Fingerboards Mineral Sands Project Inquiry and Advisory Committee
Technical note

TN No: TN 028

Date: 27 May 2021

Subject: Stygofauna in groundwater

---

1. The IAC has asked Kalbar to provide advice on the degree to which Stygofauna in groundwater, had been, or needed to be, considered in relation to National or State threatened species legislation (Tabled Document 401. Request No 4).

2. The Biodiversity Evaluation Objective in the Scoping Requirements is:

> *To avoid or minimise potential adverse effects on native vegetation, listed threatened and migratory species and ecological communities, and habitat for these species, as well as address offset requirements for residual environmental effects consistent with state and Commonwealth policies.*

3. In terms of fauna, this Objective is directed to the avoidance and minimisation of impacts on 'listed' threated and migratory species and ecological communities and habitat for 'these' species.

4. There is little available information on presence or absence of stygofauna in Victoria. As stated in *Regional baseline stygofauna survey – Onshore Gippsland Basin, Victoria* (February 2020) ('the Regional Survey'),

> *In Victoria, the presence of non-karstic stygofauna is virtually unknown. A single Amphipoda species from Thorpdale, Gippsland (Williams & Barnard, 1988) has been identified along with a Syncarida and Isopoda species found in the Lake Condah area, near Heywood (Department of the Environment, 2011). A single species of the Syncarida family Stygocarididae from the hyporheic zone of the Tambo River, north of Orbost in Gippsland, has been identified (Schminke, 1980; Serov, 2014). As part of the VGP environmental studies, a regional stygofauna survey of the Otway Basin in south west Victoria identified five stygofauna taxa (Bold et al., 2020).*[1]

5. In respect of onshore Gippsland, the Regional Survey states:

> *A regional baseline stygofauna survey across the Gippsland Basin was conducted as part of the Victorian Gas Program (VGP). Prior to this study there has been no basin-wide survey of stygofauna in the Gippsland Basin. This survey sampled 20 bores that*

---

[1] *Regional baseline stygofauna survey – Onshore Gippsland Basin, Victoria* (2020), p. 3. Available at: https://geoscience-unclassified.s3.amazonaws.com/erd_publications/reports/vgp/G160955_VGP_TR14_Stygofauna_Gippsland_high_res.pdf?AWSAccessKeyId=AKIAILARA4VCSSNMR2YQ&Expires=1622091384&Signature=SdU3c26K2nwbbdbwsnbEtWqE8XE%3D

> *are part of the Victorian Government State Observation Bore Network (SOBN) to determine if any stygofauna taxa exist within the groundwater of the onshore Gippsland Basin. Distribution ranges, including any short-range endemism (SRE), for potential conservation value were determined where possible.*[2]

6. The results of Regional Survey are summarised as follows:

> *A total of five individual animals of one stygofauna taxon were identified from one groundwater bore sampled across the Gippsland Basin. This stygofauna family was collected within the upper unconfined Quaternary Aquifer. A repeat sample was collected after three months, however no stygofauna were collected at this time.*[3]

7. As shown in Figure 5.1 of the Regional Survey, the bore at which the family was initially detected appears to be located proximate to the Mitchell River.[4] This is confirmed by the text which states:

> *Bore 80866 is located specifically within an alluvial floodplain environment of unconsolidated sand, silt and gravel associated with the Mitchell River, east of Bairnsdale.*[5]

8. The stygofauna collected are identified as being *Tuberficida enchytraeidae*, which belongs to the phylum annelid. The *Advisory List of Threatened Invertebrate Fauna in Victoria 2009* (being the most current list available on the DELWP website) lists only one species of annelid, being the Gippsland Giant Earthworm (*Megascolides australis*).[6] As such, the stygofauna encountered in the Regional Survey do not appear to constitute a listed species under State law.

9. At the Federal level, there is at least one species of listed stygofauna (the Cape Range Remipede (*Kumonga exleyi*)), but no species belong to the order *Tuberficida* appears on the list.

10. In these circumstances, the better view is that the Evaluation Objective does not require assessment of impacts on stygofauna.

---

2 Ibid, p. v.
3 Ibid.
4 Ibid, p. 16.
5 Ibid, p. 20.
6 Available at: https://www.environment.vic.gov.au/__data/assets/pdf_file/0016/50452/Advisory_List_of_Threatened_Invertebrate_Fauna_2009_FINAL_Sept_2009.pdf