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02 December 2022

Altis Property Partners

Attention: Mr Stephen O'Connor

GPO Box 4456

SYDNEY NSW 2001

Dear Sir,

Re: SSD-17647189 Access Logistics Estate
Response to IDC Integrated Water Cycle Management Review

Further to your request we provide this letter in relation to the above project. Specifically, we provide this letter in response to the *Integrated Water Cycle Management Review* undertaken by IDC in their letter reference *Access Business Park Review v2.0 dated 21 October 2022* (refer **Enclosed**). We provide updated MUSIC modelling and **Revision F** of the *Civil Engineering Report Incorporating Water Cycle Management Strategy (inc. RtS Response)*, reference **Co14021.00-07g.rpt**, and the following responses (**Tables 1 and 2**) to the comments (where relevant) included in the IDC letter.

Table 1. DCP Compliance Matrix

No.	Control	IDC Comments	Costin Roe Consulting Response
Section 2.4 Integrated Water Management			
1)	Development applications must demonstrate compliance with the stormwater quality targets in Table 4 and the stormwater flow targets during construction and operation phases in Table 5 and Table 6 at the lot or estate scale to ensure the NSW Government's waterway objectives (flow and water	<i>The modelling demonstrates compliance with the Option 2 Flow Duration Curve (FDC) targets and Option 1 of the Pollution Removal Rates of the EES requirements, however, there appear to be a number of issues that need to be resolved with the MUSIC modelling. Refer to Section 3 for more details.</i>	Revised MUSIC modelling has been undertaken based on the comments and review completed by IDC and the revised parameters recommended by IDC. The revised modelling (as enclosed and included in Revision F of the <i>Civil Engineering Report Incorporating Water Cycle Management Strategy (inc.</i>

No.	Control	IDC Comments	Costin Roe Consulting Response
	<p>quality) for the Wianamatta-South Creek catchment are achieved (see Appendix D). Where the strategy for waterway management is assessed at an estate level, the approval should include for individual buildings within the estate, which may be the subject of future applications.</p>		<p><i>RtS Response</i>), reference Co14021.00-07g.rpt dated 25 Nov 2022, confirms compliance with the stream health and water quality objectives of the MRP DCP and Wianamatta South Creek Music Modelling Toolkit. Reference to Section 5.1, Section 7.3 and Section 7.5 should be made for confirmation of revised modelling results.</p>
2)	<p>The stormwater flow targets during operation phase (Table 5) include criteria for a mean annual runoff volume (MARV) flow-related option and a flow duration-related option. Applicants must demonstrate compliance with either option.</p>	<p><i>Refer to Commentary for Waterway Health and Water Sensitive Urban Design Point 1 above.</i></p>	<p><i>Refer Item 1 comments.</i></p>
6)	<p>Development must not adversely impact soil salinity or sodic soils and shall balance the needs of groundwater dependent ecosystems.</p>	<p><i>Section 7.4 of the Civil Engineering and Water Cycle Management Report seems to indicate that rainwater harvesting is not proposed for the estate development, but the MUSIC model has significant rainwater re-use in the Rainwater Tanks. The Wianamatta Street Trees, Raingardens and Wetland all have infiltration which has not been supported with a Salinity and Sodicity soil assessment demonstrating that these will not have an adverse impact on the soils.</i></p>	<p>Refer to Section 7.4 of the updated <i>WCM Report</i> for details on rainwater harvesting.</p> <p>Refer to separate letter from PSM for responses relating to groundwater and salinity, confirming impact on salinity or sodic soils.</p>

Table 2. Music Modelling Review

IDC Review Item	Costin Roe Consulting Response
<p>Exfiltration Rate</p> <p>The exfiltration rate in MUSIC is listed as 1mm/hr which is significantly larger than MUSIC modelling parameters used by other consultants in the Mamre Road Precinct. In addition to this the exfiltration rate for the street tree irrigation is 0.36mm/hr which is consistent with this other work. Site specific saturated hydraulic conductivity testing should be provided to justify these rates and a single rate adopted for the site.</p> <p>Furthermore, an analysis of the earthworks model in the vicinity of the Temporary Wetland shows excavation to depths of 1-2m. It is therefore doubtful that a sufficient soil profile will be available for water to infiltrate in to. The proposed infiltration rates must also be justified with this in mind.</p> <p>Finally, any proposed infiltration must be supported by a salinity and sodicity assessment. This will need to be provided for review.</p> <p><u>Updated response (20/10/2022):</u></p> <p>The Temporary Wetland has been removed in the updated MUSIC model. Refer to Section 3.1 below for discussion of water treatment devices in the updated modelling configuration.</p> <p>It is noted in The Mamre Road DCP Assessment Table (Appendix C31), the MUSIC model allows for stormwater infiltration based on the soil profile identified in the Geotechnical Report by PSM. The PSM assessment indicates that soils are non-saline to moderately saline with high sodicity. Further, the JBS&G report has indicated moderate to highly saline groundwater conditions. There is no specific statement supporting infiltration on the site – which is required.</p> <p>Most test pits from the site indicate bedrock has been reached at depths of 2-3m, with excavation depths of up to 5m in certain locations. Some basins appear to be</p>	<p>Initial Response (23/09/2022)</p> <p>The exfiltration rate used in the MUSIC modelling has been revised to the lower value of 0.36mm/hr. Where wetlands are to be constructed, highly weathered rock is noted to be present at depths greater than 2.0m. The permeability of 0.36mm/hr for this stratum is considered appropriate. Refer to separate response letter from PSM for responses relating to groundwater and salinity.</p> <p>Revised Response (02/12/22)</p> <p>With reference to our updated MUSIC model “14021.01-SSDA+RtS_Stage 1_Rev3.mxproj”, it is noted that the exfiltration rate has been revised for all nodes to be 0.01mm/hr. It is therefore considered that all basins will be lined to prevent infiltration into the subgrade.</p>

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<p>sitting on, or very close to bedrock which would preclude infiltration.</p> <p>We require the geotechnical investigations to specifically address and support infiltration at the locations of the proposed basins, bioretentions etc.</p>	
<p>Evaporative Losses</p> <p>The evaporation rate is listed as 125% of PET, however standard engineering practice is that evaporative loss should normally range from 75% of PET for completely open water to 125% of PET for heavily vegetated water bodies.</p> <p>For this basin we would expect evaporation to be 100% of PET, as has been modelled in other estates in the Precinct. The proponent should provide justification for this assumption or adjust the modelling to suit.</p> <p>Updated response (20/10/2022):</p> <p>Discussion regarding evaporative losses for proposed treatment devices is outlined in Section 3.1. Detention basins and sedimentation basins have updated evaporation rates to the recommended value of 100% of PET.</p>	<p>Initial Response (23/09/2022)</p> <p>The evaporation rates used in the MUSIC modelling has been revised to the recommended value of 100% PET.</p> <p>Revised Response (02/12/22)</p> <p>No further comment</p>
<p>Re-Use (Landscape Irrigation)</p> <p>The landscape irrigation re-use associated with the rainwater tanks in the MUSIC model is modelled as PET-Rain, but there is no information on the plans showing which parts of the site will be irrigated. We request a landscape plan that shows the areas proposed for irrigation for each tank.</p> <p>Updated response (20/10/2022):</p>	<p>Initial Response (23/09/2022)</p> <p>The irrigation re-use distribution used in the MUSIC modelling has been revised to PET-Rain as recommended. A detailed breakdown of the re-use has been provided in Section 7 of the <i>Water Cycle Management Strategy (inc. RtS Response)</i>, reference Co14021.00-07f.rpt</p> <p>Revised Response (02/12/22)</p>

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<p>A WSUD plan outlining areas proposed for irrigation for each tank has not been provided. Justification for nominated annual/daily demand values is also required, including assessment of appropriate use for irrigation on site. Discussion regarding re-use for proposed treatment devices is outlined in Section 3.1.</p>	<p>Refer to drawing Co14021.00-SSDA405 for the requested WSUD Plan. The plan depicts areas of water storage and re-use to satisfy the MRDCP runoff management objectives. The plan confirms rates of irrigation, evaporative misting and non-potable re-use (i.e. toilet flushing).</p>
<p>Wetland Volume</p> <p>The initial volume of the Wetland is set to 1,000m³ which is less than the permanent pool volume of 2,000m³. The initial volume should be equal to the permanent pool to reflect the pond being full at the start of storm events.</p>	<p>Initial Response (23/09/2022)</p> <p>On review, the initial & permanent storage volumes have been set to 0m³. The basins are designed to drain till empty via the proposed pumps over a prolonged period until empty.</p>
<p>Wetland Bypass Flows</p> <p>Piped drainage drains to the temporary evaporation/infiltration basin with road overland flows by-passing the system, but the high flow bypass is in MUSIC as 100m³/sec. The high flow by-pass should be updated to reflect the actual flows entering the basin.</p> <p>Updated response (20/10/2022):</p> <p>The Wetland node has been removed in the updated MUSIC model, however high-flow bypass values for other treatment nodes require revision. The high-flow bypass for bioretentions, ponds, sedimentation basins and detention basins have not yet been updated.</p>	<p>Initial Response (23/09/2022)</p> <p>Piped flows and overland flows are proposed to be diverted into the basin, such that high-flow bypass will be dealt with by the basin weir/orifice system. Final details are to be confirmed during detailed design or post approvals stage.</p> <p>Revised Response (02/12/22)</p> <p>High-flow bypass rates have been adjusted where relevant in our updated model. We confirm that Nodes modelling volumetric treatment/storage (i.e. sediment basins, bio-retention basins & storage ponds) do not require a high-flow bypass. The bypass of these nodes is driven by a volumetric supply/demand relationship rather than peak flows.</p>

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<p>Wetland Contributing Catchment</p> <p>Lot 13 and half of lot 15 do not appear to drain to the temporary wetland. The MUSIC model should be updated to reflect this.</p> <p>Updated response (20/10/2022):</p> <p>The Wetland node has been replaced with a basin, however further to the above, the catchments draining to each device should be shown on a MUSIC catchment plan which clearly shows MUSIC modelling catchment boundaries, location of all WSUD devices etc. (refer Section 3.1).</p>	<p>Initial Response (23/09/2022)</p> <p>All lots are proposed to drain to the relevant basins/wetlands. Refer updated drawings in Appendix A of Co14021.00-07f.rpt</p> <p>Revised Response (02/12/22)</p> <p>Refer revised response to “Evaporative Losses” above. We confirm a WSUD Plan has been compiled to address these comments.</p>
<p>Rainwater Tank – Re-use</p> <p>The proponent should confirm the rainwater tank volumes in MUSIC vs what is proposed on plan. The modelled volume should be 80% of the physical rainwater tank volume.</p> <p>Updated response (20/10/2022):</p> <p>The compliance matrix states that the modelled volume of rainwater tanks is based on 80% of that nominated on plan, we request adding these details to a WSUD plan.</p>	<p>Initial Response (23/09/2022)</p> <p>The modelled volume of rainwater tanks is based on 80% of that nominated on plan.</p> <p>The size of the rainwater tank is nominal only. The final dimensions of the tank will be confirmed as part of detailed design, or post approvals stage</p> <p>Revised Response (02/12/22)</p> <p>Rainwater tank on Lot 2 is sized at 280kL, and modelled storage is 225kL.</p>
<p>Trunk Stormwater Drainage</p> <p>The Trunk drainage diversion shown in the civil plans appears to satisfactorily manage flows from upstream properties. We request confirmation that these trunk drainage pipes will remain in private ownership as per the requirements of the DCP.</p>	<p>Initial Response (23/09/2022)</p> <p>We note that piped trunk drains within the road reserve will remain in private ownership unless they are accepted by Council per <i>Control 16</i> of <i>Section 2.4</i> of the MRDCP.</p>



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<p>MUSIC Modelling Review Summary (20/10/2022):</p> <p>As noted in Section 7.5.2 of the Civil Engineering Report, the scope of the application includes “construction of Building 2, the roadways and earthworks over the remainder of the estate.” The civil drawings indicate three stages of development (CO14021.00-SSDA-201-203.pdf), however the MUSIC model appears to be a combination of the initial stage works (including the temporary basin) and the final built out scenario (rainwater tanks for all future lot roof areas). This does not reflect either the initial construction works or the final built scenario. As such, it is impossible to determine if the initial, or final scenarios comply with the WSUD requirements. We request a model for the initial development of the earthworks, estate roads and Lot 2 (Warehouse 1) for review.</p> <p>Further clarifications/issues include:</p> <ol style="list-style-type: none"> 1. Rainwater tanks for ‘Lot 15’ and ‘Lots 4-14’ are proposed to connect to Estate Basins 2 and 3 respectively in the MUSIC model. The report suggests those catchments are undeveloped and as such, rainwater tanks should not yet be implemented at this stage. 2. The ‘Lot 9 & 10 Holding Basin’ has been modelled as a temporary sedimentation basin with re-use rates that are not explained. The civil plans also indicate a pumped discharge rate of 20L/day, with no reference to the report for its purpose/destination. We request clarification on what the re-use is and the calculations behind the re-use rates in the MUSIC model. 3. It is unusual for detention basins to be modelled in MUSIC as WSUD devices as they are typically connected to permanent drainage pipes and empty over a period of an hour or two. We request that the types of basins selected for MUSIC modelling are explained in the report and match the model and civil plans. 	<p>Response (02/12/2022)</p> <p>We confirm that the scope of works being submitted for approval is for the infrastructure works, including bulk earthworks, services, road & intersections, and stormwater management, and Lot 2 only as stated in Section 2.3 of the report. Drawings SSDA201 – 203 describe the erosion & sediment control measures required for construction, and only consider construction soil and water, not operational in accordance with the WSUD guidelines in the DCP. These plans should not be used for inference of development staging. Drawings SSDA400, SSDA405 and SSDA411 describe the operational stormwater management measures proposed for approval.</p> <p>We provide the below responses to IDC’s further clarifications:</p> <ol style="list-style-type: none"> 1. We note that IDC are reviewing the ultimate “Book End” scenario. This is not the scenario being submitted for approval. The revised model <i>14021.01-SSDA+RtS_Stage 1_Rev3.mxproj</i> has removed this scenario. We confirm that Lots 4-15 are not being developed as part of this approval. 2. Refer to the provided WSUD plan Co14021.00-SSDA405 for clarification. 3. We confirm that detention basins are not modelled. The storage modelled in MUSIC are re-use storage vessels only, with re-use rates described in the report and on the WSUD plan

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<p>4. Infiltration has been proposed for bioretention devices, sediment basins and detention basins in the MUSIC model. The supplied geotechnical report by PSM indicate non-saline to moderately saline soils with high sodicity levels, which would not appear to be appropriate to receive water infiltration. If infiltration is proposed, we require the salinity and sodicity assessments to specifically address infiltration at the proposed location of treatment basins with statements supporting their use and lack of impact on the salinity and sodicity of soils.</p> <p>5. Evaporative losses have been updated for detention basins and sedimentation basins to the recommended value of 100% of PET, however the suitability of some these selected treatment devices requires justification (i.e. Wianamatta Street Trees modelled as ponds rather than bio-retention).</p> <p>6. Several high-flow bypass rates have been set to 100m³/s which could overestimate the quantity of water flowing through the WSUD devices. We request that the high-flow by-pass rates be updated to reflect the hydraulic capacity of each device.</p> <p>7. If infiltration is to be used (noting the advice above), the infiltration rates should take into account the soil profile beneath them. For example, Basin 1 has infiltration with excavation depths of up to 5m, however the PSM report suggest the soil profile at this location cuts into bedrock at 2-3m depth.</p>	<p>4. Infiltration rates have been revised to be 0.01mm/hr, being the minimum possible in MUSIC</p> <p>5. Confirming 100% of PET has been adopted for the relevant nodes in the model. The use of a pond node for street trees is considered valid as it considers the saturated zone in the filter media in accordance with the Mamre Road Draft DCP.</p> <p>6. High-flow bypass rates have been adjusted where relevant in our updated model. We confirm that Nodes modelling volumetric treatment/storage (i.e. sediment basins, bio-retention basins & storage ponds) do not require a high-flow bypass. The bypass of these nodes is driven by a volumetric supply/demand relationship rather than peak flows.</p> <p>7. Per above, infiltration has been modelled as 0.01mm/hr.</p>

We trust the information contained in this letter meets your current needs. Please contact the undersigned if clarification of any items is required.

Yours faithfully,

COSTIN ROE CONSULTING PTY LTD



MARK WILSON MIEAust CPEng NER
Director

Encl. IDC Review Letter



ENCLOSURE
IDC INTEGRATED WATER CYCLE MANAGEMENT REVIEW
21-030 ACCESS REVIEW V1.0 DATED 14 JUNE 2022