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03 July 2026

Liam Clarke

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Dear Liam,

Woodward Court, Mirfield – Technical Letter regarding Minewater Reemergence.

This Technical Letter serves to append a report prepared by Envireau Ltd in February 2018 (t/a Envireau Water) titled *'Review Of Geology And Proposed Drainage Concept'* ("the February 2018 report").

As part of a new planning application, Bellway Homes presented the February 2018 report to Kirklees Council (the Lead Local Flood Authority, LLFA) for pre-application consultation. In response (dated 19th September 2025 – ref: 2025/20746), the LLFA highlighted that they would "seek a competent person to undertake an assessment of the contribution of shallow coal mining works on soakaway tests", and also "expect a competent person to look at the risk of re-emergence where there is shallow bedrock".

This technical letter has also taken into consideration a Flood Risk Assessment (FRA) prepared by Eastwood Consulting Engineers in October 2025, which includes a proposed drainage design. The drainage design includes a large infiltration basin to the south of the site. The FRA outlines that this is for source control and initial attenuation, and that surface water disposal is only via gravity to the infiltration basin.

1 Contribution of shallow coal mining works on soakaway tests

The proposed development design in 2018 included 'plot' soakaways distributed across the site. Soakaway testing was undertaken by Lithos Consulting at 9 trial pits in February 2018. A map showing the location of the October 2025 proposed attenuation basin, location of soakaway tests in relation to the location of worked and unworked coal seam areas is shown on Figure 1.

Also annotated on Figure 1 are the minimum infiltration rates observed during soakaway testing. It can be seen that there is no correlation between infiltration rates and the presence of the shallow coal workings, which are known to be towards the east of the site, at a depth of c. 13-18 m bgl. Indeed, the February 2018 report concluded that the *"effectiveness of the proposed soakaways will not be affected by the presence of shallow mine workings at the site, which are considerably deeper than the proposed soakaways"*.

The drainage design has since been updated to infiltrate all runoff from the site via one large infiltration basin to the south of the site, as shown in Appendix A of the FRA. This is in an area of the site where no coal workings are expected to be present.

The infiltration basin has been designed to accommodate runoff from the 1 in 100 year + Climate Change event and sized using the lowest recorded infiltration rate (during testing by Lithos in February 2018) of 3.87 $x10^{-5}$ m/s. This is a conservative approach and appropriate for the known ground conditions at the site.

Lithos Consulting undertook a soil strip in September 2018, based on the areal extent of the proposed housing layout at the time, in order to confirm the absence of workings or allow for the grouting of any voids or broken ground that could affect surface stability. Lithos Consulting have subsequently undertaken an additional soil strip (in 2026) to account for a larger extent of the proposing housing layout. No additional soakaway testing was carried out as part of the 2026 investigation. The additional soil strip and findings do not affect the outcomes previously highlighted in the 2018 Lithos Consulting studies, or the outcomes documented in this note relating to the contribution of shallow mine workings on soakaway tests.

2 Risk of mine water re-emergence

The LiDAR ground topography at the site (Figure 2) demonstrates that the site drains to the southern boundary. This general flow route is shown to be maintained in the drainage layout in the FRA (Appendix A), which shows runoff from impermeable areas entering the infiltration basin to the south. There are some retained vegetated areas not served by formal drainage (areas not developed for housing), which will continue to follow the natural drainage pathways to the southern boundary.

As outlined in the February 2018 report, a layer of Falhouse Sandstone lies above the coal seam (and shallow coal workings). A schematic shown in Figure 5 of the February 2018 report demonstrates that surface water infiltrating to the Falhouse Sandstone is likely to form a shallow groundwater system, perched above lower permeability mudstone. This groundwater system flows laterally and issues close to the contact with the underlying mudstone bedrock approximately 300 m southeast of the site, and is collected by the Canker Dyke. Deeper groundwater may drain from historic workings, but would not be influenced by surface water drainage at the site.

Therefore, it is not anticipated that the proposed drainage scheme would increase the volume of water entering the mine workings, and the drainage scheme does not increase the risk of mine water re-emergence off-site.

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Summary

In summary:

- The known coal workings beneath the site do not materially influence infiltration performance.
- The updated drainage strategy – which utilises a single, large infiltration basin – has been conservatively designed using the lowest measured infiltration rate on site, providing a substantial design safety margin.
- Site topography naturally directs water toward the southern boundary, and the updated drainage design maintains these pathways.
- Infiltrating water is expected to enter a shallow, perched groundwater system within sandstone above the coal workings, ultimately discharging downslope toward the Canker Dyke. As a result, the proposed scheme does not increase the risk of mine water re-emergence.

Yours sincerely,

Rob Pickersgill
Senior Hydrologist

Dr Phil Ham
Principal Hydrogeologist

Figure 1 – Geological Information

Figure 2 – Topography

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