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Daniel Hughes
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McGregors Way
Turnoaks Business Park
Chesterfield
S40 2WB

SRE/AJK/RAN/46167-002A

8 October 2021

Dear Daniel,

Veolia Waste Transfer Site, Treforest Industrial Estate
Coal Mining Risk Assessment

We write regarding the possibility of shallow coal mining affecting the above site. Our comments are based on a review and our interpretation of geological maps, memoirs and Ordnance Survey maps, as well as a Coal Authority Consultants mining report specific to this site. We have also undertaken ground investigation works on the site.

We originally visited the site and carried out a shallow ground investigation, but this was not undertaken to investigate the possibility of shallow coal mining. Following this investigation, a Geotechnical and Geo-environmental Site Investigation report referenced 46167/001 and dated 5 July 2021 was produced.

Subsequently, three boreholes have recently been drilled on site to investigate the ground at depth and to look for signs of potential shallow mining.

The Site

The site is located south west of Main Avenue on Treforest Industrial Estate, around 4.5 km south west of Caerphilly in South Wales and is centred on grid reference 311052, 186053. It currently comprises a Veolia waste transfer station.

Historical maps show the site to be occupied by industrial premises since the industrial estate was constructed, between 1920 and 1943. The current building footprint was established between 1981 and 1991, although the current building appears to be the result of the partial demolition of a larger warehouse structure which was built in the 1970s. The building has therefore occupied the site for at least 50 years. The immediate surrounding area has been predominantly commercial/industrial in land use since at least the 1940s, forming the Treforest Industrial Estate. A number of collieries and quarries were also noted in

the wider surrounding area, including Rhyd-yr-helyg Colliery around 80m south of the site, with shafts shown 500-600 m south and south west of the site. Maes-mawr colliery is also shown around 750 m north west of the site, with shafts and levels (adits) indicated.

Development Proposals

The proposed development includes the construction of a water tank and associated pump house in the western-most corner of the site and the installation of two weighbridges in the northern part of the site.

Geological Review

The BGS online map viewer, 1:50,000 scale geological map sheet 249 (Newport) and 1:10,000 scale geological map sheet (ST 18 NW) all indicate the site to straddle the faulted boundary between the Grovesend Formation below the south west of the site (mudstone, siltstone and sandstone) and Brithdir Member sandstone and mudstone strata below the north east half of the site. These are both overlain by superficial Alluvium deposits, possibly with glaciofluvial sand and gravel deposits below the alluvium.

A fault crosses the site in a north-north west/south-south east orientation. This is downthrown on the south western side.

On the south western side of the fault, in the area of the proposed development, the strata are indicated to dip to the south west at between 8 and 12º.

The site lies within the South Wales Coalfield, the risk of shallow mining varies on either side of the fault and each side will be discussed separately below.

South West of the Fault

The shallowest seam underlying the site to the south west of the fault appears to be the No 2 Llantwit (or Small Rider) coal. The geological memoir 'The Geology of the South Wales Coalfield' records the seam to have a thickness of approximately 10 inches and does not indicate that the seam was widely worked. From the location of the outcrop and using the conservative dip of 8º, it is estimated that the No 2 Llantwit coal will lie at a depth of around 50 m below the site.

The seam stratigraphically below the No 2 Llantwit is the No 3 Llantwit (or Mynyddislwyn) coal. This lies approximately 30 m below the No 2 Llantwit and is noted as having been extensively worked. The seam is split into two leaves and the thickness varies, but with each leaf being on average 75 cm thick separated by between 15 and 30 cm of dirt. Therefore, if

either of these seams have been worked below the site, there is at least ten times the seam thickness of competent rock cover, and thus no precautions against shallow coal mining would be required.

North East of the Fault

To the north east of the fault the geological strata present include Brithdir Member sandstone with a progression to Brithdir Member mudstone towards the western part of this area of the site. The vertical geological section on the geological map indicates the Dirty Rider coal seam to be present along the geological boundary between the Brithdir Member sandstone and mudstone. The seam is not however indicated to be present at the location of the site. This suggests that the seam has been pinched out in the vicinity of the site.

The geological memoir states that the Dirty Rider and the underlying Dirty Coal are best developed to the east of Rhydyfelin (located to the north west of the site) where the thickness was sufficient for the seams to have been worked, though it is stated that the workings were not extensive. The thickness of the Dirty Rider in Nantgarw Colliery, within 1 km of the site, is noted as being 14 inches (35 cm) and is separated by 50 m of measures before reaching the Dirty Coal. This was noted as comprising 38 inches of coal on 31 inches of rashes (shale or poor-quality coal) and a further 15 inches of coal, giving a total extraction thickness of around 2.1 m although it is doubtful whether such a large thickness of shale and dirt would be extracted, and more likely that only the upper 1 m of good coal would have been taken.

The Dirty Rider therefore may or may not be present sub-cropping on the site, below the alluvial and glacio-fluvial deposits. If it is present and is found to have been worked, this is likely to have been undertaken from the surface and below ground working of this shallow seam is not anticipated.

The Dirty Coal would be anticipated to be at a depth of at least 50 m below rockhead and is therefore unlikely to present a significant risk to the site.

Coal Authority Mining Report

A Coal Authority Consultants mining report has been obtained and a copy is enclosed.

The Coal Authority state that according to their records, past underground mining is recorded in two seams of coal in the vicinity of the site. The Upper Seven Foot Coal was worked to the north east of the site at a depth of 688 m and the Upper Nine Foot Coal was worked to the east of the site at a depth of 804 m depth, and last worked in 1961 and 1927 respectively. At the depths listed, these would not be expected to affect the site.

The Coal Authority do, however, note that there are probable unrecorded shallow workings below the site. They list the Tillery Rider No 2 seam as outcropping on the site to the north east of the fault, and note that it is workable. This is contradictory to the information contained on the geological maps, which do not indicate a coal seam to be present, but the site's location within the geological sequence suggests that the Dirty Rider coal may be present outcropping at the site. We have also found information from previous mining risk assessments carried out by others, which are available via the Local Authority Planning Application Viewer (http://documentsnew.rctcbc.gov.uk/NorthgatePublicDocs/00273298.pdf) that also disputes this information and notes that the Tillery Rider No 2 Coal is a seam in its own right, encountered lower down in the stratagraphical sequence within the Coal Measures strata. The seam name provided by the mining report therefore appears to potentially be incorrect.

There are no known mine entries within 100 m of the site. However, it should be noted that the Coal Authority records may be incomplete and further, unrecorded, shafts may exist. Two abandoned mine plans are available which intersect some or all of the site.

There are no recorded opencast mines or Coal Authority managed tips within 500 m of the site.

The Coal Authority has not received any claim related to coal mining subsidence within 50 m from the site since 31 October 1994 and there are no records of mine gas emissions or mine water treatment schemes within 500 m of the site.

No notices have been given under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Additional Site Investigation Works

In order to investigate the ground conditions below the North Eastern part of the site at depth, two boreholes were drilled at the proposed weighbridge locations. The boreholes were drilled by Southern Testing using a combination of WLS and DTHH techniques. It was intended that these holes be drilled down in to the bedrock to try and locate the Dirty Rider Coal Seam.

However, both boreholes were terminated at a depth of 18.5 metres in the superficial deposits as the rig was unable to progress due to the density of the sand and gravel deposits. Below around 6.5 metres these superficial deposits comprise slightly silty fine-grained sand. The depth to rockhead was not proven.

Risk Assessment

For there to be no significant risk to development from voids caused by old mine workings migrating to the surface, it is generally accepted that there should be ten times the worked seam thickness of competent ground above the workings and below the proposed foundation level.

There is some discrepancy between the information provided by the Coal Authority and that seen on the geological maps, however it is possible that either the Tillery Rider No 2 coal or the Dirty Rider coal may subcrop at rockhead to the north east of the fault line which crosses the site. The Tillery Rider No 2 has a thickness of around 2.1 m, although it seems unlikely that this is the sub-cropping seam below the site, based on the general stratagraphical sequence of the strata recorded by the geological mapping directly beneath the north east of the site, which comprises the Brithdir Beds.

The seam is most likely to be the Dirty Rider Coal which has a thickness of 0.35 m. However, the geological map sheets do not show this seam to be in the area immediately surrounding the site, potentially indicating to be locally absent.

Two boreholes have been drilled on the north eastern part of the site, one at each weighbridge location. These holes were taken down to a depth of 18.5 metres when the rig refused. The holes did not find the bottom of the superficial deposits and therefore they do not provide any information about the possible presence of shallow workings.

Should any workings be present just below the superficial deposits encountered, there is a risk that any collapse could result in movements at the ground surface or possibly the formation of a crown hole. The extent of any such disturbance cannot be predicted. However, the loads imposed on the proposed foundations of the weighbridges will be constructed at shallow depth within the superficial deposits, and will not affect the ground at depth and should not therefore increase the risk of any collapse. Also, as the proposed development comprises only of the installation of equipment, the effect of any future disturbance of the ground could be considered to be one of inconvenience rather than a matter of safety.

Given the assumption that the shallowest seam likely to be the 0.35m thick Dirty Rider Coal, workings are much less likely to have been undertaken due to the thinness of the seam. If mining voids are present the zone of influence above the workings will be much reduced, and it would be expected that the sand and gravel deposits would ‘choke’ the workings before the void could migrate to the shallow soils.

Therefore, the risk to the proposed weighbridges is considered to be low. In order to try and limit the effect of any disturbance the weighbridge foundations can be designed to span over any localised soft spot that may appear, although this seems unlikely to occur. It is noted that the existing buildings on site have been in place in the order of 50 years. No detrimental effects are recorded, and the Coal Authority has not received any claims for alleged mining related subsidence in the last 27 years on any property in the vicinity of the site. This suggests that ground movements have not occurred at surface, either due to no mining of the shallowest seams having occurred, or due to any void migration ceasing before reaching surface.

The shallowest seam underlying the site to the south west of the fault appears to be the No 2 Llantwit (or Small Rider) coal which is indicated to have a thickness of around 25 cm and is anticipated to lie at a depth of at least 50 m below the site. Shallow coal workings are not therefore anticipated in the area to the south west of the fault line. The current proposed development (sprinkler tank) is located in the western corner of the site, away from the area potentially affected by shallow coal workings and therefore no further investigation works are proposed.

Conclusion

The north eastern half of the site may be at risk from shallow mining of the Dirty Rider coal seams. Unfortunately drilling works have not been able to penetrate into the bedrock to investigate the nature of the ground and the potential presence of shallow coal seams and possible workings, but have proven that at least 18.5 m of fairly dense sand and gravel deposits are present from surface. There therefore remains a potential risk of some ground movement in the future should any shallow workings collapse, although this is considered to be only a small risk, based on the limited thickness of the seam. It is also noted in the Coal Authority Report that they have received no notices of any ground movement since 31 October 1994.

It is therefore proposed that the weighbridges be supported on shallow foundations designed to span over a notional void and that the potential for ground settlements resulting from a collapse of any potential workings be accepted by the developer. Having chosen to adopt this approach, no further intrusive investigation work is proposed.

The area to the south west of the fault is not considered to be at risk from shallow mine workings. The current development proposal is wholly located in the south western half of the

site, away from the fault, and therefore no further works to investigate shallow mine workings are considered necessary at this time.

We trust that this meets with your approval, however if you have any comments or queries please do not hesitate to contact us.

Yours sincerely

S Ellis

Director

Enc. Coal Authority Consultants mining report

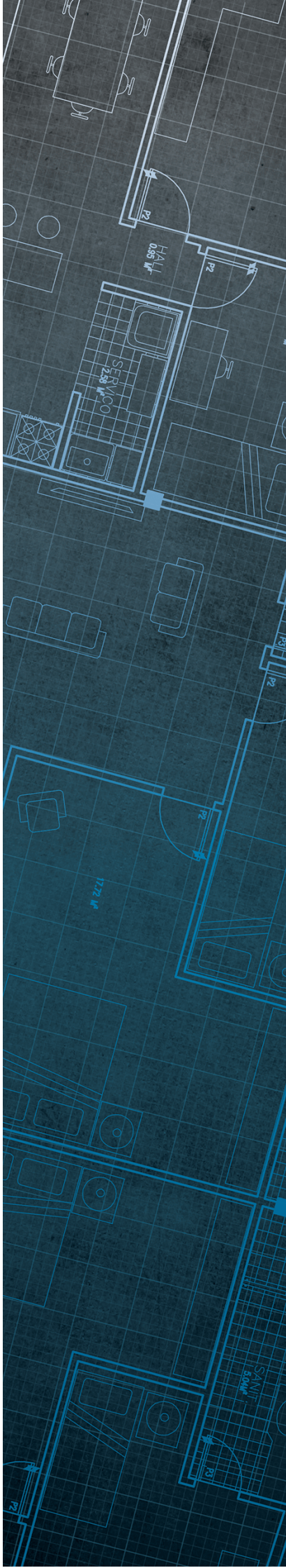
The Coal Authority

Consultants

Coal Mining Report

Veolia
Treforest Industrial Estate
Pontypridd
Rhondda Cynon Taf
CF37 5YL

Date of enquiry:	**18 June 2021**
Date enquiry received:	**18 June 2021**
Issue date:	**18 June 2021**
Our reference:	**51002539895001**
Your reference:	**46167**



Consultants

Coal Mining Report

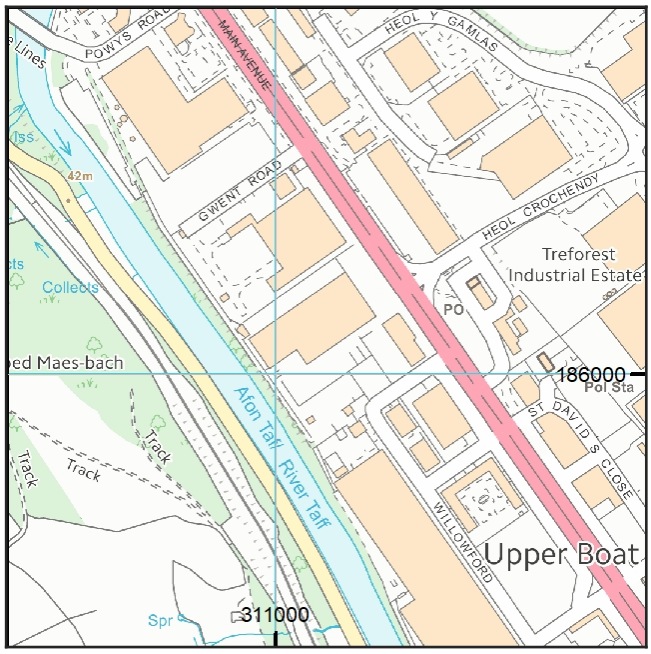
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

EASTWOOD & PARTNERS (CONSULTING ENGINEERS) LTD

Enquiry address

Veolia
Treforest Industrial Estate
Pontypridd
Rhondda Cynon Taf
CF37 5YL



Approximate position of property

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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
NANTGARW / WINDSOR	UPPER SEVEN FOOT	Coal	43P2	688	North-East	49.6	South	210	1961
unnamed	UPPER NINE FOOT	Coal	43QS	804	East	54.1	West	95	1927

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

SWR2363	615	PO0
SWR2376		

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
TILLERY RIDER NO.2	Coal	Yes	Within	N/A	3

Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Fault under or close to the property recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations
None recorded within 50 metres of the enquiry boundary.

Remediated sites
None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence
The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas
None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes
None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission.

Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

The Coal Authority

Summary of findings

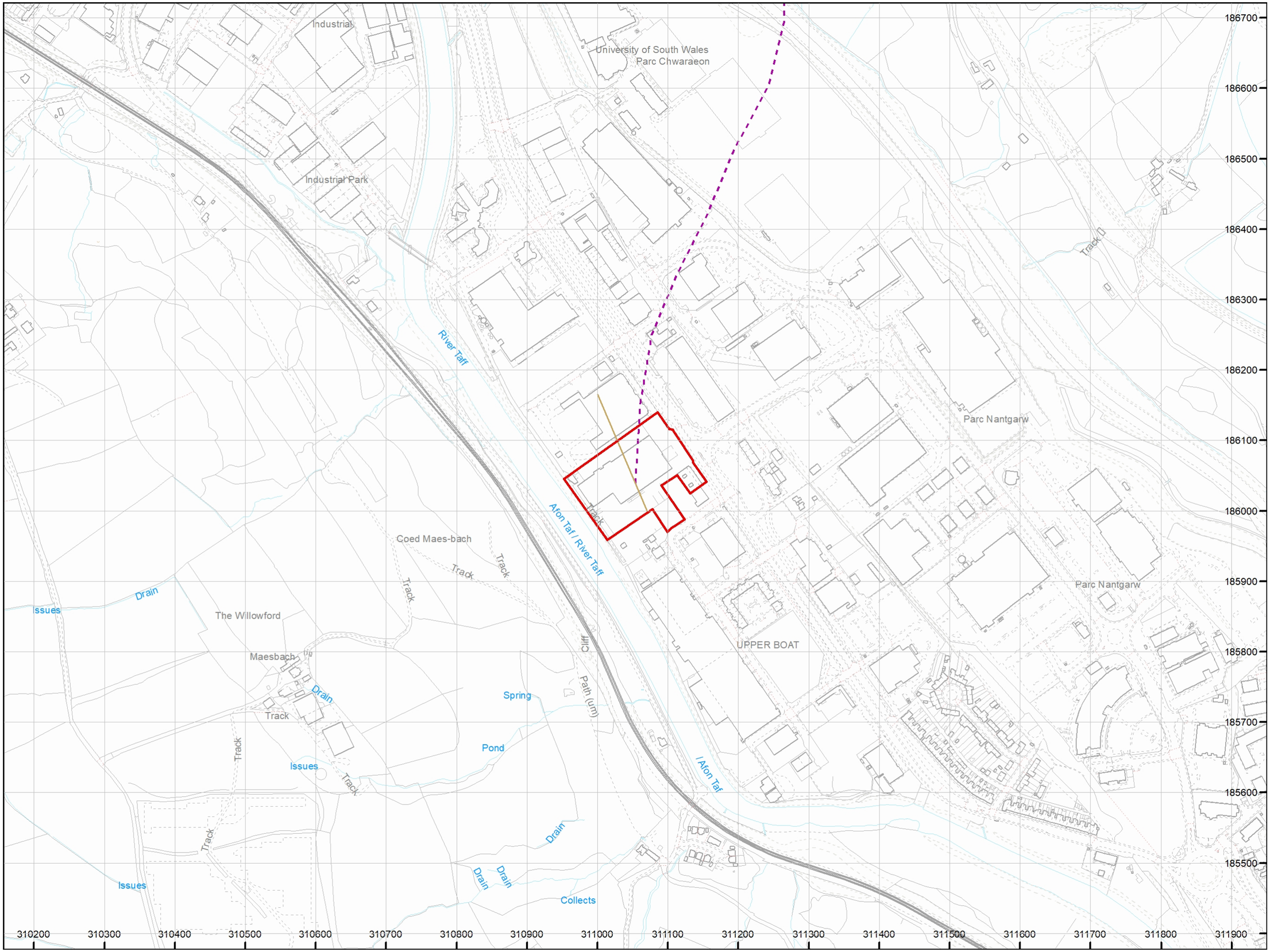
The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown

Outcrop (Conjectured)

Geological faults



How to contact us
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