MELBOURNE METRO RAIL PROJECT ENVIRONMENT EFFECTS STATEMENT INQUIRY AND ADVISORY COMMITTEE

MMRA TECHNICAL NOTE

TECHNICAL NOTE NUMBER:	062
DATE:	26 September 2016
PRECINCT:	All Precincts
EES/MAP BOOK REFERENCE:	N/A
SUBJECT:	Response to the 'Matters for further consideration and/or clarification' request dated 12 September 2016 (vii) Groundwater

NOTE:

1. This Technical Note has been prepared with the assistance of Golder Associates to respond to issues raised by the Inquiry and Advisory Committee (**"IAC"**) in the 'Matters for further consideration and/or clarification' request dated 12 September 2016.

2. For ease of reference, this Technical Note sets out each relevant request made by the IAC followed by a response from MMRA.

Request:

3. The IAC has made the following request:

   A 10% reduction in general available saturated thickness is often used by Victorian Government authorities as a threshold for identifying unacceptable drawdown impacts on aquifers. Confirmation of whether MMRA intends to use this standard to assess impact under EPR GW3.

Response:

4. Objective specific criteria will need to be developed by the PPP Contractor in its Groundwater Management Plan (**"GMP"**) in order to comply with EPR

GW3. A flat 10% threshold is not proposed to be included in the EPRs, because it may not always be appropriate to apply such a threshold.

5. For example, a 10% reduction in general available saturated thickness would not be an appropriate criteria for limiting the potential for consolidation settlement of Coode Island Silt, as the criteria will need to focus on limiting the amount of depressurization of the confined aquifer beneath the Coode Island Silt, rather than limiting the amount of dewatering within the Coode Island Silt itself.

6. However such a criterion could be used as a potential mitigation option to protect an existing registered groundwater bore, which is a typical "rule of thumb" used when assessing tolerable drawdowns for an existing bore by the rural water corporations.

Request:

7. The IAC has requested:

Clarification on whether the modelling of the geometry/thickness (depth) of the CBD station caverns is accurate. In particular:

a. Whether the information on page 41 of the Golder modelling report relates to the base of the set model layers, rather than the total opening height difference.

b. Whether the total cavern opening is 19m or 11m as actually modelled.

c. Whether the identified base of each layer in the modelling is intended to approximate the constructed cavern height.

d. The implications of the above, if any, for both drawdown and groundwater flows into the CBD stations.

Response:

8. Responses to Requests a. to d. above are as follows:

   a. The elevations provided on page 41 for CBD North Station do not relate to the excavation height. The elevations relate to the base elevations for each excavation stage. These elevations in combination with the time lines shown on page 41 were used to define fixed head functions in the model, which were used to simulate the excavation progression over time. Information on page 37 relates to the CBD South Station excavation schedule, which was used to define the fixed head function for the CBD South Station excavation progression.

   b. The height of the cavern opening was not simulated as 11 m or 19 m in the model. In the model, the station cavern extended vertically through 3 model layers and had a simulated excavation height of 15 m upon completion of cavern excavation. The cavern cells were simulated in the model by assigning them low specific storage and specific yield to enable them to quickly drain, as the fixed head boundaries were lowered during cavern excavation. This simplification of the cavern cross section in the model was considered

sufficient to provide a preliminary assessment of potential groundwater impacts for the purpose of the EES.

c. The base of each layer was located to approximately match the base elevation of each cavern excavation stage. The opening height was simulated as outlined in the response to comment (b).

d. While the opening height assumed in the model will have influenced the predicted drawdowns and inflows, it is not considered to have had a significant influence on the overall model results. This is because the excavation base elevation will have had a far greater influence on drawdown development and excavation inflow over the approximately two year time period, as the station excavations will remain drained prior to sealing.

CORRESPONDENCE:

No correspondence.

ATTACHMENTS:

No attachments.