Document control

Version 0.1

Produced by: Stephanie Allcock 8th January 2017

Checked by: Lee Wyatt 29th January 2018

Comments: Added a few bits of extra information

Version 0.2

Produced by: Stephanie Allcock 30th January 2017

Checked by: Lucy Full 16th August 2018

Comments:

# Description of mine water block

The Dawdon-Horden mine water block extends from Silksworth in the north, to Seaham (the coast) in the east, Hesleden in the south and Hetton-le-Hole in the west.

Currently the mine water levels are controlled by pumping at Horden shaft and Dawdon shaft, each, which feed into mine water treatment schemes.

The mining block is entirely concealed by the Magnesian Limestone aquifer, groundwater level information for this should be sought from the Environment Agency.

The northern extent of this block are fairly well defined with up to 200m of no recorded mine workings in some areas. The eastern extents of this block are well defined and mark the edge of the coalfield, although for the purposes of this project, the offshore workings are clipped to the low-tide. The southern extents of this block are fairly well defined, with the south east marking the edge of the coalfield. There are areas of up to 150m to 750m of no recorded mine working in the south. The western extents of this block are fairly well defined with a section of approximately 70m to 200m of no recorded mine workings.

A single underground roadway connects the northern part of this block (e.g. Dawdon) to the southern part (e.g. Horden). Hence, there is a requirement to pump at two sites in the block.

# Contouring methodology

Within the mine water block there are a total of 4 mine water level monitoring points. There are no current mine water discharges directly associated with the main mine water regime. The data used comprises a mix of datalogger data and manual readings.

The contours were generated in ArcGIS following the agreed hierarchy contouring methods. In this block, mean values for the last years’ worth of data have been used in order to correct for tidal influences and to discount for changes in pumping prior to 2016.

Eighteen control (dummy) points have been added for the purpose of contouring in order for the drawdown cones around Horden and Dawdon to be correctly interpolated.

# Methodology for Creating Future Contours

The points used to model the future contours include:

* 4 controlling outflows:
* Dawdon Colliery Beach Drift
* Easington Beach Drift
* Horden Colliery Water Level Drift
* Blackhall Water Level Drift
* 7 interpolated points spaced evenly across the block, using a gradient of 1 in 500 to the nearest controlling outflow

The contours generated in ArcGIS are produced using the same method for the current mine water contours.

# Data issues

The types of water level data collected varies across the mine water block. Some sites have continuous logger data whilst others have manual readings taken every 1 to 2 months. This can cause difficulty in comparing some of the statistical values used for the contouring method. It is considered that using mean values for the last years’ worth of data will correct for any discrepancies and will correct for tidal influences variations in pumping prior to 2016.

In addition to the difference in monitoring frequencies over the past 5 years (note that all 4 sites have dataloggers installed), the coastal sites show di-urnal ‘tidal pressure’ related water levels, where the water level varies significantly daily. In the data assessment, daily means of logged data is used where possible.

The future discharges at Dawdon Colliery Beach Tunnel, Easington Beach Drift, Horden Colliery Water Level Drift and Blackhall Water Level Drift assume an interpolated elevation that is above the surface level. This is to take into account any pressure heads required to cause all the flow to discharge at these sites.