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# CENTRAL VICTORIAN LIVESTOCK EXCHANGE

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BALLARAT PLANNING SCHEME AMENDMENT C185:

EPA WORKS APPROVAL APPLICATION SERVICE ORDER  
REFERENCE: 1001580

## STATEMENT FROM MEETING OF WATER EXPERTS

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### INTRODUCTION

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A meeting of water experts associated with the Planning Panels Victoria hearing regarding Ballarat Planning Scheme Amendment C185 was held by telephone on Friday 19 June 2015.

Present were:

Mr Glenn Marriott  
Mr Martin Haege  
Mr Greg Hoxley  
Mr Charles Mellish  
Dr Dean Lanyon

The purpose of the meeting was to identify for the Panel areas of agreement and any remaining areas of disagreement between the experts in relation to water matters.

### MEETING OUTCOME

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*The water experts met and discussed the matters raised in the expert witness statements. As a result of the information and clarifications contained in the exchanged statements there were no matters of disagreement.*

*The experts concur that the information provided is suitable for the application. The experts concur that there are no outstanding concerns as to the feasibility of, or impacts from, the proposed operation as described.*

*The experts also agree that there are matters of operational detail that are not yet completely specified. It was agreed that the level of specification provided and as elaborated on in the expert statements is appropriate for this stage of the proposed works. The experts also agree that the matters of further detail should be included at the development application stage (after the current planning stage). The experts agreed that the areas of further detail are: operational protocols; monitoring; and commissioning activities.*

## PROCESS

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Following the exchange of expert reports the experts on water related matters met by telephone. The meeting was organised by Harwood Andrews who provided teleconference arrangements but they were not present during the meeting. The meeting was chaired on behalf of the group by Mr Greg Hoxley.

At the opening of the meeting brief introductions were made and an agenda was proposed for the session. A reminder was provided to all participants that the primary duty of the experts was to the Panel and that the meeting was intended to assist the Panel in its deliberations and that the meeting outcomes should be directed to that end. It was proposed that the best approach was for Mr Mellish and Dr Lanyon to summarise the concerns and issues from their statements in light of all of the exchanged reports. From there the areas of agreement and difference would be determined.

At this point in the meeting both Mr Mellish and Dr Lanyon indicated that the exchange of statements had added considerable clarity to the detail of the proposed operation. They were satisfied that all of their concerns and matters requiring more detail that had been raised in their statements had been addressed or resolved by the recent exchange of expert statements and that nothing of substance remained outstanding. The experts all agreed that there were no matters of disagreement.

The meeting then resolved to generally discuss the application considering the comments made in the statements of Mr Mellish and Dr Lanyon to ensure that all matters were resolved.

## DISCUSSION

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The following matters were discussed by the experts and these comments are provided for the benefit of the Panel.

### WATER TREATMENT - ODOUR MANAGEMENT

The operation of the site to minimise odour release will be an important management task. The site has been designed to avoid generation of odours through the use of facultative ponds. Care will need to be taken through the commissioning process to manage the loads to allow proper operation of the treatment system to develop. Regular sampling and specialist support are desirable during the commissioning phase. This should be defined in the operations management plan for the site.

### WATER TREATMENT – DISCHARGE STANDARDS

The nature and location of the point at which the required water quality standards will be met was discussed. It was agreed that the outlet to the storage pond (offtake to irrigation) is the point at which the water quality should be tested. This means that it is important to ensure by the detailed design that the storage pond has appropriate mechanisms to manage and maintain residence time in the storage. It was acknowledged that the *E. coli* standards are an averaged (median) measure over 12 months and that there is the potential for individual samples to be above the mean and that this is consistent with the guidelines and requirements. The experts agree that the design of the system is expected to be able to meet the required standards.

## WATER TREATMENT – CONTINGENCY MEASURES

The need for contingency measures for effluent disposal was discussed. It was agreed that a suitable short term contingency would be trucking of non-conforming effluent off-site. It was also agreed that the option of connection to the Central Highland Water reticulation system was a viable contingency measure. It was not expected that a connection would be a requirement of the construction or initial operation.

## WATER TREATMENT – COMMISSIONING

The need for specialist advice and support during the commissioning stage of the treatment system was discussed. It was agreed that specialist support would be required and that this had been allowed for in the commissioning plan. It would be expected that there was suitable monitoring that would be required and that the operations plan for the site should include a description of this at the time of development application. It was agreed that this was not a special requirement of this site but was a general requirement for facilities of this type and is good practice.

## IRRIGATION – SOIL PROFILE DESCRIPTIONS

It was agreed that the soil profile descriptions and detail on soil physical and chemical attributes was significantly improved by the recent work that was documented in the expert reports. Measures such as profile EC, ESP and permeability were now present at representative locations across the site to provide the detail required to assess the appropriateness for on-site effluent disposal.

## IRRIGATION – DESIGN APPROACH

The use of rainfall as well as irrigation amount and water quality parameters to inform the resultant soil E<sub>c</sub> was discussed. The overall hydraulic loading of the soil and likely leaching fraction and resultant soil salinity and potential soil structural degradation should be assessed as part of the expected operational conditions for the site (at a later stage) to ensure that the operators have an understanding of the intended targets for operation. It was agreed that it would be useful to have a full (average annual) water balance for the irrigated land included in the final design documents so that it would be available in future. This would include an estimate of effective rainfall as well as irrigation. It was agreed that the water balance undertaken to inform soil salinity and sodicity impacts on the landscape is sufficient at this stage. It was agreed that based on the recently collected data there were no concerns as to the viability of the intended effluent application volumes to the landscape.

## IRRIGATION – NUTRIENT EXPORT

The sources of the data used for the nutrient balance were discussed. It was agreed that the operational manual for the site should include monitoring requirements so that the nutrient export can be confirmed during operation. The operational environmental management plan for the site should include trigger levels for N and P in soil.

## IRRIGATION – NUTRIENT LOAD

The overall nutrient load was discussed. It was confirmed that the site is planned as a cut and carry operation. During the discussion the potential for incidental grazing of livestock was discussed. This is expected to be of short duration as required by space management in the buildings. As this was not fully documented in the material to date it was verbally explained during the meeting. Following the explanation there was no disagreement. No concerns remained about the viability of the irrigation. It was agreed that intended incidental grazing

would be documented and included in the minutes of the meeting. This is included as attachment one.

#### IRRIGATION – 1 IN 100 YEAR FLOOD LEVEL

The intended use of land below the 1 in 100 year flood level for irrigation was discussed. It was agreed that this did not present any particular operation or performance difficulties and was not a concern to the experts. It would be expected that the site operations management plan would include a description of the management of this area in detail.

#### IRRIGATION – LEACHING

The rate of leaching and drainage below the root zone was discussed. It was agreed that at the detailed design stage (as part of a development application) it would be desirable to include estimates of the deep drainage rate and the likely EC and nutrient concentrations drainage below the root zone.

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#### DOCUMENT CONTROL

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## ATTACHMENT ONE – DESCRIPTION OF INTENDED INCIDENTAL STOCK GRAZING

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### *Introduction*

The proposed Central Victoria Livestock Exchange (CVLX) will include multiple resting paddocks for livestock to rest and freshen up before or after sales or transport (Regional Infrastructure, 2015).

Some of these paddocks will be in areas that will be used for effluent irrigation. It is important that the majority of the effluent reuse area is managed as a cut and carry program to ensure nutrients are removed from the site. Holding stock for short periods will add an additional nutrient load to the areas.

This addendum provides details of how these paddocks will be used and the expected impact on nutrient balances.

### *Resting Paddocks*

The total irrigation area available on the CVLX site is 26.6 ha. Resting paddocks occupy 21 ha of the total irrigation area. The resting paddocks will be used for some livestock to rest and freshen up before or after sales or transport. Typically short-term holding may be used before or after sales as stock arrive early or are waiting for transport. Stock are provided with feed and water while they are in the resting paddocks. The resting paddocks are used intermittently when the holding yards in the main centre are full. Stock are usually held for an average of 2 days (typically the day before and day after sale day).

### *Nutrient Balance*

The following nutrient balances consider the total average annual nitrogen loads.

Based on the data presented in the revised water cycle management report (Geolyse, 2015) the total available nitrogen load from the effluent management system is 4,830 kg/year.

A full lucerne cropping program would utilise 5,950 kg/year; a deficit of 1,120 kg/year.

A full ryegrass cropping program would utilise 4,900 kg/year; a deficit of 70 kg/year.

A four year rotation of lucerne and ryegrass (i.e. 6.6 ha lucerne; 20 ha ryegrass) would utilise 5,160 kg/year; based on the full and limited irrigation areas and 5,720 kg/year on a full uptake rate; a deficit of between 330 to 890 kg/year.

Therefore an additional nitrogen load of around 300 to 800 kg/year could be managed under a rotational lucerne/ryegrass program.

It should be noted that this is the current theoretical “spare” capacity based on the assumptions outlined in the revised water cycle management report which could vary, up or down.

### *Estimated Stock Numbers*

Nitrogen is the limiting nutrient for effluent reuse on the site. Data published by the American Society of Agricultural Engineers (ASAE, 2003) shows the following nitrogen load (as measured by TKN) from cattle and sheep per 1,000 kg live animal mass per day:

- Beef cattle 0.34 kg/hd/day
- Sheep 0.42 kg/hd/day

The proposed CVLX facility will include holding yards within the main complex that would be used for prime cattle. These would also be used as the first preference for temporary holding of store cattle and sheep. Therefore only some store cattle and sheep would use the resting paddocks.

Adopting average live weights of 400 kg and 40 kg for store cattle and sheep respectively gives the following nitrogen load per day:

- Store cattle 0.14 kg/hd/day
- Sheep 0.017 kg/hd/day

This indicates that 10 sheep are approximately equivalent to one head of cattle, which is called one unit. Adopting 0.15 kg/unit/day as the average and allowing for 15% volatilisation loss provides a load of 0.13 kg/unit/day. The “spare” 800 kg/year of nitrogen provides capacity for approximately 2,310 to 6,150 unit days. On a per sale basis this could be:

- 90 to 240 head of store cattle for 2 days each sale ( $\text{unit days} \div 13 \text{ (sales per year)} \div 2 \text{ (days per sale)}$ ); or
- 220 to 590 head of sheep for 2 days each sale ( $\text{unit days} \div 52 \text{ (sales per year)} \div 2 \text{ (days per sale)} \times 10 \text{ (conversion of unit to sheep)}$ ).

Or, for example, it could mean 440 to 1,180 head of sheep for 2 days every second sheep sale; or 660 to 1,770 head of sheep for 2 days every third sale etc. These numbers therefore show a theoretical annual limit to the site that needs to be managed, rather than stock limits that need to be applied for each sale. Use of the resting paddocks would need to be managed based on monitoring results.

### *Management*

Management of the resting paddocks and effluent irrigation would include:

- A withholding period of 4 hours (or dry pasture) following irrigation consistent with Table 3 of EPA 464.2 (EPA, 2003) – this can be achieved through rotational irrigation;
- Ensuring adequate feed is available for stock to minimise impact on pasture;
- Monitoring the number of stock using the resting paddocks;
- Monitoring the status of pasture in the resting paddocks;
- Ensuring some resting paddocks are used as solely cut and carry on a rotational basis (i.e. no stock holding);
- Applying more effluent in areas that do not have stock holding to match nitrogen loads; and
- Adjustments to the irrigation, cropping and stock holding regime based on the results of monitoring.

### *References:*

American Society of Agricultural Engineers (2003) Manure production and characteristics. ASAE D384.1 FEB03. <http://large.stanford.edu/publications/coal/references/docs/ASAESstandard.pdf>

EPA (2003) Guidelines for environmental management use of reclaimed water Publication 464.2. EPA Victoria.

Geolyse Pty Ltd (2015) Revised water cycle management report Central Victoria Livestock Exchange.

Regional Infrastructure Pty Limited (2015) CVLX Development & Operational Overview.