Submission on referral information

Lithium Plus Minerals Ltd – Lei Lithium Project

This submission is made under regulation 53 of the Environment Protection Regulations 2020

NT EPA reference number: EP2024/038

Government authority: NT Health – Medical Entomology, Public Health Division

Summary: The proximity of the project to tidal mangroves of the Charlotte River suggests mangrove biting midges will affect the project area. Tidal mangrove creeks are also likely to be localised seasonal sources of salt marsh mosquitoes. Whilst there is a lack of nearby large wetlands, the project has the potential to create new mosquito breeding sites, such as water dams, sediment ponds and water discharge areas. Mosquitoes can transmit human diseases, and therefore should be managed to reduce the impact on staff.

A short and concise biting insect management plan is recommended, to ensure the impact of biting insects is minimised, and to ensure no legacy mosquito breeding sites remain after closure.

Theme / issue	Comment
Proposed water dams	• The proposed dams could potentially become freshwater mosquito breeding sites, particularly if they have shallow margins. Shallow dams could also become legacy mosquito breeding sites. Therefore, all proposed dams should have relatively steep sites (1V:3H or steeper) and contain deep water (>1.8m wet season stabilised level).
Pit dewatering	• Any change in dry season water flows could alter the receiving environment to suit increased mosquito breeding. This may occur if pit dewatering activities extend well into the dry season and cause the receiving water dam to continually overflow. If pit water is discharged during the dry season, the receiving downstream area should be monitoring to ensure there is no mosquito breeding.
Sediment control	• Sediment control structures can potentially become mosquito breeding sites if they are designed to pond shallow water for extended periods. Please refer to the mosquito breeding prevention guideline mentioned on Page 37 (under water management) for potential mitigation measures.
Human Health	• The project site is located within 1-5-2km of tidal mangrove creeks. It is therefore likely that mangrove biting midges will affect the project site, particularly during the dry season. Potential mitigation actions against biting midges would be the use of personal insect repellents during the sunrise and sundown periods, and use of residual surface insecticides around buildings. Biting midges are not known to transmit human diseases in the NT, however can cause intensely irritating bites. • The project site does not appear to contain any major wetland habitats suitable for high and prolonged mosquito breeding. The nearest large freshwater wetland appears to be the man-made dam associated with the other mine to the north. However, localised freshwater mosquito breeding sites may exist in seasonally inundated lowlands and depressions in the Charlotte River catchment, including the small billabong to the south of the mine, near the Charlotte River road culvert. The freshwater section of the Charlotte River is also likely a source of mosquitoes during the dry season, when the channel ceases to flow and slowly dries out.

	The most common freshwater mosquito in the Top End (*Culex annulirostris*) has the potential to transmit Ross River virus (RRV), Murray Valley encephalitis virus (MEVE), Japanese encephalitis virus (JEV), Kunjin virus (KUNV) and Barmah Forest virus (BFV), therefore it would be important to prevent mosquito bites, particularly after sundown. Localised salt marsh mosquito breeding sites are likely to exist in the upper tidal channels and landward mangrove margin of the Charlotte River during the late dry season. The salt marsh mosquito *Aedes vigilax* bites during the day and night, and can transmit RRV and BFV. • Container breeding mosquitoes are also potential vectors of mosquito borne diseases such as RRV and BFV. It would therefore be important to prevent container mosquito breeding occurring at the mine site. Potential breeding sites could include used tyres, stormwater pits, water tanks and drums, unsealed/damaged septic tanks and machinery items. • Whilst there are currently limited nearby neighbours, it would be important to prevent legacy mosquito breeding sites being left behind after mining has ceased, which could otherwise impact future land uses. • The main mosquito borne disease risk season at the project site is likely to be similar as other areas of Darwin, which would be the months of December to July, with the peak risk occurring during January to May.
Biting Insect Management Plan	• There is no recent biting insect trapping data from the area. However, biting insect traps were set in 1990 from April to November, at the small billabong near the Charlotte River road culvert, to the south of the project area. Low numbers of potential malaria mosquitoes were collected during the dry season, low numbers of the main vector mosquito *Culex annulirostris* were recorded during April to September, and low to moderate numbers of the golden mosquito *Coquillettidia xanthogaster* were recorded from April to August. • Moderate to relatively high numbers of the mangrove biting midge *Culicoides ornatus* were collected at the same trap site mentioned above during the dry season months. This suggests dry season biting midge nuisance problems will affect most of the project site, most notably the western half closer to the mangroves. Despite the lack of recent biting insect trapping data, and absence of early and mid wet season data, no further trapping is required. Aerial photography suggests the mine site is in an area of low to moderate mosquito abundance when compared to other areas in the Western Top End. Also, as workers will not be living on site, biting insect management requirements would be somewhat reduced. • It is recommended that a short and concise Biting Insect Management Plan be developed. It should include relevant

	information from the mosquito breeding prevention guideline mentioned on Page 37 (under water management), plus information provided in this submission regarding the seasonality of biting insect populations. Relevant information that can be found in the NT Health personal protection from mosquitoes and biting midges handout should also be included in the management plan. The Biting Insect Management Plan should either be a standalone document, or section in the Construction and Operations management plans. Medical Entomology is available to assist with the development of the management plan if required.
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