

24 October 2025

Maven Associates Limited

by email

Attention: Toby Mandeno

Dear Toby

FTAA-2504-1055 - Rangitoopuni Application – Stormwater modelling

1. I refer to our correspondence regarding the appropriate approach to modelling stormwater flows for this matter. In summary I understand there is a point of contention as between the approach adopted by Maven and that suggested by Healthy Waters (**HW**) relating to the appropriate CN number¹ for modelling purposes. I understand the area of disagreement particularly relates to how the current position should be characterised for the purposes of identifying pre-development and post-development outcomes.
2. This effectively engages the proper consideration of the “environment” for the purposes of modelling, reflecting both the law as it applies to that concept along with an application of professional judgement in the context of the modelling exercise.
3. I record my understanding of the background position in some detail to appropriately set the table for my conclusions.

¹ CN being the runoff curve number, which is an empirical parameter used in hydrology for predicting direct runoff or infiltration from rainfall excess. The CN is based on the area's hydrologic soil group, land use, treatment and hydrologic condition.

Environment – The Law

4. The “environment” is defined in caselaw as embracing not only the existing environment, but also the future state of the environment as it might be modified by permitted activities and by resource consents which have been granted where it appears likely² that those consents will be implemented.³
5. Commencing with the existing environment, that is addressed below under the subheading “Background” as is reference to relevant permitted activities.
6. I am not aware of any granted but yet to be implemented resource consents which are relevant.
7. Therefore modelling of potential stormwater effects on the environment where a comparison to the current position is relevant, will engage with the existing environment and its future state as it might be modified by permitted activities.

Background

8. You have indicated that land use is a relevant factor in determining an appropriate CN value. Relevantly, the position is as follows:
 - (a) The application relates to two properties (Lot 1 DP 590677 and Lot 2 DP 590677) at Old North Road and Forestry Road, Riverhead (**Site**) totalling approximately 395 ha. These properties are referred to as Lot 1 and Lot 2. The Site is part of the 3,275 ha Rangitootuni-Riverhead Forest.
 - (b) The zoning of the Site includes both Rural – Countryside Living Zone and Rural – Rural Production Zone.
 - (c) The Site is Treaty Settlement Land. It is land returned to the iwi as redress for the Crown’s historic breaches of Te Tiriti o Waitangi. Its core purpose is to generate an economic baseline for its people.

² Likely means “more likely than not”.

³ *Queenstown Lakes District Council v Hawthorn Ltd* [2006] NZRMA 424 at [79].

- (d) The Site is currently used for commercial forestry with a harvest cycle of approximately 26 years.
- (e) In the 1940's the land was being used for forestry and has remained as commercial forestry for the last 80 years. Deforestation is observable in aerial images from the 1970's and it is estimated at least two crops of pine have been afforested and subsequently deforested on the Site prior to the Te Kawerau ā Maki Treaty Settlement.
- (f) The proposed development will result in a transformation of the Site from production pine plantation to a countryside living subdivision and retirement village⁴, in addition to a range of infrastructure, open space and public facilities and native forest, restored wetlands, and riparian and terrestrial forest habitats.
- (g) The current composition of the Site vegetation varies, depending upon the land clearance and stages of forestry operations with the vegetation forming discrete blocks throughout the Site. Figure 7 in the AEE illustrates much of the Site is deforested or immature forest. The approximate position is:
 - (i) The Countryside Living development in Lot 1 is proposed to have 14 stages. Currently this Lot has been recently harvested aside from the forest cover in Stages 6-8 which will be harvested from December 2025 through to March 2026. The Applicant has no intention of replanting this land with plantation forestry.
 - (ii) Lot 2 features young pines (estimated age 5 years). Portions of Lot 2 (being that outside of the retirement village development) will retain the young pines.
- (h) Cutting the pine forest is a permitted activity. There is no obligation to replant plantation forestry once cut.

Modelling – CN value

9. In an email to me you identify the following:

⁴ 208 residential lots in the countryside living subdivision and 260 villas and 36 aged care facilities in the retirement village.

- (a) HW say modelling the base (pre-development) scenario for the Site should adopt a CN value of 70. As a general statement, this is a CN number assuming forested land use. HW say a CN of 70 should be adopted across the entire Site because it reflects historic forest cover on the land.
 - (b) Maven says the following values for plantation forestry are generally appropriate:
 - (i) CN 77-80+ for recently logged forest, increased compacted areas in skid sites and haul roads.
 - (ii) CN 70 for those areas which are planted and protected native bush and/or Mature Pines.
 - (iii) CN 74 to represent a mid-point for a plantation forest. A CN of 74 allows for the rotational nature of a plantation forest, i.e. mid-point between the CN when logged and the CN when mature vegetation exists.
10. The Maven midpoint of CN 74 reflects an approach taken by others with respect to Riverhead Forest:
- (a) Modelling of stormwater undertaken by a CKL for the Applicant for Plan Change 100 includes the entire Riverhead Forest catchment (excluding Stages 1 – 5 which drain west). This modelling assumes a CN of 74.1 for Riverhead Forest.
 - (b) Council flood mapping (visible on GeoMaps) assumes CN 74 for the Riverhead Forest.⁵

Modelling for this matter

- 11. Stormwater modelling of the pre-development position should reflect the environment as defined – in other words the existing environment as it may be modified by permitted activities. In addition to that reflecting the law, it also represents a real-world approach.
- 12. As indicated above, the Site has been substantially cut over already, with further logging scheduled for the summer, coupled with an intention by the Applicant not to replant the forest and continue with a plantation forestry regime. That aligns with the clear intention of

⁵ Undertaken by E Waters New Zealand.

the Applicant to undertake development of the Treaty Settlement Land (in line with the express purpose of such land).

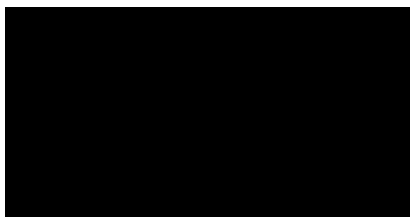
13. As I understand it, Maven have taken account of the land use on the Site as it stands at the time of the application for resource consent along with non-fanciful permitted activities (i.e. Plantation forestry may be cut and not replanted). As a consequence:
 - (a) Maven has adopted CN 74 to model the pre-development position. Maven say:
 - (i) This is conservative for Lot 1 given that the actual site conditions pre-development is CN 77 (outside of Stages 6-8, until they are logged which will be complete by March 2026). This means that the modelled pre-development runoff is lower than what it currently is.
 - (ii) This is appropriate for Lot 2 given rotational plantation forestry continues on that land.
 - (b) Maven says that post-development a CN 70 is appropriate for those areas which are planted and protected native bush and/or Mature Pines.

Conclusion

14. In my opinion the approach adopted by Maven is reflective of the law as it defines the “environment”.
15. For those areas which are subject to rotational plantation forestry, a CN value reflecting a midpoint would seem appropriate given the cycle through a fully logged state followed by many years of immature trees progressing through a growth phase until the forest matures. In addition to Maven identifying a reasoned basis for the midpoint number they have adopted (CN 74), they have also identified to its use by other consultants with respect to the Riverhead Forest. In that context the value would appear appropriate.
16. Strictly speaking a more granular modelling exercise could be undertaken by reference to the present state of Lot 1, with significant areas modelled at CN 77 or higher. But in my view it is acceptable that Maven have instead adopted a conservative approach for Lot 1, in part acknowledging logging yet to be completed on Stages 6 – 8 (even though it is appropriate in law to treat that area is already logged, given it is a permitted activity and logging of it is not fanciful – and indeed has been committed to).

17. In contrast the HW approach suggests that all the Site should be treated as mature forest, which approach ignores the rotational nature of plantation forestry, and also ignores the reality on the ground and the permitted nature of forest clearance. In my view HW's approach is poorly aligned with relevant legal principles.

Yours faithfully



Jeremy Brabant

CC. Campbell Brown – Michelle Kemp / Philip Brown; Avant - Shane Kelly