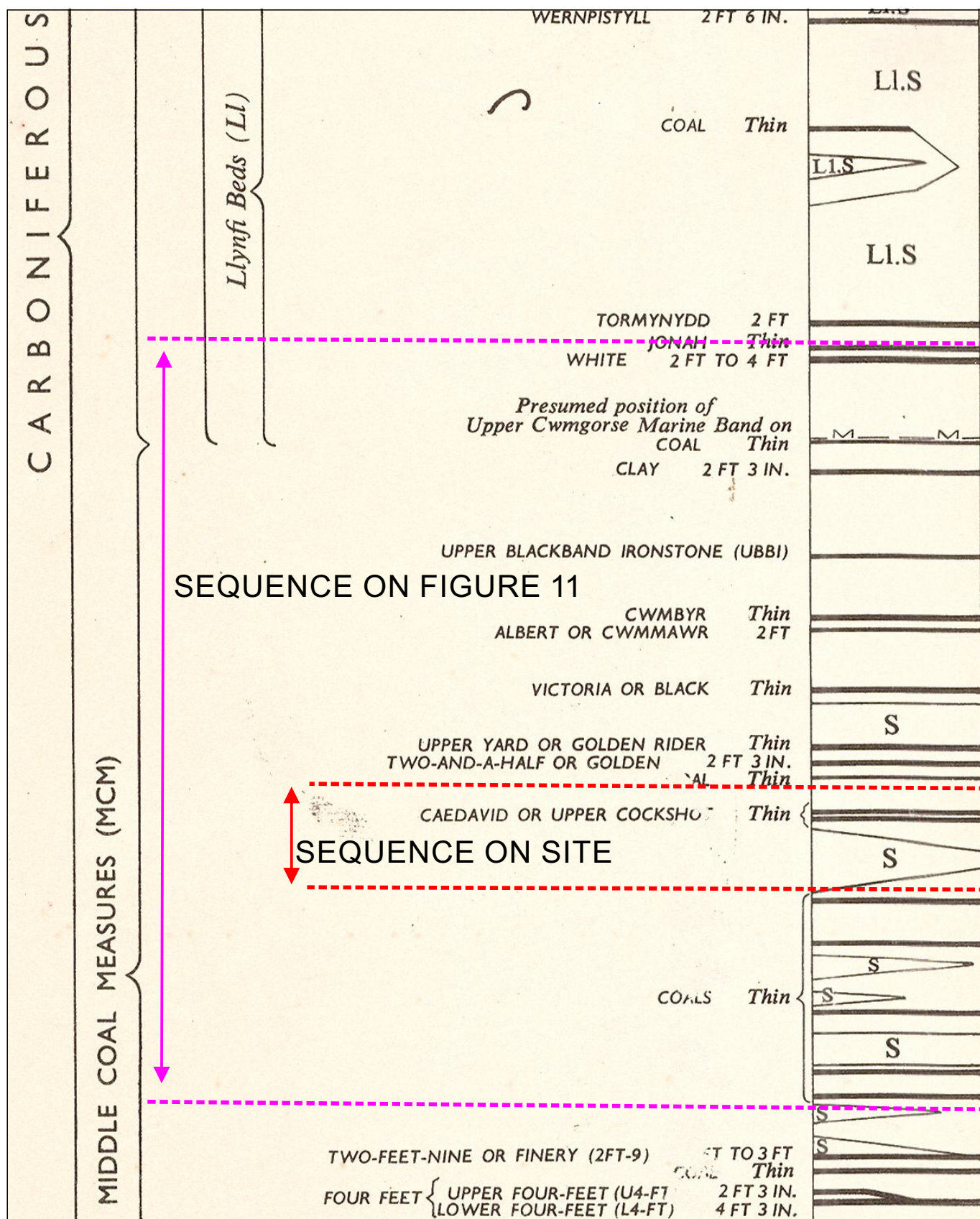


FIGURE 12

SECTION OF STRATIGRAPHIC COLUMN FROM GEOLOGICAL SURVEY SHEET 25NE SHOWING SEAM SEQUENCE IN THE IMMEDIATE VICINITY OF THE SITE

6. HYDROGEOLOGY

In the past when compiling a Part 1 desk study, the necessary aquifer information, abstractions, water quality data etc. could be obtained from the environment agency. In Wales this is no longer the case due to the failure of N.R.W. (to whom the previous responsibilities of the E.A. have been devolved) to publish them. This makes it necessary to purchase the information off a private organisation such as Groundsure. This has been done for this report and the full Groundsure report is attached as Appendix A. All the information in the following sections has been taken from the report. Some of this has been referenced by page number for anyone reviewing this report.

Aquifer designation terminology was changed by the E.A./N.R.W. in 2010 to be consistent with the Water Framework Directive terminology and the old major/minor aquifer terms have been replaced. Figures 13 and 14 have been taken directly from the Groundsure report for ease of reference.

Taking the superficial deposits first, it can be seen in Figure 13 that the glacial till underlying the site has been partly assigned a Secondary Aquifer classification whilst the other half is unclassified. This reflects the impermeable nature of the material. 250m south of the site there is a small area classed as a Secondary (A) Aquifer. This may be slightly more permeable and capable of supporting water supplies at a local rather than strategic level. In some cases they may be an important source of base flow to rivers, but the limited extent makes this unlikely here. In Figure 14 the bedrock under the site and the entire surrounding area is also given a Secondary (A) Aquifer rating. This reflects the geology of the Middle Coal Measures which contains units of permeable sandstones interbedded with impermeable argillaceous units. The dip of the strata means that the bedrock immediately below the superficial deposits could be of either type.

7. ABSTRACTIONS

There are no abstraction licences, surface or underground within 2000m of the site. B.G.S. records indicate several productive waterwells were drilled in the area in the 1950's. The purpose of these is unknown, but they possibly supplied Bryn Colliery washeries. They are evidently no longer in use.



6b. Aquifer Within Bedrock Geology and Abstraction Licences

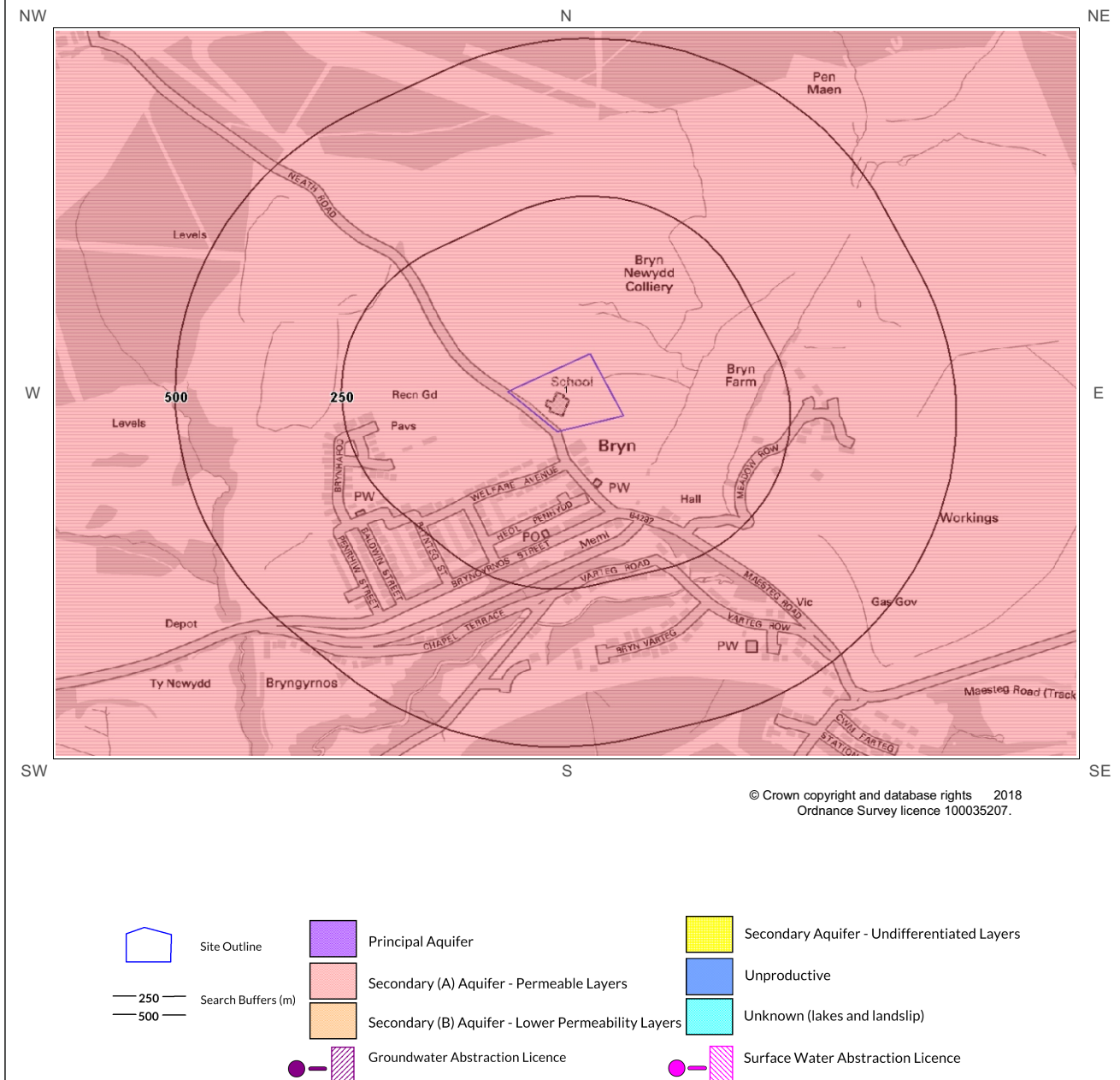


FIGURE 14

GROUNDSURE BEDROCK AQUIFER CLASSIFICATION MAP

8. HYDROLOGY

There are no surface watercourses on the site although a small stream emerges from a spring on the eastern boundary of the site. Bryn is an upland area and several small streams drain the area around the site. These all feed into the Afon Ffrwydwyllt which runs south of the village and is part of the Afan catchment. This is only a minor watercourse with a recorded width of 3.4m on the Ordnance Survey Water Network Master Map.

9 WATER QUALITY

N.R.W. have a water quality monitoring point on the Ffrwydwyllt 290m south east of the site. The stream is measured for chemical and biological quality. In common with every other watercourse in Wales the most recent figures available are for as far back as 2009. Between the years of 2005-2009 the results were all A where A is “very good” and F is “bad” for both chemical and biological quality.

10. FLOOD RISK

The E.A./N.R.W. Flood Map for planning is on page 56 of the Groundsure report. It shows a narrow strip of Zone 2 and Zone 3 floodplain adjacent to the Frwydwyllt over 250m south of the site. Similarly the RoFRaS map on page 57 shows a narrow area of Medium to High Risk in the same place. Although subject to seasonal variation, such a small watercourse has no influence on the site.

11. POLLUTION INCIDENTS

There have been six recorded pollution incidents within 500m of the site that appear on List 2 of the National Incidents Recording System. Four of these involve sewage discharge into the Afon Frwydwyllt nearly 300m south of the site. This was formerly a common problem in South Wales with combined storm and foul sewers during prolonged periods of heavy rainfall. Much work has been done by Welsh Water in the last fifteen years to remove all combined sewer outfalls from the system. It is highly likely this work has already been carried out in Bryn. The incidents would have had no impact on the site. One of the other two incidents is of atmospheric pollution by unidentified fumes. The other is the closest to the site being 77m north. This appears to be a serious case of fly tipping. The material is described as construction and demolition material. Neither of these incidents would have had any impact on the site.

12. ARCHAEOLOGICAL CONSIDERATIONS

There are no known archaeological sites on, or within 500m of the site.

13. ECOLOGICAL CONSIDERATIONS

As part of the planning process a full ecological survey of the site is currently in the process of being carried out and will be presented together with this report.

14. PREVIOUS SITE STUDIES AND LOCAL AUTHORITY RECORDS

There have been no previous contamination studies of the site, either desk based or intrusive. Previous planning and building control records connected to the construction of the school cannot be located. As mentioned previously, efforts are being made to locate an asbestos register for the school building. To date these have been unsuccessful. The author has previously produced a detailed Coal Mining Risk Assessment for the site which is in N.P.T.'s possession.

15. POTENTIAL CONTAMINANTS OF CONCERN

From the detailed study of the site history in section 4 this report concludes that there are no contaminants of concern with an on-site origin. To summarise the site was an undeveloped field until the construction of the school in the late 1960's/early 1970's. It is probable that the school building contains possible contaminants, in particular asbestos. As stated earlier, the building is currently intact and its demolition will be tightly controlled. Therefore it has no bearing on this Phase 1 assessment.

As regards off-site sources of contamination, there have been six minor pollution incidents recorded. The nature of these, and distance from the site mean they would have no effect on it. There has only been one instance of manufacturing industry in the area. This was a short-lived brickworks. There are no significant contaminants associated with brickmaking in South Wales using Coal Measure fireclay. The location is nearly 100m away from the site. There is a garage 480m distant from the site and an electricity substation 330m away. Neither would have the potential to contaminate the site.

The area has a very long history of extractive industry. This is mainly coal mining, but as described in section 4 it also includes ironstone "patching" (an early type of primitive opencast), stone quarrying and a clay pit. There has never been any coking or gas production associated with coal mining in the area. Coal mining in itself is fairly benign. Although they have had a very great visual impact

in the past, the spoil heaps associated with coal mining contain few pollutants. Elevated levels of Lead and Arsenic are sometimes encountered, but these only reflect the naturally high background levels in the Coal Measure bedrock. There is no potential for these substances to migrate due to their low leachability. There is a small trial level close to the northern boundary of the site. It would appear that the spoil seen on the historical O.S. maps was used to backfill and reinstate the level during the school construction. Old coal workings are known to produce gasses, particularly methane, in certain circumstances. The risk of this will be dealt with in the next section.

16. GROUND GAS AS A POSSIBLE CONTAMINANT

Unusually for a settlement the size of Bryn there are no records of any historic landfill sites either in the E.A./N.R.W. database or on any of the historic O.S. maps. There is a modern, regulated waste transfer station 780m north west of the site at Penrhydd Farm. There are multiple coal mining spoil heaps. Some of these have been removed or landscaped, some are still extant in their original form. None have any potential for gas generation.

The vast majority of coal working in the Bryn Area was from shallow levels (drifts or adits) driven from outcrop. These have little potential for gas generation and were usually worked with naked flame illumination. Some coal seams in South Wales were notoriously “gassy”. None of the seams worked from outcrop in the Bryn area fall into this category. In the present day these will have substantially collapsed. Any voids still extant will be flooded, displacing any possible gas. This would have occurred as soon as active pumping of the workings ceased, in the case of the nearest workings this would have been the 1960's. The exception is Bryn Navigation which had a 346m deep shaft. This was backfilled on closure and has a permanent gas venting system installed. This is at a distance of over 500m from the site. The small trial level on the northern site boundary poses no threat for several reasons. Besides the above reasons, it never went into full production for whatever reason. Also it has evidently been backfilled during the construction of the school although there are no written records of this.

The Coal Authority have no records of any gas emissions in the area ever having occurred. Full details can be seen in the C.M.R.A. in the council's possession.

17. CONCEPTUAL SITE MODEL

CONTAMINANT SOURCE	PATHWAYS	RECEPTORS	POTENTIAL SEVERITY	PROBABILITY OF RISK	LEVEL OF RISK	JUSTIFICATION
ON SITE: POTENTIAL CONTAMINATION IN SOILS. POSSIBLY ELEVATED LEVELS OF METALS, CYANIDE TPH AND PAH	INGESTION, DERMAL CONTACT, INHALATION OF DUST/VAPOURS	FUTURE END USERS AND SITE VISITORS	MEDIUM	LOW	LOW	NO POSSIBLE CONTAMINATION FROM ON SITE SOURCES
		CONSTRUCTION WORKERS	MEDIUM	LOW	LOW	NO POSSIBLE CONTAMINATION FROM OFF SITE SOURCES
	LEACHING THROUGH SOIL BY GROUNDWATER	CONTROLLED WATERS	MEDIUM	LOW	LOW	VERY LOW PERMEABILITY OF GLACIAL DRIFT WOULD NOT ALLOW CONTAMINANTS THROUGH TO THE UNDERLYING MINOR AQUIFER
	PERMEATION OF WATER PIPES	FUTURE END USERS AND SITE VISITORS	MEDIUM	LOW	LOW	DECISION ON NEW PIPEWORK SPECIFICATION TO BE MADE BY CONTRACTORS AND DEPENDANT ON GROUND CONDITIONS
ON SITE: ASBESTOS AT OR NEAR GROUND SURFACE IN SOILS	INHALATION OF FIBRES IN AIRBORNE DUST	FUTURE END USERS AND SITE VISITORS	HIGH	LOW	LOW	NO POSSIBILITY OF ASBESTOS PRESENCE IN SOIL. NO ON-SITE OR OFF-SITE SOURCES
		CONSTRUCTION WORKERS	HIGH	LOW	LOW	
ON-SITE GENERATION OF GROUND GAS	GAS MIGRATION AND BUILD UP WITHIN BUILDINGS LEADING TO AN EXPLOSION	FUTURE END USERS AND SITE VISITORS, BUILDINGS	HIGH	LOW	LOW	NO POTENTIAL FOR ON-SITE GAS GENERATION FROM LANDFILL OR MINEWORKINGS
OFF- SITE GENERATION OF GROUND GAS FROM LANDFILL				LOW	LOW	NO LANDFILL NEAR ENOUGH FOR GAS MIGRATION TO BE A RISK
OFF-SITE GENERATION OF MINE GAS				LOW	LOW	THE ONLY MINEWORKINGS NEAR ENOUGH TO THE SITE TO POSE A RISK OF GAS MIGRATION HAVE NO POTENTIAL FOR GAS GENERATION
APPRAISAL OF POTENTIAL RELEVANT POLLUTION LINKAGES IN INITIAL CONCEPTUAL SITE MODEL						
OLD SCHOOL COURT, BRYN, PORT TALBOT						

18 INFORMATION GAPS AND UNCERTAINTIES

There are no information gaps or uncertainties. Therefore there is no need for further intrusive works on the site. The Phase 1 desk study has conclusively demonstrated there is no further need to treat the site as potentially contaminated land.

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10/09/2018