

# Request for Further Information Response Register

Consent type and number                    MH CI 23 PPC84 PF 2023 04 06  
 Address    Mangawhai Hills, Tara Road, Cove Road, Old Waipu Road, Moir Road.  
 Subject     RFI

KDC Council Request 23.04.2023		Chester Response 12.05.2023			
<b>Regulatory Engineering Requirements</b>					
1.	In terms of the options presented in the proposal for using community wastewater plants or onsite treatment solutions, please demonstrate further details in respect to the proposed phasing of the development, which considers any potential impacts on Council’s network at the time of subdivision resource consent	Within the area owned by the applicant, it is proposed to construct 50 houses per year, over a 10 year span, with a resultant total 500 new dwellings at the end of the 10 year development period. Infrastructure required is to be constructed during Stage 1 to provide WW treatment for future stages.			
2.	Please provide an indication of the potential subdivision lot yield for the purposes of calculating the future effluent requirements for a possible connection to a public system if and when this would be required.	<p>A total of approximately 500 lots are proposed within the applicant’s site to be served by private on-site treatment. Traffic assessments allow for a yield of 600 lots in total within the total plan change area, so there is potential for approximately 100 lots in the future that may require connection to the public wastewater network.</p> <p>Design flow for private wastewater treatment (approx. 500 Lots):            Average Dry Weather Flow – 2.52L/s            Peak Dry Weather Flow – 6.29L/s            Peak Wet Weather Flow – 12.59L/s</p> <p>Design flow for potential public connection (100 Lots):            Average Dry Weather Flow – 0.50L/s            Peak Dry Weather Flow – 1.26L/s            Peak Wet Weather Flow – 2.52L/s</p>			

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<p>3.</p>	<p>Please provide calculations for impermeable surfaces demonstrating the overall, upper end percentages, if the development area is to be developed to the full extent of the site, taking into account the proposed green spaces.</p>	<p>Please refer to the attached spreadsheet for coverage calculations.</p> <ul style="list-style-type: none"> <li>Existing Model = 10% Impervious, 90% Pervious</li> <li>Surrounding Area at Residential MPD, Site Area Rural = 37% Impervious, 63% Pervious</li> <li>Entire Catchment Area Residential MPD = 50% Impervious, 50% Pervious</li> </ul>	
<p>4.</p>	<p>Please verify flood models based on levels from the recent weather event in Mangawhai (24th February 2023). It's noted that there is a potential risk of flooding at 114 Moir Street, which could be cumulatively impacted by the proposed development. Given the low accuracy of hydrological models, there may be value in using this recent information as confirmation of the calculated flood levels</p>	<p>The client has since been to visit the property to speak to the resident and enquire about recent flooding events experienced in February 2023. It was reported by the resident that flood waters approached 'within 100mm' of the FFL on February 27th 2023. It is unclear if this was measured accurately and is anecdotal. In order to test this through flood modelling, rain gauge data made available by NRC has been used against our HEC-RAS existing coverage model. The rain gauge closest to the property is referred to as 'Hakaru at Tara' approximately 9km from the site. No storm event was recorded for 27th February, however the Cyclone Gabrielle event on 24th February 2023 shows rainfall of 398mm over a 24 hour period. This has been used as the rainfall for our test model.</p> <p>We have applied some refinement of the model's Mannings numbers in this area to provide as much accuracy as we can at this early stage in the design. We note that we do not have topographical survey, and floor levels are estimated from the LINZ lidar ground model. We have added in the bridge structure to the south of 114 Moir Street, but note that the dimensions of this are best guess at this stage and are yet to be confirmed before we proceed with a more detailed flood model at RC stage.</p> <p>The resultant water surface elevation from this test model is 3.82m. Our assumed FFL of 114 Moir Street is 4.25m, resulting in a freeboard of 0.42m, which is lower than the anecdotal level provided by the resident. Given the lack of accurate survey data in this area and anecdotal nature of estimated flood level by the resident, a variance of several hundred millimetres is not unexpected.</p>	

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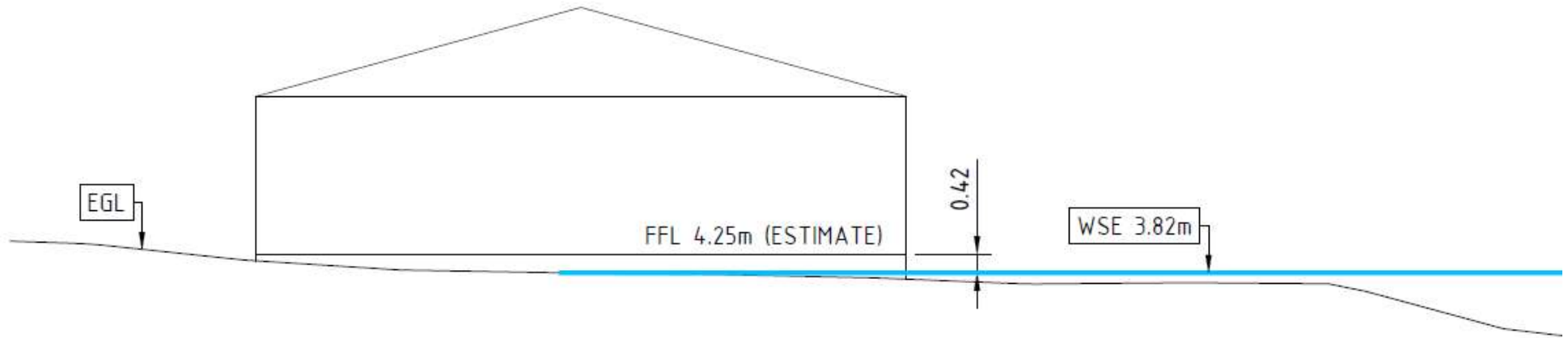
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		Cyclone Gabrielle was a significant storm event well above the 1% AEP event that we are required to model, and we note that even in such an event the property in question did not flood.			
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Existing as all rural

Subbasin	Area (km <sup>2</sup> )	CN	CN*Area	Impervious	Pervious
Subbasin-1	1.4093	74	104.2882	0.14093	1.26837
Subbasin-2	0.4603	74	34.0622	0.04603	0.41427
Subbasin-3	0.35302	74	26.12348	0.035302	0.317718
Subbasin-4	0.35787	74	26.48238	0.035787	0.322083
Subbasin-5	0.066475	74	4.91915	0.0066475	0.0598275
Subbasin-6	0.128	74	9.472	0.0128	0.1152
Subbasin-7	0.2844	74	21.0456	0.02844	0.25596
Subbasin-8	0.2695	74	19.943	0.02695	0.24255
Subbasin-9	0.2663	74	19.7062	0.02663	0.23967
Subbasin-1	0.2893	74	21.4082	0.02893	0.26037
Subbasin-1	0.2528	74	18.7072	0.02528	0.22752
Subbasin-1	0.1301	74	9.6274	0.01301	0.11709
Subbasin-1	0.29415	74	21.7671	0.029415	0.264735
	<b>4.561515</b>	<b>74</b>	<b>337.55211</b>	<b>0.4561515</b>	<b>4.1053635</b>

10% 90%

CN  
IA

74
4.5

Surrounding residential with our development still at rural

Subbasin	Area (km <sup>2</sup> )	CN	CN*Area	Impervious	Pervious
Subbasin-1	1.4093	86	121.1998	0.70465	0.70465
Subbasin-2	0.4603	86	39.5858	0.23015	0.23015
Subbasin-3	0.35302	86	30.35972	0.17651	0.17651
Subbasin-4	0.35787	86	30.77682	0.178935	0.178935
Subbasin-5	0.066475	74	4.91915	0.0066475	0.0598275
Subbasin-6	0.128	74	9.472	0.0128	0.1152
Subbasin-7	0.2844	74	21.0456	0.02844	0.25596
Subbasin-8	0.2695	86	23.177	0.13475	0.13475
Subbasin-9	0.2663	74	19.7062	0.02663	0.23967
Subbasin-1	0.2893	74	21.4082	0.02893	0.26037
Subbasin-1	0.2528	86	21.7408	0.1264	0.1264
Subbasin-1	0.1301	74	9.6274	0.01301	0.11709
Subbasin-1	0.29415	74	21.7671	0.029415	0.264735
	<b>4.561515</b>	<b>86</b>	<b>374.78559</b>	<b>1.6972675</b>	<b>2.8642475</b>

37% 63%

CN  
IA

86
3

Entire catchment residential

Subbasin	Area (km <sup>2</sup> )	CN	CN*Area	Impervious	Pervious
Subbasin-1	1.4093	86	121.1998	0.70465	0.70465
Subbasin-2	0.4603	86	39.5858	0.23015	0.23015
Subbasin-3	0.35302	86	30.35972	0.17651	0.17651
Subbasin-4	0.35787	86	30.77682	0.178935	0.178935
Subbasin-5	0.066475	86	5.71685	0.0332375	0.0332375
Subbasin-6	0.128	86	11.008	0.064	0.064
Subbasin-7	0.2844	86	24.4584	0.1422	0.1422
Subbasin-8	0.2695	86	23.177	0.13475	0.13475
Subbasin-9	0.2663	86	22.9018	0.13315	0.13315
Subbasin-1	0.2893	86	24.8798	0.14465	0.14465
Subbasin-1	0.2528	86	21.7408	0.1264	0.1264
Subbasin-1	0.1301	86	11.1886	0.06505	0.06505
Subbasin-1	0.29415	86	25.2969	0.147075	0.147075
	<b>4.561515</b>	<b>86</b>	<b>392.29029</b>	<b>2.2807575</b>	<b>2.2807575</b>

50% 50%

CN  
IA

86
2.5