

Civix Limited
 Level 1, 87 Albert St
 Auckland Central, Auckland, 1010

13 April 2022

Lakshmi Nair
 Healthy Waters

20 Melia Place, Stanmore Bay - Fast Track Application – Responses to Healthy Water Queries

Dear Lakshmi,

This letter has been written to provide responses to the queries raised by Healthy Waters in relation to the stormwater management proposal for the site. Following a formal request on 3 March 2022, a meeting was held on the 21 March 2022 to discuss Healthy Waters’ queries. A summary of the queries and the responses are outlined below:

Healthy Waters Request	Response	Sheets Affected
<i>In respect of water quality there is no mention provided on the type of material and water quality for the private yard spaces.</i>	Private yard spaces have been updated to permeable pavement. No water quality requirement for these areas	Infrastructure report drawings 1400-1409
<i>In respect of Stream Hydrology the runoff from private yard spaces have not been included in JOAL tanks or individual dwelling tanks .</i>	Private yard spaces have been updated to permeable pavement. No water quality requirement for these areas	Infrastructure report drawings 1400-1409
<i>The infrastructure report has missed giving any details on the building over the 525mm diameter stormwater pipe and the proximity of the dwelling at lot 20 to a manhole.</i>	The stormwater design has been updated to avoid building over the existing stormwater line.	Infrastructure report drawings 1400-1409



<p><i>The flood report contains no details such as calculations or plans to explain how the OLFP is diverted within the development and the flood plain is dispersed (included in the infrastructure report). There are also no details provided on the model schematisation, input data and parameters used in the model, therefore it cannot be determined whether the modelling methodology is appropriate.</i></p>	<p>Responses to flood modelling comments in Appendix 5c from Hansol Lee are as below:</p> <ol style="list-style-type: none"> 1. Regarding the inflows, rainfall is accounted for at source rather than all being included at the inflow at the top of the site. Methodology has been updated accordingly. 2. Model scenarios: 2 scenarios have been implemented. The model area extends one lot width north of the development site and all areas within the model area are based on existing and proposed topology and impervious coverages to accurately model flows into the development site. The area upstream of the site contributing to inflows into the model extent is primarily road corridor therefore impervious coverage is not expected to change under MPD. 3. Impervious area of MPD updated in SMP to 60% 4. Channelisation factor has been changed to 0.6 5. 10yr scenario has been added. 6. No pipes are included in the model in accordance with AC modelling guidelines (pipes >600mm assumed 100% blocked) 7. No head discharge relationship is applied on the manhole. 8. Volume difference is shown in table 3, section 8 of the flood modelling methodology. <p>As discussed in the meeting with Healthy Waters, retaining walls introduce instability in the Tuflow model. To avoid this, a high mannings value is given for retaining walls which stabilizes the model however it shows unrealistically high water depths where flow paths run over or adjacent to walls.</p>	<p>Flood modelling methodology 1340-1351</p>
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The following documents have been updated in response to this request:

- **Appendix 5A – Infrastructure Report**
- **Appendix 5B – Stormwater Management Plan**
- **Appendix 5C – Flood Modelling Methodology**

Should you have any questions in relation to any of the above, please feel free to contact the undersigned on 0211101863 or via email jack@civix.co.nz.

Kind Regards,



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