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Mr Alexander Scott
Planning Officer – Infrastructure Projects
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2000

20 August 2013

Dear Alex,

CHAFFEY DAM AUGMENTATION AND SAFETY UPGRADE PROJECT (SSI 5039) – RESPONSE TO REQUESTS FOR ADDITIONAL INFORMATION AND CLARIFICATION

I refer to your requests for additional information and clarification as submitted by email to State Water on:

- 27 June 2013 and 1 July 2013, in relation to the Tier 3 offset approach used for vegetation offsets in the Revised Offset Plan (nghenvironmental, 2013);
- 12 July 2013, in relation to the reduced works corridor for realigned roads and flooding associated with the auxiliary spillway; and,
- 23 July 2013 in relation to traffic and transport impacts and works to the auxiliary spillway.

The additional information and clarification requested by the Department of Planning and Infrastructure (the Department) and our subsequent response to each item is set out below.

1. Email dated 27 June 2013

“Availability of alternative EEC [Endangered Ecological Community] offset sites that will obtain a like for like credits offset for the affected EEC

State Water: The cost of acquiring private land is outside State Water’s budget and Crown land is already held in reserve.

Requirements:

- *The offset proposal requires further justification of the use of the Tier 3 approach in the OEH Interim Offsets Policy.*
- *This justification should include a discussion of the conservation status of surrounding Crown land (i.e. whether any existing designation or protection precludes its use towards an offset), and the cost and ability to acquire private land or enter into management agreements over it.*
- *On this latter point, a survey of the location of land containing the relevant EEC within the vicinity of the site and the market availability and value of that land and/or management agreements should be provided.”*



2. Email dated 1 July 2013

"Justification of the Tier 3 approach as per the OEH Interim Guidelines for the north west offset site."

Response:

An assessment of potential additional EEC offset sites was carried out for the land immediately surrounding the Chaffey Dam reservoir. The outcomes of this assessment are presented in **Attachment A**. The assessment methodology is described below.

Areas of land around the reservoir containing the EEC were investigated for their potential use as additional EEC offset sites. The sites were identified through field surveys and subsequent vegetation community mapping by ngenvironmental as part of the Project Environmental Impact Statement (EIS) and Preferred Infrastructure Report (PIR).

Field surveys have been carried out (at least in part) over each of the sites considered for use as an additional EEC offset site. The survey effort is shown on the figure provided at **Attachment B**. If any of these sites were to be further pursued as an offset site, it is expected that further survey would be required to calculate the offset credits in accordance with the BioBanking Assessment Methodology (BBAM) (DECC 2009).

The vegetation communities surrounding the reservoir, including the EEC, are shown on the figure provided at **Attachment C**.

For each of the identified sites, the following was established:

- Land owner/s;
- Current conservation (reserve) status;
- Estimated market value (acquisition cost);
- Potential market availability; and
- Potential to establish a management agreement over the land.

In relation to the estimated market value, Valuer General's land valuations were utilised where available (refer **Attachment D**). For those properties where no Valuer General's land valuation was available, the market value was estimated based on an average land value per hectare, calculated from those properties with available Valuer General's land valuations.

Real estate websites were also examined to assist in estimating the market value for each site. Using the information for past property sales near Chaffey Dam on website "Onthefhouse" (refer **Attachment E**), an average market value per hectare was estimated for comparison with the average land value per hectare calculated using the Valuer General's land valuations.

In regard to any Aboriginal Lands Claims around the Chaffey Dam reservoir area, the Native Title NSW map viewer shows that Chaffey Dam and surrounding lands are the subject of an active Native Title Claim (Gomeri People) that extends over a very large area of land (111,429 km²).

WorleyParsons has made preliminary inquiries with the Sydney Office of the National Native Title Tribunal in relation to the above Native Title Claim. The advice from the Sydney Office confirmed that the application by the Gomeri People was filed with the Federal Court on 20 December 2011 and entered on the Register of Native Title Claims on 20 January 2012 (refer **Attachment F**).



Based on an assessment of the information above and in particular, the existing designation and use of some land (including reserve status that would preclude the use of such land as an offset site and existing business operations), as well as likely cost for acquisition of land, the potential availability to use the sites assessed as an additional EEC offset site was considered unsuitable to the Project.

As described in the Revised Offset Plan (nghenvironmental, 2013), the BioBanking Public Register was searched on 26 February 2013 and no credits for the EEC community were found to be available on the market.

In determining whether the mitigated net loss standard (i.e. the Tier 3 approach) is appropriate, the *NSW OEH interim policy on assessing and offsetting biodiversity impacts of Part 3A, State significant development (SSD) and State significant infrastructure (SSI) projects* (OEH, 2011) (the OEH Interim Policy) states that consideration should be given to the following matters:

- a) *whether the credits required by the calculator are available on the market;*
- b) *whether alternative offset sites (other than credits) are available on the market;*
- c) *the overall cost of the offsets and whether these costs are reasonable given the circumstances."*

Given the outcomes of the assessment, *all* of the above circumstances apply. The OEH Interim Policy sets out that where *any* of these circumstances apply, then it is reasonable to apply the "variation criteria" so that:

- a) *suitable offset sites can be found within a reasonable² timeframe;*
- b) *the costs of offsetting is brought within a reasonable range; and*
- c) *an offset to clearing ratio of at least 2:1 vegetated to cleared hectares is achieved."*

Attachment B of the OEH Interim Policy sets out the "variation criteria" that may be applied to the offsetting requirements of the BBAM to achieve a Tier 3 approach. As documented in the Revised Offset Plan, variation criteria (a) is relevant to the Project, as shown in Table 1.

Table 1: Variation Criteria for the Tier 3 Approach

Variation criteria	When is this option appropriate?	How this applies to the Project
a) Convert ecosystem credits for one vegetation type to any vegetation type within the same vegetation formation in the same IBRA bioregion (OEH, 2011).	When no matching ecosystem credits are available (OEH, 2011).	<p>Insufficient credits are available at the offset site for Yellow Box – Blakely's Red Gum grassy woodland. White Box grassy woodland credits have been used to satisfy the minimum 2:1 vegetated to cleared hectares requirement for the Box-Gum grassy woodland TEC.</p> <p>Both the Yellow Box –Blakely's Red Gum grassy woodland and Roughbarked Apple - Silvertop Stringybark - Red Stringybark grassy open forest are of the 'grassy woodland' formation. This criteria would also allow for the transfer of the credits between these communities, which would then satisfy the credit requirements of the BBAM (nghenvironmental, 2013).</p>

Given the above, it is considered that the use of the Tier 3 offset approach, as set out in the *NSW OEH interim policy on assessing and offsetting biodiversity impacts of Part 3A, State significant development (SSD) and State significant infrastructure (SSI) projects* (OEH, 2011), is justified.

² What is "reasonable" is contingent upon a range of factors and needs to be considered on a case by case basis (OEH, 2011).



3. Email dated 12 July 2013

- *"How wide is the typical reduced works corridor for realigned roads, if there is a typical corridor?"*
- *Page 237 of the EIS talks about the 0.3 m and 0.5 m additional flooding downstream at Woolomin when the auxiliary spillway spills. What is the flooding in terms of area flooded and depth of flooding (in relation to houses and existing ground level) if the current spillway spills? We need more information on this to flesh out the impacts of operation."*

Response to 1st Point:

The road designs incorporated into the EIS were at a preliminary stage and a wide corridor of land was assessed for the proposed road works. Once the road alignment was finalised and the road design completed, this corridor could be defined more accurately and hence the reduction in area.

The reduced works corridors for the realigned roads have been designed to minimise specific impacts of the Project identified in the EIS. As such, there is no typical corridor width. The reduced works corridors are generally between 40 m and 90 m wide. Some wider areas are also present, which will be utilised for equipment laydown and ancillary facilities.

Response to 2nd Point:

The reference on page 237 of the EIS relates to the original scope of work.

The modified Project will not involve any changes to the auxiliary spillway or fuseplug. However, the proposed raising of the dam will, as a function of the increased reservoir supply level, lead to the threshold for triggering the fuseplug being reduced to the 1 in 1,000 annual exceedence probability (AEP) event (Black & Veatch, June 2013). The original design involved modifications to the fuseplug which ensured that the threshold for triggering the fuseplug was the 1 in 10,000 AEP event.

Therefore, there is potential for modified Project to lead to more frequent occurrences of high flow discharges along the Peel River below Chaffey Dam. For example, if it is assumed that the augmented Chaffey Dam has a design life of 100 years, then the chance of the fuseplug being triggered over this timeframe will increase from 1% under the 1 in 10,000 AEP trigger condition to 9.5% under the 1 in 1,000 AEP trigger condition that will apply for the modified and proposed Project. Therefore, it is 10 times more likely that the fuseplug could be triggered over an assumed design life of 100 years.

While the 1 in 1,000 AEP flood is less rare than the 1 in 10,000 event that is the current threshold for triggering of the fuseplug, it is still a very rare event. Therefore, the triggering of the fuseplug under the alternative dam configuration that is proposed as part of the Project will only occur in very rare meteorological circumstances. Notwithstanding, there is potential for these changed conditions to lead to more frequent occurrences of high flow discharges along the Peel River below Chaffey Dam.

Flood modelling undertaken for State Water by Black & Veatch (June, 2013) indicates that triggering of the fuseplug at the 1 in 1,000 AEP event will lead to little change to tailwater levels and velocities immediately downstream of the dam. It will however, lead to an increase in peak flood levels downstream at Woolomin in circumstances where the fuseplug is triggered. The modified Project (in which there is no change to the fuseplug) will result in 1 in 1,000 AEP flood levels at Woolamin being 0.7 metres higher than for existing conditions.

This clearly is an increased impact at Woolomin. However, it needs to be recognised that the impact will be negligible in terms of any increase in the risk to life at Woolomin. This is because the implementation of protocols documented in the Woolomin Floodplain Risk Management



Plan would ensure the evacuation of all residents of the village prior to the onset of a 1 in 100 AEP flood. Therefore, discharges from the auxiliary spillway in events of the magnitude of the 1 in 1,000 year event or rarer, would not incrementally increase the risk to life as those people potentially affected would have previously been evacuated from the area (URS, 2010).

The predicted increase in depth of flooding at Woolomin in an event where the fuseplug is triggered will have an increased impact on property. That is, the greater depth of flooding will lead to increased damages to property and infrastructure.

However, it needs to be recognised that in an event where the fuseplug is triggered, there will already have been extensive flooding of Woolomin. Much of the possible damage to infrastructure and property will already have occurred and the incremental damage associated with floodwaters due to the release of the fuseplug will only generate a relatively minor increase in property damage.

It should also be noted that no increases in peak 1 in 1,000 AEP flood levels are predicted for Tamworth in the scenario where the fuseplug is triggered.

4. Email dated 23 July 2013

"I'm working through the traffic and transport section of my report and want to clarify heavy vehicle movements to and from the site. The original EIS (p. 206) assumes that concrete batching will occur off-site with concrete brought in on trucks (I assume that this concrete will come from Tamworth). Any on site concrete batching will require a separate approval. I want to clarify the number of truck movements. The EIS talks about doing the spillway works over four eight hour days, based on the capacity of the concrete pump to empty 11 trucks per hour. I realise that the predicted movement of roughly 160 truck movements per day is the maximum capacity, but is the concrete pour actually likely to happen that quickly? If not, what is the likely concrete truck movement?"

The revised construction methodology (page 3 of the response to PIR) includes installation of 7000sqm of precast concrete panels for the dam raising. How many truck movements is this, over what period of time?

Also, as discussed on Friday, can you please clarify what's happening with the auxiliary spillway (i.e. whether or not it is being modified)? If it's remaining as is, can you please advise what rain event will cause the dam to spill at the current and augmented FSLs?

Response:

The volume of concrete required and methodology for construction of the morning glory spillway have been further refined since completion of the EIS and PIR. A volume of approximately 1,170 m³ of concrete will be required for these works. Assuming 12 concrete pours at an average of 100 m³ each, 20 concrete deliveries per day, each with a volume of approximately 7 m³, will be required over a period of approximately 8.5 days. This equates to a total of 40 concrete truck movements per day (to and from site) for a period of 8.5 days.

The precast concrete panels to be used as part of the revised construction methodology to raise the dam wall will be transported from the manufacturer in Tuggerah, NSW, to site via semi-trailer. Transport of the panels to site will require up to approximately 110 semi-trailer loads, over a period of around 55 days (assuming two loads per day). This equates to a total of four truck movements per day (to and from site) for a period of 55 days.

No changes are proposed to be made to the auxiliary spillway during construction of the Project. As the reservoir capacity will be increased as part of the Project, following completion of construction, the auxiliary spillway fuse plug will be triggered by a 1 in 1000 year ARI event, rather than a 1 in 10,000 year ARI event, as is the case at present.



WorleyParsons

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I trust that the responses provided satisfy your requirements. Should you have any questions regarding the information and clarifications, please contact me on (02) 8456 7385.

Yours sincerely,
WorleyParsons

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Reviewed by

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