**Bilston Glen Area Rising Mine Water**

Notes on Strategy and Draft Scoping Report, 2014

**Current situation**

Monitoring of the water levels at Bilston Glen Shaft and Easthouses Borehole; each on either side of synclinal shaped coalfield. Both sites show the same water level and rate of rise, thus good connection in the deep mine workings.

Projected rebound shows a discharge to surface at occurring between 2017 and 2020, the likely discharge location being at the Old Fordell Day Level; itself an existing SEPA priority discharge.

Both sides on the syncline at Bilston Glen and Easthouses have steeply dipping strata, thus potential borehole sites are limited to narrow bands. However, on the Easthouses side a lot of this area is residential property or land marked for residential development. On the Bilston Glen side, the nature of the workings/shallow workings would result in siting a borehole being difficult.

The existing monitoring shaft (east) at Bilston Glen is void, although this is at a higher elevation and currently there is a small diameter pipe through the 6m thick shaft plug at 25m. The second shaft (west) at Bilston Glen is also reported to have a 4m thick concrete plug at approx. 25m. It is uncertain if this second shaft is also void below the plug. The east shaft is located on the edge of the pavement and road to a newly built industrial unit. The west shaft is located in a grassed area adjacent to the car park of an industrial unit.

The discharge at Old Fordell is located within a steep side ravine, and currently there is no access for monitoring purposes. The ability to collate all the current and future water from the adit is uncertain; however there is also a known void air shaft on the day level which could be utilised; although it is within an area of residential property.

**Future situation / predictions**

Currently the required pumping rate to prevent any uncontrolled discharges is uncertain; however estimated to be between 50 and 100 L/s

The likely chemistry of the mine water is uncertain, although estimated to be approximately 20 mg/L, although could initially have a first flush of about 80 mg/L

At Old Fordell, the current mine water chemistry and mine water flow rates are uncertain, although estimates of flow are about 10 to 50 L/s (seasonal) and iron up to approximately 10 mg/L.

Without controlling the rising mine water, the likely discharge location is anticipated to be Old Fordell, however above this level there are more possible discharge locations.

To treat the Bilston Glen mine water an area of about 2Ha would be required, initially with provision for chemical dosing.

The scoping report identifies strategies which are broadly summarised as:

Allow the mine water to fully recover, and then implement a scheme to treat this discharge.

Pumping and treat the mine water, initially via chemical dosing, or through a phased treatment scheme option.

The scoping report identifies the area around Easthouses colliery site / tip to be a preferred pump and treat option. However, this would require drilling a large diameter (c0.5m) deep borehole (c200m), this would be some distance (>200m) away from the likely MWTS location.

The second option in the report is from a borehole at the site of Bilston Glen spoil tip. Again, this borehole would also be greater than 100m (to intercept required level in the workings) and a large diameter. The area around this site also includes numerous shallow workings and probable unrecorded workings; these would prove difficult for drilling and should be avoided.

No other options have been investigated during the study, although there may be other sites, these are likely to include other issues such as land availability, borehole size and depths.

**Coal Authority Review and Strategy**

After reviewing the scoping report and the surrounding area, the Coal Authority has identified some options including:

1. Pumping from the existing mine shaft at Bilston Glen: This would require a rising main of approx. 300m between the shaft and potential treatment area. The treatment area would likely be the same as the scoping report (i.e. Bilston Glen tip). However, this area of land does include known issues including: recreational area for walkers, horse risers, bikes etc; the area is covered with trees and recent propsals for a by-pass in the area resulted in protest groups. The nearest potential discharge location for treated mine water of Bilston Burn is a SSSI (for geology in the stream bed).
2. Collecting the water from Old Fordell discharge: This could resolve the current priority discharge and the future rising mine water issue which may flow to the same location. However, to date there has not been any nearby land available for a treatment scheme, thus a long transfer pipe (>500m) may be required. The water could be collected from the adit mouth or from an air shaft (if the adit is blocked).
3. Pumping from a borehole at Easthouses: This would require a large diameter, deep borehole from which the water would be pumped. The site of such a borehole is currently uncertain and may require a long transfer pipe (>250m) between the borehole and MWTS. The preferred treatment scheme area would be the tip, although this would require pumping uphill from the borehole. Other potential sites in the area may already be assigned for development, or other areas may be difficult to acquire.

**Recommendations**

After reviewing the scoping study and assessing the Bilston Glen area and possible options, we recommend initiating both the following options in parallel:

**Old Fordell** – Within this option it is recommended that the Estates team are instructed at getting permission to:

1. Access the discharge, for installation of flow monitoring structure
2. Access the discharge for a possible capture / transfer to a treatment area
3. Access the airshaft above the adit, for routine monitoring
4. Access the shaft for possible capture / pumping / transfer to a treatment area

In addition to the above, the Authority would also need to determine the most appropriate area of land for a treatment scheme; this should be based on distance from capture, elevation of the site, size of land and discharge route.

**Bilston Glen** - Within this option it is recommended that the Estates team are instructed at getting permission to:

1. Access to both shafts, one to locate and determine if it is void, and both to assess for the possibility to be used for a pumping station.
2. The treatment area, which is currently identified as the former tip. However, this land will need to be assessed for suitability (i.e. geotechnical, ecological etc.).
3. The transfer and discharge routes to and from the treatment area