

27 November 2023

Wingecarribee Shire Council
PO Box 141
Moss Vale NSW 2577

To Whom It May Concern,

DA 23/1070 (1-5 Rainbow Road, Mittagong): Heritage Response to RFI

This response has been prepared on behalf of the client to address the heritage-related questions/comments contained in Council's Request for Information (RFI) letter dated 23 August 2023

Council has raised the following 2 applicable issues:

1. The potential of the excavations at the study site to adversely impact the heritage significance of the chalybeate spring

As part of the DA planning process, the client commissioned JK Geotechnics to undertake detailed geotechnical and groundwater studies.¹ It is our understanding that JK Geotechnics' geotechnical/hydrological investigations included a water monitoring study which involved drilling boreholes variously across the site and installing water monitoring/testing wells. I observed these wells near the eastern boundary shared with the spring site when I re-visited site on 30 August 2023, and in discussions with JK Geotechnics in early September 2023, established that the wells were drilled to a point lower than the maximum excavation depth required for the proposed basement. Measurements from the wells were used to inform volume estimates of groundwater discharge around the proposed basement; modelling concluded it would be less than 1ML/year.

Following the issue of Council's RFI, the client commissioned ENRS Pty Ltd to provide further expert hydrogeological services to perform additional due diligence in respect of the above issue. ENRS reviewed the JK Geotechnics reports, and then designed and undertook their own water testing regime at the site.

The objective of ENRS' testing regime was to

...review the hydrogeological setting in context of the proposed basement construction to consider the degree of hydrological connection between the spring and groundwater which may be intersected at the Site based on the results of previous groundwater studies and supplementary groundwater laboratory analysis, including isotopes and major ion chemistry."²

I have reviewed the reports from JK Geotechnics and ENRS to inform my assessment of the potential of works to adversely impact the heritage significance of the spring, i.e. that it be able to continue to function as a natural spring. Core to this were the questions of if there is a relationship (or not) between the sampled groundwater at the study site and that of the spring, and whether the excavations were likely to hit the aquifer feeding the spring.

¹ JK Geotechnics: *Site Hydrology Report for 1-5 Rainbow Road Mittagong*, 2 August 2023

² ENRS Pty Ltd: *Hydrogeological Review – Chalybeate Spring, Rainbow Road, Mittagong*, 24 November 2023, p.1

In this respect, ENRS makes the following observations/conclusions following the comparison of water samples collected from each of the water monitoring wells at the study site, the spring and Iron Mines Creek³:

The geochemistry results indicate the Spring water and groundwater share similar characteristics likely due to the host geology. However, there are differences, and the results are not an exact match which indicates the Spring is not in direct hydraulic connection with the shallow groundwater sampled from the Site.

ENRS further concluded:

In general, the weight of evidence from the previous hydrology study (JK, 2023) and the laboratory results reviewed herein, indicate the proposed basement area is unlikely to intercept the Spring aquifer and hence not adversely affect the Spring.

While it was concluded that the groundwater to be drained from study site has sufficiently different geochemistry to not originate from the aquifer feeding the spring, and that excavations are unlikely to intercept the spring's aquifer, the following additional mitigative arrangements have been recommended:

1. That the JK Geotechnics detailed dewatering management plan incorporate requirements for monitoring the spring and consider options for managing groundwater if conditions are encountered which differ from those outlined in the study site's Hydrology Report;
2. That the water monitoring wells at the study site remain in situ to enable ongoing testing/monitoring as required;
3. Excavations be commenced furthest away from the spring at the western side of the site, and move in an easterly direction so as to allow sufficient room and scope to do any repair work should the unlikely event arise that flowing water is encountered; and
4. In the unlikely event that flowing water is encountered, the hole will be backfilled with a grout mixture to cap the flow while expert geotechnical/hydrological advice is sought.

2. Screening trees provided along the boundary shared with the spring site

The plans have been amended to increase the deep planting zone from along the E boundary shared with the spring site. This has resulted in the setback to the side building line on the N block being increased by approximately 1.5m, and the green space next to the S block increased to almost the full 7.7m setback by the moving the driveway further to the west.

Review of historic photos of the site (**Figures 1 & 2, below**) indicate that there were eucalypts present around the boundary of the spring house. The existing trees along the shared boundary have been examined and it has been determined that the trees are largely a mix of exotic species that won't match well with the intent to return the setting to a more natural eucalypt 'woodland' evident in the primary sources.

The new planting schedule of 10 supplementary Spotted Gums takes cues from these photos to provide a sympathetic link between the medium-to-tall eucalypt canopy in the spring parkland and the eucalypt street trees along the N side of Rainbow Road in front of the study site. The Spotted Gums have a mature height of 15m which will provide sufficient screening of the built structure while reinforcing the native woodland setting of the spring parkland. The understory is planned to be planted out with grasses and shrubs up to 1.5m including Gynea Lily, Daphne, and Mat Rush.

The new proposed landscape plan and planting schedule and is a significant improvement on the original put forward, putting in place a multi-level vegetative screen to the buildings which will contribute to the native woodland setting of the spring parkland.

³ ENRS, 2023: p.4



Figure 1 | Pre-1906, looking north toward Mount Alexandra, the Spring House(?) in middle of image. [Linda Emery, *Pictorial History: Southern Highlands*, Kingsclear Books, Alexandria [N.S.W.], 2008, p.25]



Figure 2 | Looking SW at the spring site (white building) across now-Old Hume Highway. The ironstone deposit around the site had been exploited by the Fitzroy Iron Works, as evidenced by the cuttings present in the hill. [Berrima District Historical & Family History Society]

Conclusions

1. I am satisfied with the conclusions and recommendations provided by the geotechnic, hydrological and hydrogeological experts, which indicate that the aquifer feeding the spring will not be materially affected by the drainage of groundwater seepage at the study site, and that it is unlikely that excavations will encounter the aquifer feeding the spring.

I am also satisfied that there are sufficient mitigative arrangements in place to monitor the ground water at the site for changes, and that the excavations will be commenced at the further point away from the spring and proceed with caution as they approach the eastern boundary; and

2. I am satisfied that the amended architectural and landscape plans provide an appropriate coverage of tall trees to screen the buildings at the study site, and to improve views from, and the setting of, the spring site.

Overall, it is concluded that the heritage significance of the chalybeate spring will not be adversely affected by the proposed works.

Do not hesitate to contact the undersigned if clarification is required.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'E. Gorman', with a stylized flourish at the end.

Elizabeth Gorman B.A., M.A., M.ICOMOS

Associate Director

Sue Rosen Associates