12 September 2016

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Dear Tim,

RE: Proposed State Significant Development (SSD 7016) – Borg Panels Timber Processing Facility

Thank you for your letter dated 27 July, 2016. Please find following our responses to the questions raised in your letter.

1) The demand for stormwater from both the existing and future pond would be regulated at 400m^3/day, i.e. 200m^3/day from each pond. This demand can't always be met as the ponds may or may not have a volume of water in them. This is the theoretical demand which is entered into the MUSIC model and it is the demand which will be drawn from the ponds assuming there is sufficient volume available.

2) The theoretical demand of 400 m^3/day has been validated against a rigorous and recent water balance prepared by Borgs. The water balance is based on the average consumption, production, recycling and reuse of water that has occurred in the plant since July 2016. The water balance shows that the current demand for town water is approximately 338 m^3/day. The proposed new particle board facility is extremely efficient and after recovery and reuse of as much water as is feasible, requires a further 50 m^3/day. The total predicted future daily demand for town water on the site is therefore 388m^3/day. This is very close to the 400m^3/day which has been assumed for the purposes of modelling. This demand fluctuates daily and is an average daily demand based on the most recent operational performance of the existing plant. Some days more water may be harvested, if required, and on other days less water may be harvested.

3) There is currently some, irregular, stormwater harvesting occurring on the site however it is not a core component of the water cycle at the current time. Borgs has been testing the viability of stormwater harvesting and is now satisfied that it is a viable option which is compatible with its current water treatment system. This project and approval process presents an opportunity to formally adopt the technology and to make it a core component of the water cycle management on the site. In this heavy industrial context, this brings numerous benefits in terms of reduced export of pollution, protection of the creek geomorphically and ecologically and reduced demand for town potable water.

4) While the theoretical daily demand for harvested water is 400 m^3/day, the predicted yield from harvesting has been modelled using MUSIC and is estimated at 120 ML/year. We clarify that in the conclusion of the report, it was noted the yield would be 133ML/year though elsewhere throughout

the report the yield was reported as 120 ML/year. This value of 133 ML/year is not correct (it was a typographical error) and the predicted yield is in fact 120 ML/year. 400m^3/day demand for stormwater expressed as an annualised demand equates to 146 ML/year. The proposed scheme can't however supply 100% of the theoretical demand for stormwater, it can only supply (120/146) 82% of the theoretical demand for stormwater.

5) The existing plant's water cycle management is a highly complex arrangement, largely driven by the need to balance salt loads in effluent discharged from the site, with water sourced from various sources including a spring dam (licensed through an existing WAL) other groundwater sources (also licensed though an existing WAL), town potable supply, recycling of desalinated process waste water and some irregular harvesting of stormwater in recent times for proof of concept of the harvesting potential.

6) After allowing for an increase in demand from the new plant and stormwater harvesting, the future demand for town water would on average diminish from 141.6 ML/year (388m^3/day) down to 21.6ML/year. This represents a substantial net average reduction in demand for town water though during dry times when stormwater was not available there would be a demand on the town's water supply equivalent to the daily demand from the Borgs combined plant.

   On average, the stormwater harvesting could supply about 85% of the current plus future water demand. In wet periods it could supply 100% of the demand and in dry periods it would not be able to supply any water and there would then be reliance initially on the licensed spring dam and bore water (up to WAL limits) followed by reliance on the town's water supply.

   The reduction in demand for town water should see Oberon dam remain fuller for longer and spill more frequently. Thus any harvesting on the Borg's site is offset by increased frequency of flows leaving Oberon dam.

7) Currently, town water is occasionally imported to help dilute salty effluent to ensure it meets Council's trade waste requirements. It makes a great deal of sense to dilute salty effluent with low salt stormwater in lieu of importing (at significant cost) Council's high quality potable supply only to return it to trade waste and noting that water will be further treated to a high standard in Council's wastewater treatment plant and then discharged back into the catchment.

8) We confirm that <u>only</u> runoff from operational areas and roof runoff would be harvested. No runoff from the undeveloped rural land (on the western side of Lowes Mount Road) which also feeds into this catchment will be harvested. The unpolluted rural runoff is separated from the polluted industrial runoff (refer to the report for details) and directed around the ponds in its own existing swale. This clean runoff is also to be directed around the proposed sampling point.

9) Given that clean/unpolluted runoff is not to be harvested, in accordance with your advice, there is no need to calculate or exercise any harvestable rights as the only water to be harvested will be from industrial land uses. We reiterate the proposal only includes harvesting of runoff from existing roads, hard stands, car parks and roofs as well as future industrial buildings, hardstands and car parks.

10) The proposed 6 ML water quality dam will be constructed at least 40m from the top of bank of the nearest watercourse. If during detailed design, it needs to be moved closer to the first order creek, a controlled activity permit will be obtained from DPI. We note that if the proposed pond were to be moved closer there would not be a loss of riparian vegetation and impacts on either stream ecology or geomorphology would be negligible.

11) In light of the letter from DPI and following further discussion with Borgs and review of the pollution control licence, the existing V notch weir is no longer proposed for removal – we have resolved that the pollution licence conditions do not actually require a flow measurement point and so there is no need to remove the weir. Therefore the proposal would be amended as follows:

    a. The existing V notch weir would <u>not</u> be impacted by the works and left in place

    b. No new V notch weir is proposed

    c. It will be necessary to construct new swales to connect overflows from the proposed pond with the existing creek line and these will all be carried out in accordance with any Controlled Activity guidelines/permits or conditions of consent. Essentially these will be grass lined swales. Once detailed designs have been developed Borgs will lodge an application and request a Controlled Activity permit. Again we note that there is no riparian vegetation that will be removed, the area is devoid of trees and it will be stabilised and revegetated as soon as practical during construction.

12) In terms of defining the impact of the proposed harvesting scheme including on biota: Appendix J identifies that in line with work by some of Australia's most eminent scientists, reported in Fletcher et al (2004), that a decrease in catchment imperviousness, which is a result of the proposed harvesting scheme, would see an improvement in creek ecological health, that is, an increase in indicator species which is indicative of an increase in biota. This statement of course presumes, substantial flow will remain in the creek, i.e. that there is not a threat to low flows also commonly called environmental flows. Through the use of flow duration curves which are a way of summarising the entire flow regime, the report demonstrates that even after harvesting, the level of flows would remain above "rural" runoff conditions, i.e. similar to that which would occur if there was no development on the site and it remained in a theoretical rural state of development without extensive impervious areas. The key point to appreciate here is that the development of extensive impervious areas at Oberon would be linked to a decline in biota and the harvesting scheme seeks to reverse this while simultaneously providing an alternative source of water and reducing reliance on the town's water supply.

    The proposed harvesting scheme also reduces the chemical and physical pollutant load on the receiving waters. It will help to reduce the load of suspended solids, total nitrogen and total phosphorus leaving the site. The reduction in pollutants, i.e. a reduction in the export of nutrients and suspended solids leaving the site, combined with a reduction in excessive flows is likely to have a beneficial effect on water quality and positive impacts on native biota.

    In terms of impacts on human downstream users, the flow duration analysis presented in the report shows the impact on flows at the point of discharge from the site. It can be seen that 85% of the time (15th percentile on the graph) there is no impact on flows leaving the site. For less frequent flow percentiles such as the 10^{th} percentile (flow value is exceeded only 10% of the time) there will be a reduction in flows from 9 l/s (rural state) to about 6 l/s (with harvesting).

    Within 3 km of the site, Kings Stockyard Creek joins the Fish River. Here the Borgs industrial catchment becomes part of a much larger rural and urban catchment (which includes substantial parts of the township of Oberon with its substantial residential and industrial impervious areas) where this impact would not be discernible. Within 15 km of the site, the Fish River is joined by the 27 km long Duckmaloi River where it is more likely that existing users have active WALs to extract directly from the river/creek. Here the impact would be even further reduced because the Borgs and CHH catchment which is about 1 km^2 would become a very small fraction of a catchment which is hundreds of square kilometres (at least 300 km^2), that is, less than 0.33% of the catchment is impacted. Without

examining the specific impact on any existing WALs, it is highly unlikely that there will be any discernible impacts on downstream land users and it is considered that a detailed examination of impacts on individual WALs is therefore not warranted.

In conclusion the proposed harvesting scheme, when taken in its industrial context of extensive impervious areas, is most likely to result in an improvement in creek health and therefore lead to an improvement in the diversity and abundance of biota downstream of the site. It is highly improbable that any downstream human water users would be impacted by any change in the flow regime.

13) DPI noted that it was reported that the volume of runoff would remain above rural levels despite harvesting 120 ML/year of polluted water from the site. We again reiterate that harvesting of clean, undeveloped rural areas will not occur. There is a 40-hectare rural catchment which drains through the site and the runoff from this catchment will not be harvested. In terms of total volumes of runoff – as was reported – the total volume of runoff, after harvesting remains about double (287 ML/year) the rural volume of runoff (140 ML/year).

    It is recommended that further analysis is unwarranted especially because DPI agree that there is a legal right to harvest roof runoff (under the Water Management Act) and a duty to harvest polluted industrial runoff and harvesting of other runoff is not part of the proposal.

Please do not hesitate to contact the undersigned if you need any further clarification.

Yours sincerely

Mark Liebman

Director, Principle Engineer