FTAA-2504-1055 - Rangitoopuni Application

Maven Response to Panel RFI 4

14 November 2025

Expert Consenting Panel

C/- Environment Protection Authority

1.1 Overview and General Approach

Maven has produced this report for the benefit of the Panel, with this memo intended to support Item 2 of RFI 4. The Panel RFI is provided below for ease of reference:

> *In paragraphs 6, 7 and 8 of its Memorandum – Response to Minute 4 dated 7 November 2025, the Auckland Council set out a summary of its remaining concerns with respect to Potential Natural Hazards/Flooding and Stormwater Effects. Information responding to the claims in paragraph 7 of that Memorandum is sought from the Applicant. Further, with respect to the three 'matters of importance' set out in paragraph 8 of the Memorandum, information, in the form of potential conditions that might be imposed to address these concerns, is requested.*

1.2 Council Memorandum

The relevant sections of the Council memorandum are outlined below, followed by a response to each of the specific paragraphs of which cross-reference back to previous Maven responses issued to the Panel.

> *6. Prior to the applicant's release of information to the Panel on 24 October 2025 the Council provided further comments on the proposed assumptions and methodology underpinning the flood model (column G of the excel document). This response, previously provided to the EPA and accessible through this link due to file size Model Review 251023.xlsx which identifies points of difference on assumptions, notably including but not limited to:*
>
> *I. The CN value utilised for the pre-development condition.*
>
> *ii. The extent of cumulative flood storage included across the post-development areas*
>
> *iii. The manning roughness number used to represent the different land uses*
>
> *7. The effect of the above is that at the time of this engagement Council flooding/stormwater specialists did not consider the model as being fit for purpose as the modelling approach was considered to overestimate the pre-development and underestimate the post development stormwater runoff and peak flows from the site. On this basis, Council flooding/stormwater specialists did not agree that the outcomes presented in the associated flood hazard and risk assessment capture the potential effects of the proposed development on flooding downstream, nor consider this should be baseline for future flood modelling under the conditions proposed.*

8. Council identifies the following matters of importance which we respectfully request the Panel carefully consider:

i. Sequencing of required stormwater management measures and infrastructure to manage and mitigate flows noting the various individual stages of the development. This is not limited to, but is particularly relevant to the timing of measures related to Forestry Road and to the eastern section of the CSL subdivision flowing towards the Riverhead Catchment.

ii. The effects on the downstream environment including persons and property, particularly the Riverhead Township.

***iii.** The effects and therefore resilience of the identified Stormwater Pond / Dam structure within 49 Forestry Road.*

1.2.1 Paragraph 6 – Maven Response

1.2.2 I. The CN value utilised for the pre-development condition.

Maven continues to hold our position on the CN values as was detailed in Section 1.7.1 of our formal response dated 24 October 2025; and further supported by the legal position provided by Jeremy Brabant also dated 24 October 2025. We disagree with Council's view that the pre-development CN should be modelled on an assumed forested cover (CN 70), given that this is clearly not accurate. We remain of the view that any modelling done needs to factor in both the existing environment (cleared forest) and consider the rotational nature of plantation forestry when quantifying downstream flood risks and or resilience assessments of the Riverhead township.

Maven has prepared two graphs to illustrate this benefit and some of the assumptions both from a pre-development and post-development basis. *Please note the time scale is provided for reference only.*

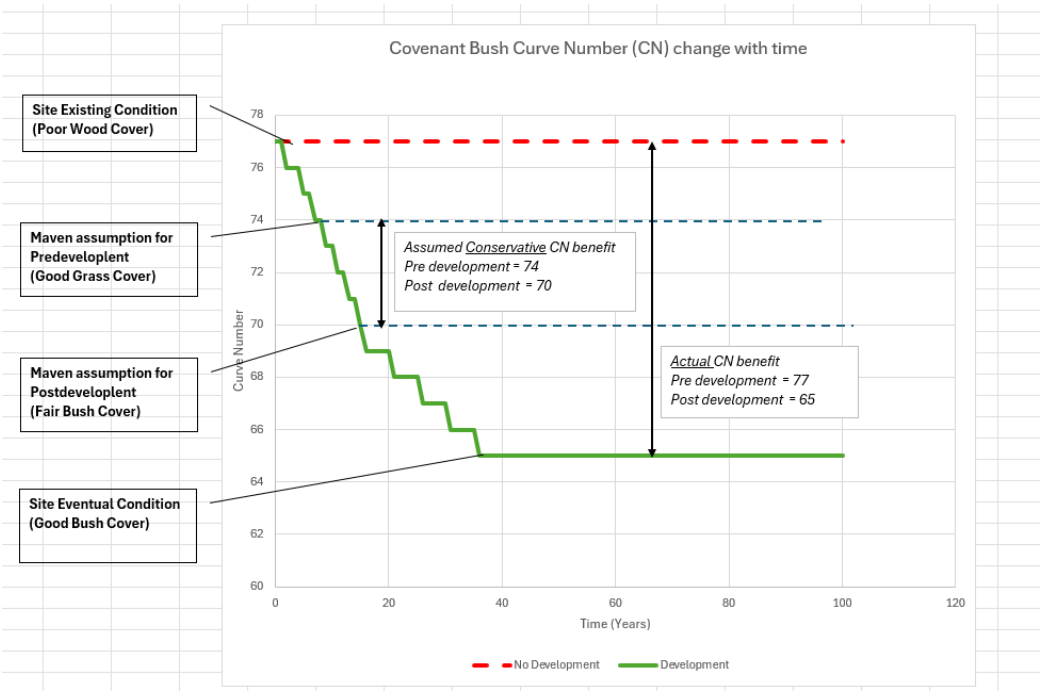

Figure 1: CN Value Change overtime of proposed development vs no development. Note: the time scale is provided for reference only.

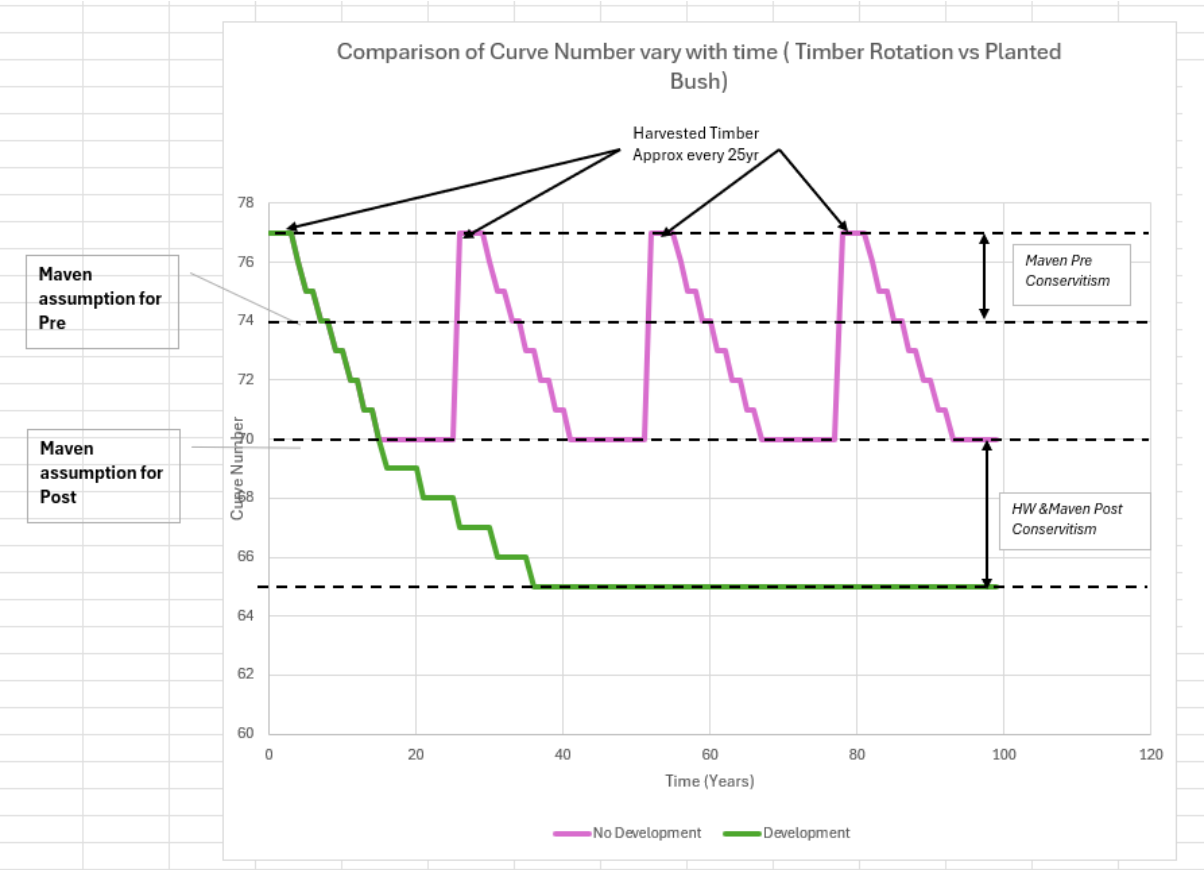

Figure 2: CN Value change overtime between proposed development and retention of plantation forestry. Note: the time scale is provided for reference only.

The above graphs demonstrate the conservatism within the assumptions of the Maven flood modelling completed. The pre-development runoff assumes a lower CN value of 74, whist the ultimate runoff assumed post development based on CN 70, however, continued benefit and resilience to the downstream catchment will occur as the bush continues to establish, with good bush cover having a CN value of 65 for Class C soils.

Table 2-2c.-Runoff curve numbers for other agricultural lands[1] (SCS, 1986)

Cover description		Curve numbers for hydrologic soil group-			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range-continuous forage for grazing.[2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow-continuous grass, protected from grazing and generally mowed for hay.		30	58	71	78
Brush-brush-weed-grass mixture with brush the major element.[3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	[4]30	48	65	73
Woods-grass combination (orchard or tree farm).[5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods.[6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	[4]30	55	70	77
Farmsteads-buildings, lanes, driveways, and surrounding lots.		59	74	82	86

Figure 3: Run off Curve Numbers

1.2.3 ii. The extent of cumulative flood storage included across the post-development areas

This concern was addressed. Maven undertook further sensitivity tests / modelling of which has been provided to Healthy Waters for comment and was detailed in Table 1.6 of our formal response dated 24 October. Specifically, the modelled scenarios included the following:

Table 1: Summary of Modelled Scenarios Undertaken

Model Scenario	Summary
Change of N value for all Building Platforms in the CSL (0.1 to 0.035)	Sensitivity runs were completed for the 100yrCC including lowering manning of platforms of CLS from 0.1 to 0.03. Update increased post development flows by approximately 0.1%, however flows were still found to be less than predevelopment. Maven's position is that change of the N value shall not have impact on the assessment.
Change of N value for total RV extent from 0.1 to 0.035	Sensitivity runs were completed for the 100yrCC including lowering manning of platforms of RV from 0.1 to 0.03. Update increased post development flows by approximately 0.1%, however flows were still found to be less than predevelopment. Maven's position is that change of the N value shall not have impact on the assessment.
Change of N value for total RV extent from 0.1 to 0.035 and pre-soak to remove concerns around excessive ponding	Sensitivity runs were completed for the 100yrCC including terrain update to remove discussed ponding. Update increased post development flows by approximately 2%, however flows were still found to be less than predevelopment. Maven's position is removal of noted ponding on platforms shall not have impact on the findings of the assessment especially given that we consider the predevelopment scenario to be conservative in nature (CN=74 for harvested pine forest).

1.2.4 iii. The manning roughness number used to represent the different land uses

As per Table 1 above, the manning roughness was changed for all CSL platforms (which was indicating ponding) and for the entire Retirement Village. The results indicating no effects, as summarised in Table 1, above.

1.3 Paragraph 7 Response

> *7. The effect of the above is that at the time of this engagement Council flooding/stormwater specialists did not consider the model as being fit for purpose as the modelling approach was considered to overestimate the pre-development and underestimate the post development stormwater runoff and peak flows from the site. On this basis, Council flooding/stormwater specialists did not agree that the outcomes presented in the associated flood hazard and risk assessment capture the potential effects of the proposed development on flooding downstream, nor consider this should be baseline for future flood modelling under the conditions proposed.*

The above statement relates closely to the disagreement between the Applicant and Council on the pre-development nature of the site and thus the assumed basis of the pre-development flow rates to which provide the basis for mitigation. A summary of the Applicant's position is outlined below:

1. Maven retains the view that the pre-development nature of the site for clear felled forest has a CN value of 77-80+.
2. Maven has taken a conservative approach and assumed the pre-development CN for the site is CN 74. We remain of the view that this is below the actual CN value based on the current state of the site.
3. Maven has assumed a CN value of CN 70 for planted and protected forest cover. We remain of the view that forest cover which will be protected in perpetuity should have a reduced CN value applied. Bush cover has known benefits in reducing stormwater runoff and providing improved flood resilience outcomes.
4. We remain of the view, that there are significant long-term benefits that will arise from the intended protected bush catchment from that of rotational forestry. Refer to Figures 1 and 2 under Section 1.2.2, above for a visual representation of this.

1.4 Paragraph 8

8. Council identifies the following matters of importance which we respectfully request the Panel carefully consider:

1.4.1 8i.

Sequencing of required stormwater management measures and infrastructure to manage and mitigate flows noting the various individual stages of the development. This is not limited to, but is particularly relevant to the timing of measures related to Forestry Road and to the eastern section of the CSL subdivision flowing towards the Riverhead Catchment.

The conditions of the consent require the full extent of planting to be done in each stage prior to the release of titles for the CSL development. Conditions of the consent require this planting to be in place, whilst the management plans require the ongoing establishment and finally the covenants ensure protection in perpetuity so that the benefits of the bush cover can be relied upon.

Culvert 1-1 will be constructed as part of the first stage of civil works (Stages 1-3), and this will provide attenuation for the western catchment as required, to the amended rainfall events for the western catchment (i.e. 2yr with CC, 10-yr with CC and 100-yr with CC). We have modified Culvert 1-1 and can confirm that no on-lot attenuation is required, as per the statement noted in Paragraph 1.3.2 of the Maven Memo Response to Draft Conditions dated 7 November 2025.

Planting of the eastern catchment will continue in advance of the development. This season we will undertake earthworks and civils in Stages 1-3. The following earthworks season (summer of 26/27) Stages 4 and 5 will be constructed and then Stages 6-7 (eastern catchment) will be undertaken the following earthworks season (summer of 27/28). Bulk planting of this catchment will occur next winter (2026) and will be above the 500,000 trees planted already in Winter 2025 and thus will have 2-3 years of maturity before any development occurs in the catchment.

Maven retains the view that the programmed planting combined with the conservative assumptions outlined in Section 1.2.2 of this Memo are sufficient to address the minor interim effects of the modeled scenario whereby CSL is developed with no Forestry Road upgrade or the construction of Culvert 7.

Forestry Road upgrade and the construction of both Culvert 7 and the dry basin will be constructed before the Retirement Village is occupied. Both attenuation devices and the full road upgrade will be

constructed as the first stage of civil works, ensuring that these upgrades are functional before the Village is occupied.

1.4.2 8 ii.

> *The effects on the downstream environment including persons and property, particularly the Riverhead Township.*

Please refer to the commentary and summary included in Section 1.2.2, 1.3 and 1.4.1 above.

1.4.3 8 iii.

> *The effects and therefore resilience of the identified Stormwater Pond / Dam structure within 49 Forestry Road.*

As per our response dated 24 October 29025, under Item 1.5, this concern was addressed as per the following statement, of which is provided below for ease of reference:

> Although Maven does not have the consenting history of the downstream pond/feature, we have made assessment on the potential effects. A review of the post-development model indicates that the flows are reduced from the assumed pre-development state (CN 74) which will ensure long-term risk to the downstream structure is reduced. Given that the effects on this structure will be increased when the forest is felled (this catchment will be logged between December 2025 – March 2026), the replanting and protection of the bulk of the catchment will produce long-term benefits.