



EWENNY ROAD ADIT INTRUSIVE INVESTIGATION: OUTLINE METHODOLOGY

CA APP-003129 / ADIT REFERENCE: 286190-003

Introduction

The headings below set out an outline methodology for the intrusive investigation of Adit ref. 286190-003. The investigative works are broken down into four phases. The purpose of these works has been documented thoroughly elsewhere and discussed directly with the Coal Authority recently (early 2023). In summary however, the purpose is to locate the mine adit, assess its condition and determine whether remedial works are required to manage future long term liabilities whilst maximising future development potential.

Alongside this permit application and in accordance with CDM-2015 regulations, a Principal Contractor is being appointed to manage the overall intrusive investigation and surveying process. Technical oversight and site supervision will be provided throughout by WSP.

As part of the Principal Contractor's role and responsibilities, a construction phase Health and Safety plan will be prepared for the work. This will include detailed method statements and risk assessments for each work element and will be shared with the Coal Authority before the investigations begin.

The following four phase outline methodology should be read in conjunction with *Adit Excavation FIG-001* which accompanies this application.

Phase 1: Set up and Preparatory works

- Secure Coal Authority Permit Approval and NRW Temporary Excavation discharge agreement.
- PAS128-Type B Utility tracing exercise for the 11kV spurs, the combined and storm sewer to the west and foul and storm sewer to the north of the excavation area. Define and mark out service easement.
- Demarcation of the adit intersection point and outline of excavation footprint.
- Assess down gradient drainage grip location for excavation groundwater discharge.
- Vegetation removed across excavation and drainage grip area.
- Dipping of groundwater levels in local monitoring point (SP-A) in lead up to excavation work.
- Baseline sampling and analysis of groundwater at monitoring point SP-A).
- Mobilise welfare facilities and security fencing.
- Mobilise and set up silt trap unit.
- Visual inspection of upstream and downstream River Llynfi water quality one week and then immediately prior to the commencement of the excavation works.

Phase 2: Adit Excavation

- Continuous gas monitoring installed and set up. To include personal gas monitors for all site staff and remote monitoring for the base of excavation.
- Hydraulic breaker used to remove concrete surfacing across full excavation area (26x46m). Concrete stockpiled in a suitable location away from the excavation area.
- Linear drainage grip broken out and excavated to 1-1.5m depth x 20m length (approx.).
- Commence excavation at proposed adit intersection point using a 30 ton long reach excavator, maintaining a 35 degree batter angle.
- Arisings stockpiled and sealed in an area with appropriate bunding to prevent surface water runoff. Segregation of Made Ground (Colliery Spoil) and underlying alluvial soils.

- Should visual or olfactory evidence of soil contamination be encountered during excavation, these materials will be stockpiled separately and sub-sampled for appropriate chemical laboratory testing.
- On encountering groundwater, excavation works will pause to allow rest water levels to establish and minimise the suspension of sediment. If inflows are low, a sump will be formed in the base of the excavation. When appropriate to do so, pumping will proceed to dewater the base of the excavation. Pumped water will be passed through a silt trap before being routed to the on-site drainage grip.
- Periodic visual surface water quality inspections will be carried out along the line of the River Llynfi up and down stream of site and the toe of the colliery spoil development platform on the eastern boundary.
- If the adit is not encountered at around the 105mAOD level, the search will be extended in a north-easterly direction by 5m, and then if still unsuccessful by the same distance in the opposite direction, re-profiling side slopes as the excavation progresses to maintain stable slope angles.
- On encountering the roof of the adit, further excavation will proceed with caution to preserve the integrity of any remaining timber support structures and to enable an assessment of the potential for an adit water storage surge into the base of the excavation. If safe to do so, the excavation will be advanced through the adit roof and cut down to invert level, with side slopes around the adit arch on either side profiled to stable slope angles suitable to afford man accessible inspection from the base of the excavation.
- Provided groundwater levels are under control, the base of the excavation can be kept dry and gas monitoring confirms that it is safe to do so, the adit inspection and monitoring work will then proceed.

Phase 3: Adit Inspection and Monitoring

The adit inspection and monitoring phase of work will include but may not be limited to the following: -

- Visual assessment of adit condition and water flow through the adit conduit;
- Photographic record and direct measurement of adit dimensions;
- Direct measurement of flow rate and discharge volume calculation (if feasible);
- Water quality sampling and measurement of field parameters using in situ testing equipment, and
- Remote cavity surveying using 3D laser scanning techniques (if dry). If conditions are saturated, sonar equipment may be used as an alternative means of assessment. Surveying will accurately record adit dimensions and condition south east towards the adit portal and upgradient (north west), as far as possible towards and beyond Oakwood Drive.

All in-person inspection work around the adit aperture will take place from the base of the excavation, working in pairs. Man-access will not be permitted *into* the adit under any circumstances and personal gas monitoring equipment will be in use at all times during all inspection work.

Phase 4: Excavation Reinstatement

On the assumption that the adit is positively identified and that further remedial works are deemed necessary, reinstatement for this phase of work will be temporary, pending the agreement of a remedial strategy.

The adit position will be topographically surveyed accurately before closing the excavation. Single sized stone (e.g. pea gravel) will then be used as a filter media to backfill around and across the adit intersection location maintaining flow from one side to the other. These materials will be brought back up to ground level in layers, in step with reverse order reinstatement of the wider excavation either side, which will be carried out using site won arisings (the natural alluvial soils and overlying colliery spoil).

A 300mm perforated HDPE monitoring pipe and headworks will be installed within the stone backfill at the centre point of the adit during reinstatement to allow short to medium term adit water flow and quality monitoring.

Site Location Plan
Ewenny Road Adit Investigation & Treatment Optioneering / CAAPP-003129
Oakwood Drive, Maesteg. CF34 9TS
NGR: 286167, 190567

Legend

- Adit - 286190-003
- Proposed Line of Adit intersection



Site Boundary

Investigation Area

Adit - 286190-003

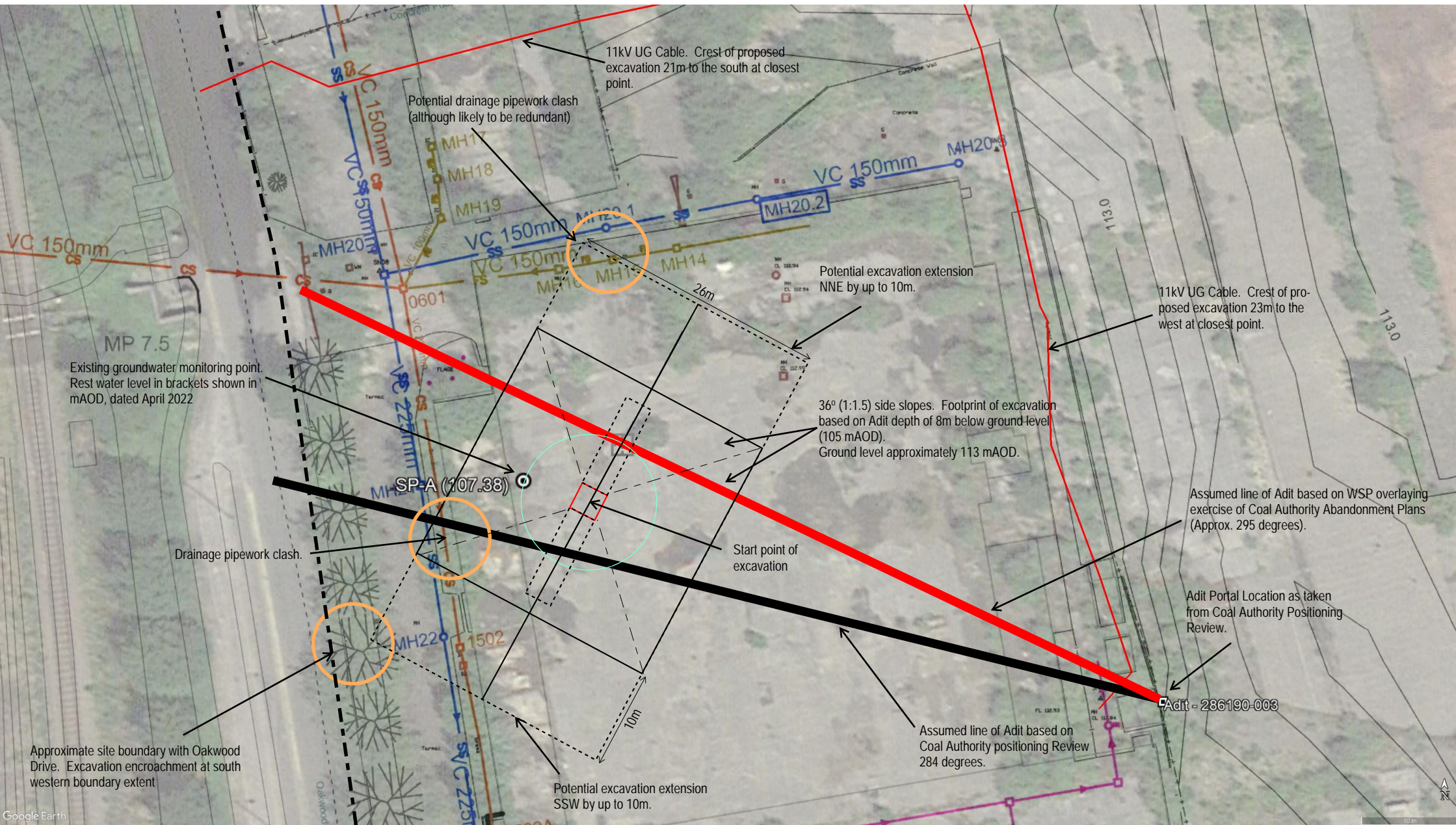
Ilynfi River



100 m

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Proposed Excavation Location and Dimensions



Adit Reference: 286190-003

Figure 001