



allen price & scarratts pty ltd
land and development consultants

Our Ref: N24537

30 August 2018

NSW Independent Planning Commission
By Email: ipcn@ipcn.nsw.gov.au

Attention: Alana Jelfs

Dear Alana,

RE: Response to the UNSW's Independent Review of the Water Quality Assessment of the proposed Golf Course at Culburra Beach

Please find attached our submission in response to the UNSW Independent Review of the Water Quality Assessment dated 21 August 2018.

Attached to this document is a letter from Martens which provides the IPC with our position with respect to the independent review's opinions on the ground water and surface water modelling and subsequent impacts on development.

The Independent Review (IR) in Section 3.1 outlines various aspects of the "2018 SEPP". We assume this is to be interpreted to relate to *SEPP (Coastal Management) 2018*, for which Schedule 1 does classify Lake Wollumboola as a Sensitive Coastal Lake. It must be pointed out to the IPC that the provisions of *SEPP (Coastal Management) 2018* do not relate to this DA as it was not even in draft form when the DA was lodged in 2011. It is confirmed, however, that the repealed SEPP71 still relates to the proposal.

Further, mention is also made of "two SEPP Coastal Wetlands" in Section 3.1 and that the golf course is in the "proximity areas" for two wetlands. It must be pointed out to IPC that the "proximity area" as outlined in *SEPP (Coastal Management) 2018* does not relate to this DA for the reasons outlined above.

It is noted there are two wetlands in the vicinity of the proposed golf course which are listed in the repealed SEPP14. Section 4 of SEPP 14 stipulates that it is only land within the mapped areas where SEPP14 applies. As there are no works proposed within the mapped areas, the provisions of SEPP14 do not apply to this DA.

Further, the IR in Section 3.1 also mentions that the 196Ha site is 60% of the Long Bow Point (Direct) sub-catchment as per HGEO 2017. This may be factually correct but this information skews the readers understanding of the minor scale of this site in the context of the Lake Wollumboola catchment. It fails to mention that:

- 82% or 160.4Ha of the 196.1Ha site will be managed as a private conservation reserve; and
- the proposed golf course and its facilities only occupy 35.7Ha of the whole 4,206Ha catchment of Lake Wollumboola which is approximately 0.85% of the entire catchment)

It is difficult to take seriously the proposition that this proposal will have a significant impact on Lake Wollumboola when it affects less than 1% of the catchment of Lake Wollumboola and proposes best practice water quality and golf course site management measures.

It is noted that the IR suggests the HGEO groundwater study inform this DA. This is not appropriate as it forms a completely separate planning process and does not relate to this DA in any way.

We look forward to receiving the IPC's Determination and taking the next steps in this process.



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Allen Price & Scarratts Pty Ltd

Matt Philpott
Director

Attachment 1: Letter from Martens dated 30/8/18

August 30, 2018

The Halloran Trust
c/o Allen Price Scarratts
Attn: Matt Philpott
By email

Dear Matt,

RE: PROPOSED CULBURRA GOLF COURSE: RESPONSE TO UNSW WRL REVIEW.

This document provides a response to the *Independent Review on Water Quality Assessment regarding the Long Bow Point Golf Course* signed by Grantley Smith as manager of the UNSW Water Research Laboratory (WRL). We provide the following responses to specific critical assertions made in the review:

Groundwater

1. When considering Professor Santos' review of the groundwater conditions we note he concludes on page 2 that the sampling effort required to reach conclusions as made by OEH is significantly greater than that applied. He also notes that there is considerable lag in the time the equipment used by OEH takes to reach a valid measurement, given the number of locations tested on the day of testing and the stated sampling time of only 10 minutes (compared to 20 – 50 minute lag referenced by Prof. Santos) the data presented by OEH is considered invalid. The OEH assertion that the Lake is significantly influenced by groundwater is thus unsupported by science.
2. The completed site testing and analysis as presented by Martens has assessed both the shallow and the deep groundwater systems beneath the site. The deep siltstone system is incapable of delivering significant groundwater to the Lake (a conclusion that the reviewers do not disagree with). The remaining potential pathway (perched soil aquifers) were only observed on low lying land near the lake (i.e. they are supported by the Lake standing water) and not on the ridge top. The absence of a permanent shallow groundwater system in the soil layers elsewhere on site indicates that flow would be intermittent at best and that in all likelihood the potential pathway from golf course to Lake would be incomplete for most of the time.
3. There is not evidence to suggest that the groundwater transport path from golf course to Lake is anything other than a very minor potential contributor to Lake nutrient and water fluxes. Given the extensive vegetated buffer between the Lake and the golf course it is not appropriate to defer approval of the proposal for the HGEO study. That said, the HGEO study will provide baseline data against which development phase groundwater monitoring can be assessed.

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Surface Water

4. IWMP / MUSIC peer review (para 2 of section 4 on page 3) – it is agreed that the MUSIC model used for the assessment of water quality on the site has not been subject to a peer review. However, input parameters are entirely consistent with the peer reviewed model developed by Martens for the West Culburra (SSD 3846) application. As such the model used for assessing the golf course water quality impacts has had the benefit of the extensive peer review process applied to that model.
5. Pollutant reduction (para 3 of section 4 on page 3) – the modelled pollutant reduction is detailed in the MUSIC modelling completed, documented and submitted.
6. IFD rainfalls (1st dot point on page 4) – this relates to design events and does not impact on the MUSIC modelling completed. Rainfall data used for the assessment were compliant with the local control (Shoalhaven Council's Engineering Design Specification). The reviewers have referred to these when discussing the MUSIC modelling which is confusing as IFD data is not used in MUSIC modelling.
7. Fertiliser inputs (2nd dot point on page 4) – it is claimed that the modelling is 'non-conservatively based on post establishment application rates'. The basis for this claim is not provided and it is simply incorrect. The modelling of the golf course has, based on a historic EPA / OEH requirement, been completed assuming that the golf course is an 'agricultural' landuse. This is by no means consistent with the WRL's claim that the modelling is based on 'post establishment' fertiliser use. The assumption is in fact highly conservative as a golf course, either in establishment or operational condition, shall not generate pollutants at the rates assumed for agricultural landuses. The reviewers have made this very significant and unsubstantiated claim based on, we conclude, a misunderstanding of the most basic of the modelling input parameters.
8. Wetland lining (3rd dot point on page 4)– the lining of many structures, be they water quality systems, landfills or waste containment systems, is standard industry practice. Reliance on the performance of these is normal across a range of applications. The reviewers claim that reliance on no leakage from the wetlands is 'non-conservative' is not supported in any way. This assertion is unreasonable and unfounded. Importantly, even if there was to be some very small degree of leakage then the effects on the environment would also be negligible.
9. The reviewers' claims that the grading of the course to achieve drainage to the wetlands is 'non-conservative' (4th dot point on page 4) due to the scale and topography of the course. The application includes extensive design works by Golf By Design (which would not typically be provided until construction certificate stage) to ensure / demonstrate that the modelled grading and drainage outcome can be achieved. The reviewers' assertion appears to reflect a lack of experience in dealing with actual development projects where the need to achieve a specified drainage outcome is normal and achieving it is simply a detailed design process. To claim it is 'non conservative' is unsubstantiated and incorrect.
10. Flow reduction (5th dot point on page 4) – the reviewers refer to the modelled 17% reduction in flow from the MUSIC modelled catchments. These catchments comprise the entire golf course and upslope site areas which drain to the golf course wetlands and are approximately 92 ha. The total area of the properties on which the proposal is located is approximately 200 ha. The modelled 17% reduction

in flow from 92 ha of a 200 ha property, with no change in flow from the remainder of the site, is equivalent to a 7.8% reduction from the overall 200 ha site. This is less than the 'landholders entitlement' in NSW which permits the use of up to 10% of the annual average runoff for any purpose.

11. The reviewers state (6th dot point on page 4) 'it appears that the constructed wetlands are to be used as bio-retention basins requiring some unspecified retention duration ...'. Why the reviewers concluded the wetlands are bioretention basins is not explained and is certainly not clear. The wetlands are shown as wetlands on all plans, and are referred to as such at all locations, model parameterisation shows only parameters used for wetlands. There is no inference, nor requirement, that they be biofiltration basins and they are not modelled as such. This point raised by the reviewers is simply an erroneous misinterpretation of the information provided. The basin outlets are modelled to deliver a detention time of approximately 72 hours (see Table 11 on p 34 of IWMP). MUSIC parameterisation provides adequate detail to inform the detailed design of these wetlands, this is clarified in Martens letter of December 8, 2017 where the pumping rate (3 l/s) for the harvesting system is specified. MUSIC uses the specified stage vs volume information and thus correctly models the performance of the specified wetland volume with overflows as and when the site hydrology and hydraulics dictate. As such conditioning the final detailed design solution to be in accordance with the assessment will deliver a built solution consistent with the modelled performance.

There is no assumption that there will not be overflow from the wetlands as inferred by the reviewers' comment that the 'proposed solution has the inherent risk of overflow or release of untreated, nutrient rich run-off'. The model assesses the quality of inflow and outflow using the industry best practice algorithms in MUSIC. There will most certainly be overflows – otherwise the reduction in flow would be 100% - but that is not a design limitation, it is an expected outcome. The result of that overflow is the important result. Overflow volumes and pollutant loads are assessed by the model and demonstrate that there is an acceptable nutrient discharge outcome.

12. At the 7th dot point (page 4) the reviewers suggest that the water quality modelling has only considered the 1 in 100 yr ARI storm. This is incorrect. MUSIC uses a rainfall data series from 1964 - 1970 (see section 5.3.2 of the IWMP). This period was selected during the peer review process for the West Culburra MUSIC modelling project. The period is considered appropriate for assessment of water quality outcomes. That the reviewers have missed this fundamental model parameterisation suggests that the completed review has either been inexpertly completed, or done with inadequate time to allow even a most basic understanding of the detail to be achieved.

The reviewers conclude on the second to last paragraph on p4 that the 'IWMP is not consistent with the standard typically expected for ...'. As with many other assertions this is incorrect. The reviewers go on to recommend detailed design of the wetlands and analysis of more frequent storms for water quality. Detailed design is appropriately conditioned and analysis of 6 years of rainfall is more than typical – the reviewers' 'requirement' is simply an example of the reviewers' failure to understand the completed modelling despite the very clear explanation provided in the IWMP.

The reviewers raised at various points the need to consider the impacts of the club house. As there is no club house in the proposal this requirement is unnecessary and reflects the reviewers' lack of understanding of the proposal being considered by the IPC.

The reviewers rightly suggest that an Operation and Maintenance Plan and Soil and Water Management Plan (sediment and erosion control) should be prepared for the site. These plans should be conditioned as part of the IPC approval of the project.

Under the 'Cumulative Impact and Tipping Point' heading the reviewers raised concerns that cumulative impacts may cause the Lake to pass a tipping point which leads to significant change. However, no detail presented in the review refutes the modelled conclusion that the proposed development with the extensive water quality control systems, will result in no increase in nutrient loads to the Lake. If there is no increase as a result of the development the contribution to the cumulative impact of a range of unrelated existing and proposed developments shall remain zero. Therefore, the proposed golf course is acceptable when considered in isolation or cumulatively.

In summary the review completed has misunderstood or misrepresented the details of the proposal and the completed assessments and as a result has come to an incorrect conclusion regarding the proposal. As previously detailed and documented the proposed golf course development, with the extensive water quality control systems, shall not result in increased nutrient load to the Lake, shall have negligible impact on the hydrology of the Lake and should be approved.

If you have any queries please contact the undersigned.

For and on behalf of

MARTENS & ASSOCIATES PTY LTD



ANDREW NORRIS

BSc(Hons), MEngSc, MAWA

Director