FTAA-2504-1055 - Rangitoopuni Application

Maven Response

1.1 Overview and General Approach

The following memo provides a formal response to the memorandum of planning matters for Auckland Council, dated 17 September 2025. Specifically, this memo seeks to address relevant civil and surveying comments contained within the following annexures.

1. Healthy Waters – Hilary Johnston (Annexure 2)
2. Stormwater – Martin Meyer (Annexure 6)
3. Dams – Don Tate (Annexure 9)
4. Traffic Engineering (Annexure 10)
5. Auckland Transport - primarily focused on Griffin Benton-Lynne (Annexure 11)
6. Regional Earthworks, Streamworks and Freshwater Ecology (Annexure 13)

The memo focuses on addressing matters of contention and information gaps noted. Where matters have been resolved, we have not sought to make comment.

For ease of assessment, we have listed our response against the relevant paragraphs and information gaps listed in the Memorandum of Planning Matters. If relevant, more detailed reference has been made to the Annexure itself.

1.2 Earthworks – Paragraphs 140-146

Paragraph 146 confirms that the works can be suitably managed by the proposed sediment and erosion control conditions. Maven believes further consideration is needed in respect to the need for – and conditions associated with – any potential Adaptive Management Plan (AMP).

Maven is of the view, that the Countryside Living Subdivision (CSL) part of the proposal is suitably staged, so that an AMP is not required. The CSL will be undertaken in stages (i.e. the first construction phase will see Stages 1-3 developed). In doing so, the total exposed area will be reduced sufficiently that finalised sediment and erosion control plans being provided prior to a pre-start of each stage(s) is sufficient, once a contractor has been engaged.

Maven can understand the need for an AMP in support of the Retirement Village (if this was deemed necessary), however, the suggestion or need for pre-stream monitoring fails to consider the pre-development nature of the site. As such, the GD05 complying design Maven has included in support of the proposed earthworks will provide significant stream health benefits during construction, from that of the current forestry operations.

1.3 Dam Attenuation 163-174

Paragraphs 163 to 174 detail the perceived information gaps relative to the proposed attenuation culverts (Culvert 1-1 and Culvert 7) which form part of the overall stormwater solution. Paragraph 164 outlines disagreement as to whether the culverts are defined as dams under the AUP:

> *164. There is a disagreement between Council specialist and the Applicant's specialist as to whether or not these meet the definition of a "Dam" under the AUP(OP) (and as such the technical reasons for consent). Council's position has been summarised in **Annexure 9**.*

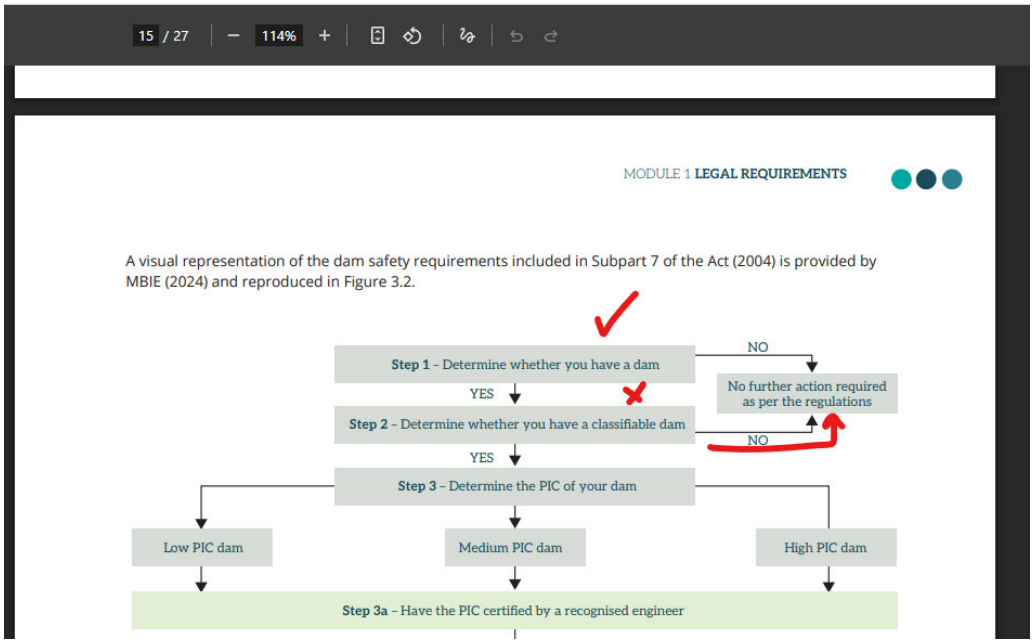
We defer to the planning response with respect to the classification of the culvert structures under the AUP.

1.3.1 New Zealand Society on Large Dams (NZSOLD) Classifications

Please refer to the appended memorandum from ENGEO. Collectively, we note that the dam is not a classifiable dam under the *NZSOLD New Zealand Dam* Safety Guidelines (2024). This is because neither dam features a total volume (when measured to the dam crest) of 20,000m³.

For Culvert 1-1, this assumes the 100-yr culverts are blocked and ultimately overtops the crest in the accessway (JOAL 1), for Culvert 7, this is to the 100-yr spillway level, noting there is not a 100yr culvert in the design. Please refer to additional plans C485 PN 147007, C481-6-1 PN 147016 which provide more detailed assessment relative to the volumes and crest heights of both structures.

The below figure outlines a clear flow diagram of how dams are classified and when a PIC assessment is needed. Resultantly, no PIC is required.



1.3.2 Design Memorandum and Detailed Design Considerations

The technical memorandum from ENGEO (addressing Geotech, dam engineering design and construction matters) provides further assessment as to the appropriateness of the design, and how these mitigate any perceived effects.

The following matters will require further assessment and design at the detailed design (building consent) stage:

1. Ensuring the structures are suitably bedded into solid ground (both culvert structures are underlain by rock).
2. Construction methodology and materiality (aggregate foundation, with a likely clay cap or plastic liner to the upstream embankment to ensure the dam remains impermeable during rainfall events)
3. Specific design of any penetrations (including the culverts) which go through the embankment.

4. Design of the spillway (to ensure that there is a robust and safe overflow), even in blocked scenarios. A maintenance plan is expected as a condition of consent, and the yearly checks will be done as required.
5. Construction observation and sign-off processes.

Maven and ENGEO are of the view that subject to the required detailed design and approval at the Building Consent stage, any effects can be suitably mitigated. We are also of the view that the additional assessment is of sufficient detail to mitigate any perceived downstream effects, given that neither dam is a classified dam under the NZSOLD, which clearly confirms that no PIC or detailed assessment is required.

1.4 Stormwater Effects (Paragraphs 231-240)

Paragraph 233 confirms that the site is not subject to the Region Wide NDC. It goes on to note that the only part of the application which features public assets is Forestry Road, which will be managed by Auckland Transport. As per Auckland Transports request, quality treatment of Forestry Road extension has been removed. An amended plan set showing the raingardens being removed is attached to this response, including the scheme plan and all roading (RV C190-1-1 Rev B, C300 PN 174016 and relevant C400 PN 147017 drawings)

Item b of Paragraph 234 outlines a perceived concern of using culverts for attenuation are higher at risk of attenuating flows at source. Maven disagrees with this sentiment noting that treatment at source in a Countryside Living Subdivision instead puts emphasis on future lot owners to both maintain and manage private attenuation devices. These controls are administered through consent notices.

Such at-source treatment wihtin the CSL would likely result in attenuation of peak flows for roof and/or driveway run-off. As the future lot owners will be reliant upon roof caught water for potable and non-potable supply, there is increased risk that the assumed solution may not work as desired during a rainfall event.

Catchment wide solutions which have been favoured provide catchment wide improvements, whist reducing the risk associated of private on lot attenuation solutions. In Maven's view, this approach should be supported. The wholesale revegetation also delivers ongoing and compounding improvements to the receiving catchment, through decreasing runoff and increased initial abstraction from the protected bush. This will improve water quality and decrease run-off in rainfall events.

Item c of Paragraph 234 outlines that no detail has been provided for the treatment and/or proprietary devices, including their sizing. This is not correct, treatment for the bulk of the Retirement Village is provided including the carparks which exceed 30 or more carparks. Calculations and details were also appended within the Maven package. Final designs will be subject to future Common Accessway and/or Building Consent approval from Auckland Council.

Paragraph 235 suggest amendments to conditions. Maven has reviewed this and notes that the conditions need to reflect the requirements for treatment that is needed under the AUP. The insertion of GD-01 levels of treatment for all countryside living JOALs and private accessways is an overreach and not justifiable.

A further assessment against the treatment provisions and assumed need for a BPO are provided below within Section 2.3.1

Paragraphs 236 and 238 note concerns relative to the public road (Forestry Road Extension). These primary concerns are listed in Annexure 11 (Awa's assessment). For ease of reference, the relevant section of Griffin's memorandum is noted below in section 2.3.4 and responded against.

1.4.1 Best Practical Option Assessment / Water Quality

It is noted that there are various crossovers between Healthy Water Comments (Annexure 2), Stormwater (Annexure 6), and Streamworks and Regional Earthworks (Annexure 13) which relate to the suggested need for a Best Practical Option.

All Maven reporting (which has been confirmed via Council and Healthy Waters) outlines that the site is rural zoned and is not part of the Region Wide NDC. Instead, discharge consent is sought for the activity under E8. A robust assessment was made against the relevant standards of E8.

In the absence of the Region Wide NDC, the need for treatment is outlined clearly in the AUP. In the view of Maven, this is limited to the following scenarios, listed under E9.4.1:

1. High contaminant generating carpark (30+ carparks); and
2. High-use Road (5000+ v p/d).

We disagree that a BPO is required and remain of the position that the detailed and robust assessment provided within the Stormwater Management Plan is sufficient and fit for purpose. A summary of this approach is outlined below:

Forestry Road

The treatment has been removed from Forestry Road extension as requested by Auckland Transport who will own and manage the road. The reasons being is that it is a local road only, the existing section (carrying more traffic) does not currently have treatment, and that treatment is not required under the AUP. Maven therefore notes that the treatment provisions need to be removed from the Forestry Road conditons.

CSL

None of the private accessways in the CSL are classified as high-volume roads. The only carpark requiring treatment (community centre) is provided with treatment, as detailed within the Maven plans and calculations provided. Swales are provided in support of all JOALs, and where gradients allow, this provides treatment for the JOALs. No treatment within the lots at source is considered necessary or needed.

The level of treatment provided in support of the proposal exceeds that required by the AUP, and the catchment wide replanting will have clear and measurable improvements on stream health within the receiving catchment. Although such planting is harder to quantify under GD-01, this needs due consideration, of which Ray Smith (Development Engineer, Annexure 4), was able to quantify.

Retirement Village

Although rural zoned, given the more intensive nature of the Retirement Village, a conservative approach was taken to the provision of treatment within the Retirement Village. Treatment is provided for all JOAL area and high contaminant generating carparks. The only areas which are not provided with treatment are the smaller JOALs which serve less than 10 parking spaces (Accessways 5A, 6A, 8A) which fall away from the larger raingardens and/or proprietary devices proposed.

1.4.2 Response to Healthy Waters Items 3.20-3.22

The key aspects of the Healthy Waters response are outlined below within items 3.20 – 3.22. Within these paragraphs, it is assumed that the Regional Policies in E1 required a BPO assessment to be undertaken.

> *3.20. Runoff from private accessways and JOALs is proposed to discharge to private swales for conveyance and preliminary filtration where gradients allow. No information has been provided on the water quality treatment requirements for hardstand surfaces within future individual Countryside Living lots. A preliminary analysis of the JOAL longitudinal grades within the Stages 8-14 indicates that approximately 50% exceed the 8% longitudinal grade threshold, which is generally considered the upper limit for providing water quality treatment via a swale. It has been estimated that overall, the proposed development could generate an estimated 20 hectares of untreated impervious surfaces which will increase the risk of adverse effects on the water quality of receiving environment.*
>
> *3.21. Within Section 7.3.2 of the SMP the Applicant's Engineer has asserted that as the site is not bound by Healthy Water Region Wide Network Discharge Consent, and as the private roads will be low volume (less than 5,000 vehicle movements per day), that water quality treatment is not required. This is in reference to the high contaminant generating area provisions under E9 of the AUP, which are a specific, targeted overlay for land uses that are regarded as being high contaminant generating. However, the provisions of E8 together with the overarching objectives and policies outlined through E1 set a broader framework for water quality, with expectations beyond just the high contaminant generating land uses. This framework includes directive policies E1.3(2)(a) (to maintain or enhance water quality, flows, stream channels and their margins and other freshwater values…) and E1.3(8)(b)/(e) (minimising the generation and discharge of contaminants… and providing for the management of gross stormwater pollutants…).*
>
> *3.22. Further information was sought justifying the proposed stormwater management approach for the JOALs and private accessways areas serving less than 10 units as part of initial comments provided on the application (**Appendix A**). Sufficient information, for example, an evaluation of how the various stormwater management devices and strategies proposed will maintain or enhance the quality of stormwater runoff within the receiving environment and is the Best Practicable Option (BPO) has not yet been provided. A BPO framework is set out by AUP policy E1.3(14).*

Maven disagrees with this sentiment, noting that the rules provided in E8 and E9 are setup to achieve the regional policy statements, and that compliance with the rules is considered to achieve E1 policy direction. We defer further comment on this matter to both Campbell Brown.

Finally, Maven notes that Old North Road, which is an arterial road which carries significantly more vehicles, is not treated. This is consistent with all adjoining rural roads, of which treatment is not currently or intended to be provided for.

1.4.3 Stream Geomorphic Assessment

Healthy Waters, Council's Streamworks and Regional Earthworks Specialist and the Stormwater specialist all have made references to the need for a more robust assessment of the potential impacts on stream health. This is summarised by the following, noted as an information gap:

A Geomorphic Risk Assessment is required to evaluate the current state of the network (noting there is evidence of active erosion of the existing watercourse network through the site), identify development impacts and mitigation strategies, and assess natural hazards and public safety risks.

This assessment is essential to enable an assessment of effects of the development on the hydrological function of the wider network, health and safety (flooding and geotechnical risks), and on-going maintenance effects for Healthy Waters.

Additionally, a Geomorphic Assessment is critical in enabling a full understanding of potential effects on the watercourses within the site and associated freshwater ecology effects from the proposed development.

To justify the appropriateness of the proposed riparian setbacks a Geomorphic Risk Assessment should be undertaken to evaluate the current condition, sensitivity, and likely adjustment of the proposed and existing stream networks in response to urbanisation. This must include assessment of soil strength and resistance characteristics, flow energy, and long-term geomorphic evolution.

The assessment should specifically outline the potential for increased stream erosion and channel instability relative to the proposed stormwater management approach that includes limited application of hydrology mitigation for private hardstand areas and JOALs. The assessment shall demonstrate that the proposed stormwater management approach will not increase the risk of scour and erosion in the receiving environment.

In response, Maven is of the view that Council's collective assessment fails to consider the wider benefits that the proposal is seeking to deliver, of which the Applicant is not required to do. In a typical rural countryside living subdivision, either no planting or in some instances, discrete riparian planting is undertaken. The balance of such sites typically remain as grassland. The effects of stormwater discharge on the streams are therefore increased for any proposed impervious areas, given the inability for natural processes to aid in the filtering and retention of rainwater during rainfall events.

In contrast, the almost complete native vegetation planting of the catchment, will provide significant stream health improvements. This planting and protection of native bush will result in clear and measurable benefits when compared to the current status quo, which would instead result in the pines being harvested every 25-28 years. During and after such operations, the streams are subject to increased erosion, scouring and sediment discharge.

Again, such benefits are harder to quantify within standard Council frameworks, but this does not remove the positive effects they provide for. Roof water in the CSL and Retirement Village will be provided with SMAF levels of retention, alongside the detention basin, of which all provide reduced runoff in smaller rainfall events, demonstrated by the reduction in flows for the 2-year rainfall event within the Maven flood model.

In our view, the effects created by smaller rainfall events needs to consider these holistic catchment improvements. The proposal will create significant positive effects, and further geomorphic stream assessment is not justified given the current land use.

1.4.4 Culvert Design / Attenuation Structure Details

The design of the culvert structures and attenuation structures have varying degrees of crossover in response between Maven (from a civil design perspective) and that of Bioresearchers from an Ecology effects point of view. The following response should be read in conjunction with the response from Bioresearchers.

The main point of concern is listed below for ease of reference:

> *1. All culvert cumulative lengths within one site are required to determine progressive encasement rule trigger in E3.6.1.14(1)(c) and level of effect has not been established.*
>
> > *a. The standard by the applicant has been interpreted as each culvert must be less than 30m. However, progressive encasement applies to the total number of culverts within the application site and overall stream bed modification from all existing and proposed culverts.*

Maven defers to the planning response from Campbell Brown Planning Limited. It is considered that there is no basis for that interpretation given the wording of the standard.

> > *b. A map should be provided to illustrate culverts which are to remain in the stream, proposed replacements and any new additional structures requiring stream bed modification including wingwalls/apron and erosion and scour (rip rap).*

Maven has provided a detailed plan set which clearly shows where all proposed culverts are located within the site. This only included culverts when associated with mapped streams, rather than overland flowpaths which extend over various JOALs.

> *2. Applicant has not provided an assessment for the dam/attenuation structures against E3 including the nature or level of effect.*

Maven defers to the planning response from Campbell Brown in this respect.

> *3. Only standard designs have been provided for the culverts which does not demonstrate the exact stream environment (i.e. stream bed width, gradient, profiles etc) in which the culverts are proposed.*

This statement is not correct. The culvert plans indicate the existing surveyed contour of both the upstream and downstream conditions of where the culverts are being placed. The proposed surface (EGL) is also clearly indicated on the drawings. Please refer to the amended culvert drawings attached to this response, which provide additional clarity as requested. A full list of amended plans is listed under Appendix B.

We note that in some instances (Culvert 6 being one example), the upstream invert level is dictated by the surveyed invert of the existing 300mm pipe. This sits above the stream bed, whilst the downstream culvert is perched. Whilst we are increasing the size of the culvert, we cannot lower the invert (otherwise we will drain the wetland) and cannot get the downstream outlet into the stream level, given the height difference. Instead, specifically designed riprap will be provided at grade to the interaction towards the primary stream.

Design details should include per the Regulations in 70(2)

a. The culvert's width where it intersects with the bed of the river or connected area (s) and the width of the bed at that location (w), both measured in metres, must compare as follows:

where $w \leq 3$, $s \geq 1.3 \times w$;

where $w > 3$, $s \geq (1.2 \times w) + 0.6$

b. Stream bed width at each location along with the culvert sizing and dimensions should be provided to demonstrate compliance with the above.

c. Exact embedment achievement for each culvert should also be provided with detailed design plans; 25% minimum is required. Gradients and slope needs to be provided in the detailed design to determine whether the cross-sectional water velocity is not greater than in all immediately adjoining reaches and that bed substrate over the full length of the culvert is present.

We have reviewed the assessment provided by Bioresearchers. We concur with their position taken, noting that were possible, compliance with this standard is achieved. Culvert 1-1, Culvert 6 (not able to be located in the stream given existing height of culvert and upstream wetland) and Culvert 7 are unable to comply with this standard.

In all instances, the culverts will provide significant improvement from the current state (smaller and/or perched culverts) and this needs consideration when assessing the possible impact.

1.4.5 Public Road (Awa Assessment – Annexure 11)

5.1 It is strongly recommended that the applicant provide updated flood maps which clearly show the existing and proposed public road reserve, as well as the location of the actual road within the road reserve, i.e., where vehicles and pedestrians would be present within the road reserve, so that the hazard can be adequately assessed.

Additional flood maps showing depth of flood waters through Forestry Road have been provided within this response. Please refer to Maven plans (PN 147016 C475, C475-1-C475-6 and cross-sections C475-7-12. This shows that the depth of flood waters associated with the primary stream flows is not contained within the carriageway, and although in some areas the flooding is within the legal road extents, this is unavoidable, given the topography and fact that there is a section of Forestry Road (outside of our site) which is in an existing legal corridor. You can clearly see that the extend and depth of flooding is reduced from the existing condition.

There is no footpath within Forestry Road, so only vehicle traffic factor of safety compliance is required. There is no footpath in the existing alignment / section of Forestry Road either.

5.2 Zoomed-in maps should also be provided so that it can clearly be seen where the worst-case locations are, and these should be labelled to clearly show the maximum values.

The Flood Report provided indicated worst case depths in the carriageway, not in the flooding contained within the road reserve, where this extends down towards the stream. Please refer to the additional plans appended.

5.3 The maps provided should include depths maps, depth comparison maps and depth x velocity maps for all the scenarios assessed.

This can be provided at request of the panel. It is noted that this will be provided in support of the future Engineering Plan Approval process. For the purpose of minimising risk to vehicles, emphasis in the initial design has been focused on providing compliant depths of flooding in the carriageway which ensures compliance with the velocity/depth components of the AT TDM.

5.4 Assessments of the energy grade line for flow within the road reserve should be provided to demonstrate that the proposal will not result in hazardous flow conditions which could endanger road users or prevent the ingress and egress of emergency services.

The working design of Forestry Road ensures that overtopping is minimised to complying levels. Hydraulic grade lines relate to the culvert and are not deemed to be of relevance within this assessment. Compliance with compliance with the velocity/depth components of the AT TDM ensures mitigation of this concern.

5.5 The proposed public culverts should be demonstrated to meet the requirements NZTA Bridge Manual, AT Code of Practice, and Auckland Council Stormwater Code of Practice and the proposed access should be demonstrated to be adequate. Failure to do so prior to consent could result in the need to apply for a S127, costly rework for the applicant or result in onerous operation and maintenance costs and/or hazardous conditions for operation and maintenance personnel.

The provided documents have been reviewed, and Maven is of the view that these aspects can be suitably considered in the detailed design phase. Given the sensitive nature of the downstream catchment, these culverts have been (and will need to remain sized) to ensure they do not create adverse impacts. Thus, we need to ensure suitable flexibility is provided in the detailed design process, so that the culverts can collectively ensure flood mitigation is achieved. In our view, the need to avoid downstream flooding effects trumps the specific design of a culvert, which may not consider the sensitivity of the downstream catchment. Either way, in all events, suitable access and maintenance will be provided for all culverts throughout the Forestry Road alignment. We note that for the existing public road section, our intended upgrades will have significant improvements, from the undersized and largely unlocatable culverts that currently convey flows through the road corridor.

1.5 Healthy Waters – Specific Matters (Annexure 2), paragraphs 241-249

Annexure 2 forms the basis of the following assessment, which correlates back to paragraphs 241-249 and the listed information gaps in D1 of the overall Memorandum of Planning Matters for Auckland Council. The key flooding and overland flow matters are outlined below, followed by Maven's formal response.

For clarity, the stormwater treatment matters have been addressed earlier in our response, as has the concerns relative to stream morphology and instream attenuation and dams.

*4.1 The Applicant has responded to comments provided by HWFR as part of preliminary feedback and engagement outlined within **Appendix A**. Items in relation to flooding were discussed at a post lodgement meeting as described in Section 1.14 above. Some matters raised have been addressed by information provided by the Applicant on 18 August 2025.*

4.2 These matters must be resolved before HWFR can confirm its position on the proposed developments. Without resolution or the provision of further information, HWFR is unable to

adequately assess the potential for significant adverse effects. In addition, they are considered to be fundamentally tied to development layout, and therefore must be addressed as part the Resource Consent process, rather than deferred to Engineering Plan Approval (EPA) stage.

To ensure the development will not create new, or exacerbate existing natural hazard risks, the Applicant must provide the full stormwater model to Healthy Waters, including both pre- and post-development scenarios, to enable verification of modelling assumptions and support of the proposed management of stormwater in relation to potential effects on flood hazards.

Flooding within Forestry Road has been discussed earlier in the memo, this section relates primarily to the Healthy Water matters raised. For ease of reference, Maven has responded to the formal RFIs in the ongoing table which has been shared and responded to twice by both Maven and Healthy Waters. This is attached in Appendix A.

We have agreed that the model will be shared with Healthy Waters in advance of any request from the panel, and ongoing consultation between the Applicant and Healthy Waters will be undertaken.

Within our assessment in Appendix A, we have reiterated points of difference relative to some comments provided by Healthy Waters. Please refer to this table for the detailed commentary and reasoning contained within.

1.6 Overland Flowpaths

Further assessment needs to be provided on the management of overland flows within Lots 1 and Lot 2 to demonstrate that the overland flow paths within JOALs, access roads and designated overland flow path corridors have been designed in a way that does not introduce flood hazards that present a risk to people, property and infrastructure.

Maven has provided calculations for both the 10-yr and 100-yr design for all swales in the CSL. This confirms that the swales have been designed to safely convey both 10 and 100-yr flood levels. The swales and assumed worst case water levels are indicated within the provided indicative cross-sections. For the most part, the JOALs are located on ridgelines, which limit the upstream catchments. The exception is JOAL 2 in Stage 3, which features an upstream catchment. However, these catchments are largely directed to OLFPs which have been conveyed under the JOAL, via engineered culverts. Any minor sheet flows will be caught in the swales, and there is sufficient capacity to allow for this.

Given the location of the building platforms avoid existing and/or proposed OLFP locations, we do not believe any further assessment is required.

With respect to the RV, OLFP locations are indicated on C470 to C470-7. All OLFPs are contained within the private accessways and are then safely conveyed to nearby streams and or existing OLFPs, via engineered swales and riprap structures.

Finer details relative to compliance with minimum floor levels, and specific riprap designs will be undertaken at future detailed design stages, however, Maven has set floor levels as to comply with the SWCoP for the purpose of this Fast Track application.

1.7 Development Engineering (Ray Smith) Annexure 4

Ray has helpfully summarised our approach to stormwater control, and has taken a pragmatic and reasoned approach to our design philosophy, noting the following:

> *Increased **Stormwater** runoff from the proposed impermeable surfaces is intended to be offset by roof water collection and reuse and the introduction of vegetation planting. These methods in principle are an accepted method of stormwater control for rural or large lot development and have been included within Councils "Toolbox of Methods" since around the year 2000. The offset planting in particular provides a method for addressing increased flows, timing and volume of runoff through a range of return period events. It is also acknowledged, however, that matters such as effects on water quality and downstream capacity/flooding effects of this potential cumulative discharge into watercourses need to be carefully considered. I note Healthy Waters and the Council Stormwater specialist have otherwise raised several matters in relation to stormwater discharges and outstanding information, which have been reported on and requested separately.*

1.7.1 S67 Information Gap - FENZ

A formal application has been made to FENZ; however, their formal approval is yet to be received. This has been followed up again, although not yet received. Additional details relative to the Retirement Village firefighting design has been provided to FENZ, as they had provided an RFI on the formal consultation application lodged.

1.7.2 S67 Information Gap – Power and Comms

Maven is in the process of getting specific designs for Stages 1-3 of the Countryside Living subdivision from both Vector and Chorus. Consultation has been undertaken with both providers, who have confirmed that subject to upgrades, the development can be provided with power and communications connections. An indicative supply and design price has been provided in both instances.

1.8 Traffic Engineering (Annexure 10) – Summary only

The following provides a summary of any relevant items to which have been modified or responded to in the revised Maven civil design package. We defer to the Commute response for a wider response on the traffic engineering matters.

1.8.1 Access 1 (JOAL 1 and JOAL 2):

As requested by Commute, the design of the JOAL 1, Old North Road intersection has been modified to include a right turn bay into Pine Tone Road. Please refer to the amended civil drawings PN 147007 C300-1-0, C300-1-1 and C300-1-2 Rev B. The amended tracking to accommodate the requested movement, and shoulder widening of the JOAL 1 / JOAL 2 intersection has been done. The landscape plan has also been amended to shift the location of the gates back to the desired location.

We are also confirming that the covenant restricting vegetation within the sight lines will be controlled and administered by the Residents Association as requested.

1.8.2 Deacon Road / Forestry Road Intersection

As requested by Commute, the Deacon Road / Forestry Road intersection has been upgraded to include line marking for the right turn bay. Please refer to the appended Maven civil drawing PN 147016 C310-1 Rev A).

1.9 Deacon Road / Riverhead Road Intersection

The requested warning sign sought by Auckland Transport has been included on the appended Maven drawing PN 147016 C310-2 Rev A.

1.10 Forestry Road

The treatment has been removed from Forestry Road, as per the request from Auckland Transport. The drawing set and scheme plan has as a result been updated, as the stormwater design and legal boundary has been modified to suit the new alignment.

We also note that the design of Forestry Road has considered existing vehicle access into the adjoining vehicle crossings, and we can confirm that complying gradients can be achieved, with these tie ins within the legal extent of Forestry Road. During construction, temporary restrictions will be in place, and if the adjoining landowners would like the crossings to tie into their property this can be done, however, the design is not reliant upon obtaining right of entries.

1.11 Resident at [redacted] – Submission

In response to the concerns raised by the resident ([redacted]) we provide the following response:

1) The application does not relate to or is reliant upon the Riverhead Road culvert upgrade. This is a separate matter.
2) The runoff from the site will be managed as to ensure there is no downstream effects, for all the required rainfall scenarios. Maven's assessment and design is to ensure that mitigation is provided to the pre-development state. Flooding within any catchment will increase under the climate change factors being applied, and the design needs to ensure mitigation to pre-development levels with the same rainfall factors applied.
3) We remain of the view that the proposed revegetation and protection (via covenants) will create improved resiliency and reduce runoff and flooding effects for downstream properties in the future, from that of the otherwise continued operation of plantation forestry.
4) The flood mitigation strategy has favoured catchment wide solutions to that of typical at-source (detention tanks) approach. This is due to the risk of such devices not being maintained or designed as needed are increased. This will also ensure that the mitigation is constructed in advance of impervious surfaces from the Retirement Village being introduced into the catchment.
5) All catchment devices will be owned and managed by the Residents Association which will ensure ongoing maintenance and upkeep ensuring the mitigation can be relied upon for downstream properties.
6) It is not typical to share models with external parties, however, as part of the consenting and detailed design process, Maven will continually need to demonstrate compliance with the stormwater discharge consent, which will require pre-development attenuation for all the listed events. The flood model and associated maps are provided in support of the Fast Track application.

2. APPENDICES

APPENDIX A – HEALTHY WATERS COMMENT REGISTER AND MAVEN RESPONSE

Initial RFI	HW Comments O2.09	Maven Response
1.1 A copy of the Applicant's flood model for the Riverhead catchment including all of the modelled pre-development model and post-development scenarios.	No further comment. Model not yet provided.	To aid the process and to ensure transparency, Maven will be providing the model prior to any formal RFI being received from the Panel.
1.2 Additional modelling scenarios (50%,20%, 10%, 5%, 2% and 1%) and associated assessment of effects for the development relative to existing land-use and rainfall. These scenarios are to be included with copy of the model requested under Item 1.1	Flood Assessment Report Section 7 (Table 1: Modelled Scenarios Summary) does not list the requested scenarios. There was also no associated assessment of effects provided within the application documents.	The scenarios included in the report are listed in Table 1 of the Maven Flood Modelling Report. These included the initial scenarios sought upon our pre-application meeting, and included the further scenarios requested in the formal pre-application minutes which were included in the relodged documentation. This amounts to 16 modelled scenarios. We believe this is a sufficient level of detail provided in support of the application.
1.3 Further justification on the filtering of flood comparison maps to 10mm.	The hydraulic modelling carried out is comparative (i.e. comparing pre-development scenarios to post-development scenarios) and as such the results comparison layers.	We defer to our previous statement as to why the filtering is provided.

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<td>1.4 Further justification on the use of a uniform pre-development curve number (CN) of 74 across the entirety of the proposed site.</td>
<td>Further advice was provided to the Applicant on 25/07/2025. For clarity the following was provided:

Pre-development CN (logging areas) – Healthy Waters modelling specialists have been consulted and have advised that a CN number of 70 is to be used for all logging areas irrespective of whether these have been logged. This is largely based on observations from calibration modelling after January 2023 events.

Post-development CN (covenanted bush) – Following from pre-development CN advice above, CN 70 can be applied to all covenanted and planted bush areas provided these will not be subjected to extensive earthworks.</td>
<td>Maven continues to disagree with Healthy Waters' sentiment that there is no difference in CN values from harvested and/or mature pine forests. We have based our position on the following guidance.

1. All modelling done to date for PC100 and by Council assumed a CN of 74 for the Forest. As such, we have sought consistency.

2. The CN value is based on Table 2-2c Runoff Curve numbers fromTP-108, which is the primary source for any flood modelling CN values in the Auckland Region

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

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

3. We note in our previous response, that we had suggested that the site (post logging) which is the current state of the bulk of Lots 1 and 2, would be poor pasture lands. On reflection, and further consideration, we instead hold the position that the site should be classified as woods in poor conditions which is CN 77, for Class C soils.</td>
</tr>
</table>

	In addition, logged areas still retain significant hydrological function. Residual vegetation, forest litter, branches, and root systems continue to intercept rainfall, enhance infiltration, and slow runoff. These features are not comparable to a cleared or developed land and therefore do not justify the use of a higher CN typically associated with disturbed or compacted soil conditions.	This reflects the commentary that Healthy Waters has noted that existing roots and other vegetative matter will aid (in some part) the control of water. 4. Maven has undertaken further review on the CN and runoff effects which relate to the post-harvest stage of plantation forests. We note that the process of logging also disturbs and compacts large areas within a forest, associated with roading, haulage and skid sites. In Maven's view, recently felled forest areas are best described as the following a) Harvested / Clear Cut CN 77 -80+ - Immediately after harvest, the removal of vegetation, and soil compaction from machinery increases runoff. A value near the higher end of this range would be appropriate for compacted logging roads and landings. For avoidance of doubt, we are taking the conversative CN of 77 as per TP108 Table 2-2c. 5. Maven has taken a conservative approach whereby we have not taken the CN 77 as the baseline of our flood model, even though this is the current state of Lots 1 and 2 (for the most part), as was evident during the recent site visits. Our basis for assessment is CN 74. An assessment of effects should be relative to the pre-development conditions within any site. 6. Maven is in the process of running a pre-development model at CN 77 as a further scenario and sensitivity check. This is important to consider, given the nature of the rotation pine forest. If a rainfall occurs during or shortly after logging, increased runoff is caused. In contrast, the intended revegetation and protection associated with the CSL development will ensure significant and measurable runoff reduction for the catchment. This provides a long-term benefit for the receiving catchment. We note that widespread planting and protection is not required, and such outcomes need due consideration when assessing the benefits of this development.

		7. These compounding positive effects are amplified by the increased initial abstraction that forested areas provide in catchments. This results in more water being retained in a catchment during a rainfall event. Although this is a known benefit of forested areas, this is not something that is factored into flood model outputs.
1.5 Details on how the function of the Retirement Village Stormwater Pond was incorporated in the model.	1.5 The details of the input parameters (e.g. elevation volume, outflow structure, etc.) including the HEC-HMS model to be provided for review.	The HEC – HMS model will be provided to Healthy Waters as requested.
1.6 Further assessment of effects on flooding from the proposed Forestry Road upgrade pertaining to the effects from the upgraded culverts, and the effects from upgraded vehicle access to private driveways.	1.6 Addressed subject to review of agreed updates.	Noted.
1.7. Further assessment of effects on flooding from the proposed Forestry Road upgrade pertaining to changes in flood velocities.	1.7 Addressed subject to review of agreed updates.	Noted.
1.8. Confirmation whether consultation was carried out with the landowner of 100	1.8 Evidence of consultation to be provided. Subject to updated assessment of effects	Campbell Brown to provide evidence as part of the AEE, refer to the email response from the adjoining neighbour stating that they do not have any concerns with the project.

Forestry Road on the increase in flooding within their property.	considering 1.6 and 1.7 above to be reviewed.	
1.9. Overland flow path assessment including catchment plans and representative cross-sections of the overland flow conveyance corridors, and culvert spill/overtopping points with supporting calculations assuming Maximum Probable Development (MPD) and 3.8- degree climate change (and primary network blockages as required).	1.9 Representative cross-sections need to be incorporated with the catchment plans to demonstrate that the conveyance of the overland flows within JOALs, access roads and designated overland flow path corridors can be achieved in a way that does not introduce flood hazards that present a risk to people, property and infrastructure.	Refer to Maven Response in Section 1.6 of our formal response.
1.10. Details on the provisions that will ensure the spillway function on Lot 1 (Countryside Living Subdivision) doesn't restrict access for residents or emergency services during high intensity rainfall and details on whether easements or consent notices will be	1.10 Blockage assessment for all culverts to be provided including design of an overland flow path that meets the relevant safety design criteria. Refer to SWCoP Section 4.3.9.8(h) and 4.3.9.8(i) for blockage assessment design requirements. Given the nature of the catchment	With the exception of the attenuation culverts, all other culverts have been designed to convey 100-yr flows. In the event of blockages (which is unlikely given sizing of primary culverts), however, the accessway design over the culverts will allow in the worst case for any overland flow to sheet over the accessway and into the downstream watercourse / OLFP. This is consistent with standard countryside living developments, and such details will be provided as part of the future Common Accessway (CAW EPA).

implemented to secure this overland flow path and its function.	being bush, a higher blockage rate is considered appropriate.	
1.11. The Flood Modelling Report states that the downstream bridges do not result in an increase in flood levels. However, it is noted that the bridge decks were not included in model. Please clarify whether this conclusion is based on the comparison between pre development and post-development flood levels, if so, please provide flood extent and depth maps. Please also include the justification for omitting bridge decks from the model.	1.11 Further advice was provided to the Applicant on 25/07/2025. For clarity the following was provided: Bridge Structures: For completeness the bridge structures within the streams should be represented in the model. Should this not be incorporated into the model, then the stormwater modelling report will need to provide clear justification on the appropriateness and accuracy of the results.	This will be incorporated into a model shared with Healthy Waters. We retain our position that as we reduce peak flows, this also removes the need for in depth relative flood level assessment downstream, as such heights will remain relative to upstream flows.
1.12. Clarification whether the use of initial abstraction (Ia) of 5mm is appropriate for the existing bush areas and whether the use of Ia = 0.2S (where S is determined by TP108 Equation 3.2) is more appropriate.	1.12 Addressed. Initial abstraction (Ia) to be implemented as per TP108 Table 3.1 across all scenarios.	Noted. Flood modelling has been done in accordance with this request, however, as per Item 7 above under 1.4, this does not consider any future benefit and increased abstraction from future forested areas.

1.13. Clarification of whether the referred 'eastern catchment' only provides attention to 2% AEP as it has not been specifically mentioned in the SMP that 1% AEP will also be attenuated to. This would impact the design of the proposed culverts, and also the area/height behind the culverts.	1.13 Addressed subject to SMP being updated to clearly capture the approach.	Confirming that the eastern catchment is provided with attenuation for the 2, 5, 10-, 20-, 50- and 100-year events. The western catchment (Stages 1-5 of CSL has only been modelled for the 2, 10 and 100yr events as noted wihtin the Flood Modelling Report.

SUMMARY OF THE AMENDED DRAWINGS ATTACHED TO THIS RESPONSE

Countryside living

Earthworks

147007-M- C230-1-1 Rev B - PROPOSED EROSION SEDIMENT CONTROL PLAN - STAGE 1

Roading

147007-M-C300-1-0 Rev B - PROPOSED ROADING OVERVIEW - STAGE 1

147007-M-C300-1-1 Rev B - PROPOSED ROADING OVERVIEW - STAGE 1

147007-M-C300-1-2 Rev B- PROPOSED ROADING OVERVIEW - STAGE 1

Stormwater

147007-M-C481 Rev B - CULVERT 13-4 PLAN AND LONDSECTION

147007-M-C482 Rev B - CULVERT 14-1 PLAN AND LONDSECTION

147007-M-C483 Rev B - CULVERT 6-6 PLAN AND LONDSECTION

147007-M-C484 Rev C - CULVERT 1-1 PLAN AND LONDSECTION

147007-M-C485 Rev A - CULVERT 1-1 100 YR FLOOD STRORAGE PLAN (new drawing)

Retirement Village

Scheme Plan

147016-RV- C190-1-1 Rev B - RETIREMENT VILLAGE PROPOSED SCHEME PLAN

147016-RV- C190-1-2 Rev B - RETIREMENT VILLAGE PROPOSED SCHEME PLAN

147016-RV- C190-1-3 Rev B - RETIREMENT VILLAGE PROPOSED SCHEME PLAN

Roading

147016-RV-C300 Rev B - RETIREMENT VILLAGE PROPOSED ROADING OVERVIEW PLAN

147016-RV-C300-9 Rev B - RETIREMENT VILLAGE FORESTRY ROAD EXTENSION PLAN

147016-RV-C300-10 Rev B - RETIREMENT VILLAGE FORESTRY ROAD EXTENSION PLAN

147016-RV-C300-11 Rev B - RETIREMENT VILLAGE FORESTRY ROAD EXTENSION PLAN

147016-RV-C300-12 Rev B - RETIREMENT VILLAGE FORESTRY ROAD EXTENSION PLAN

147016-RV-C300-13 Rev B - RETIREMENT VILLAGE FORESTRY ROAD EXTENSION PLAN

147016-RV-C300-14 Rev B - RETIREMENT VILLAGE FORESTRY ROAD EXTENSION PLAN

147016-RV-C300-15 Rev B - RETIREMENT VILLAGE FORESTRY ROAD VEHICLE CROSSINGS

147016-RV-C300-16 Rev B - RETIREMENT VILLAGE FORESTRY ROAD VEHICLE CROSSINGS

147016-RV-C310 Rev A - PROPOSED INTERSECTION IMPROVEMENT PLAN (new drawing)

147016-RV-C310-1 Rev A PROPOSED INTERSECTION IMPROVEMENT PLAN (new drawing)

147016-RV-C310-2 Rev A PROPOSED INTERSECTION IMPROVEMENT PLAN (new drawing)

Stormwater

147016-RV-C400-0 Rev B - RETIREMENT VILLAGE PROPOSED STORMWATER PLAN

147016-RV-C401-1 Rev B - RETIREMENT VILLAGE PROPOSED STORMWATER EXTENSION PLAN

147016-RV-C401-2 Rev B- RETIREMENT VILLAGE PROPOSED STORMWATER EXTENSION PLAN

147016-RV-C401-3 Rev B- RETIREMENT VILLAGE PROPOSED STORMWATER EXTENSION PLAN

147016-RV-C401-4 Rev B- RETIREMENT VILLAGE PROPOSED STORMWATER EXTENSION PLAN

147016-RV-C401-5 Rev B- RETIREMENT VILLAGE PROPOSED STORMWATER EXTENSION PLAN

147016-RV-C401-6 Rev B- RETIREMENT VILLAGE PROPOSED STORMWATER EXTENSION PLAN

147016-RV-C420-26 Rev B- RETIREMENT VILLAGE STORMWATER LONG SECTIONS - ROAD RUN OFF

147016-RV-C420-27 Rev B - RETIREMENT VILLAGE STORMWATER LONG SECTIONS - ROAD RUN OFF

147016-RV-C420-28 Rev B - RETIREMENT VILLAGE STORMWATER LONG SECTIONS - ROAD RUN OFF

147016-RV-C420-29 Rev B - RETIREMENT VILLAGE STORMWATER LONG SECTIONS - ROAD RUN OFF

147016-RV-C420-30 Rev B - RETIREMENT VILLAGE STORMWATER LONG SECTIONS - ROAD RUN OFF

147016-RV-C420-31 Rev B - RETIREMENT VILLAGE STORMWATER LONG SECTIONS - ROAD RUN OFF

147016-RV-C420-33 Rev B- RETIREMENT VILLAGE STORMWATER LONG SECTIONS - ROAD RUN OFF

147016-RV-C420-33 Rev B - RETIREMENT VILLAGE STORMWATER LONG SECTIONS - ROAD RUN OFF

147016-RV-C475 Rev A - RETIREMENT VILLAGE100YR FLOOD EXTENT OVERVIEW PLAN (new drawing)

147016-RV-C475-1 Rev A - RETIREMENT VILLAGE100YR FLOOD EXTENT PLAN (new drawing)

147016-RV-C475-2 Rev A - RETIREMENT VILLAGE100YR FLOOD EXTENT PLAN (new drawing)

147016-RV-C475-3 Rev A - RETIREMENT VILLAGE100YR FLOOD EXTENT PLAN (new drawing)

147016-RV-C475-4 Rev A - RETIREMENT VILLAGE100YR FLOOD EXTENT PLAN (new drawing)

147016-RV-C475-5 Rev A - RETIREMENT VILLAGE100YR FLOOD EXTENT PLAN (new drawing)

147016-RV-C475-6 Rev A - RETIREMENT VILLAGE100YR FLOOD EXTENT PLAN (new drawing)

147016-RV-C475-7 Rev A - RETIREMENT VILLAGE 100YR FLOOD EXTENT CROSS SECTION – OLFP (new drawing)

147016-RV-C475-8 Rev A - RETIREMENT VILLAGE 100YR FLOOD EXTENT CROSS SECTION – OLFP (new drawing)

147016-RV-C475-9 Rev A - RETIREMENT VILLAGE 100YR FLOOD EXTENT CROSS SECTION – OLFP (new drawing)

147016-RV-C475-10 Rev A - RETIREMENT VILLAGE 100YR FLOOD EXTENT CROSS SECTION – OLFP (new drawing)

147016-RV-C475-11 Rev A - RETIREMENT VILLAGE 100YR FLOOD EXTENT CROSS SECTION – OLFP (new drawing)

147016-RV-C475-12 Rev A - RETIREMENT VILLAGE 100YR FLOOD EXTENT CROSS SECTION – OLFP (new drawing)

147016-RV-C481 Rev B - RETIREMENT VILLAGE PROPOSED CULVERT PLAN AND LONGSECTION

147016-RV-C481-1 Rev B - RETIREMENT VILLAGE PROPOSED CULVERT PLAN AND LONGSECTION

147016-RV-C481-2 Rev B - RETIREMENT VILLAGE PROPOSED CULVERT PLAN AND LONGSECTION

147016-RV-C481-3 Rev B - RETIREMENT VILLAGE PROPOSED CULVERT PLAN AND LONGSECTION

147016-RV-C481-4 Rev B - RETIREMENT VILLAGE PROPOSED CULVERT PLAN AND LONGSECTION

147016-RV-C481-5 Rev B - RETIREMENT VILLAGE PROPOSED CULVERT PLAN AND LONGSECTION

147016-RV-C481-6 Rev B - RETIREMENT VILLAGE PROPOSED CULVERT PLAN AND LONGSECTION

147016-RV-C481-6-1 Rev A RETIREMENT VILLAGE PROPOSED 100-YEAR FLOOD STORAGE PLAN (new Drawing)

147016-RV-C481-7 Rev B - RETIREMENT VILLAGE PROPOSED BRIDGE PLAN AND LONGSECTION