



STAFF REPORT

TO: Environment & Planning Subcommittee

FROM: Leif Pigott – Consent Planner Natural Resources

REFERENCES: RM080193 – Land Use Earthworks

SUBJECT: **ST LEGER TRUST – REPORT EP08/12/04** - Report prepared for hearing of December 2008

St Leger Trust has lodged several resource consent applications relating to a Rural Residential subdivision. This report discusses the resource consent application made to authorise land disturbance associated with the development proposed earthworks. The site is in the Land Disturbance Area 1, Slope Instability Risk Area and it is zoned Rural Residential Serviced.

1. DESCRIPTION OF THE PROPOSED ACTIVITY

The applicants propose the development of a 32 lot subdivision with an associated access road and right-of-ways.

The site is located on the hill slope to the south and east of Highland drive and to the south of Champion Road. Parts of the site are in the Slope Instability Risk Area as defined on the maps of the Proposed Tasman Management Plan. An investigation has been undertaken by Tonkin and Taylor (T&T reference 870037.004).

Large areas of the site have been found to be suitable for the subdivision. However there are some areas that pose a higher risk that will require mitigation work to make them suitable for development and the access road will need to traverse some of these high risk areas.

2. PROPOSED TASMAN RESOURCE MANAGEMENT PLAN (PTRMP) ZONING, AREAS AND RULES AFFECTED

The land is zoned Rural Residential Serviced and some of it is with the Slope Instability Risk Area and Land Disturbance Area 1 (see Figure 1 page 8).

The relevant permitted activity rule is 18.12.2.1 but the proposed activity does not meet the permitted activity rule 18.12.2.1 condition (c) as the cuts are greater than 0.5 metres. The activity therefore becomes a controlled activity with the relevant rule being 18.12.2.2. The following is a list of the matters the Council has reserved control over in rule 18.12.2.2:

- (1) *Matters (1) to (13) in Rule 18.5.2.2*
- (2) *Risk of damage by erosion, falling debris, subsidence, slippage or inundation from any source.*

Matters (1) to (13) in 18.5.2.2 are listed below

- (1) *The location, timing of construction, design, and density of earthworks including roads, tracks, or landings.*
- (2) *The disposal and stabilisation of waste material or fill.*
- (3) *Loss of or damage to soil.*
- (4) *Damage to riparian vegetation or soil.*
- (5) *Damage to animal or plant communities or habitats in water bodies or coastal water.*
- (6) *Effects of the activity on river or stream flows.*
- (7) *Sedimentation effects on subsurface streams or caves in karst.*
- (8) *Damage to any structures.*
- (9) *The visual effects of the activity*
- (10) *Potential damage to any cultural heritage site or area, including any archaeological site or site of significance to Māori.*
- (11) *Damage to any natural habitat or feature.*
- (12) *The duration of the consent (Section 123 of the Act) and the timing of reviews of conditions and purpose of reviews (Section 128).*
- (13) *Financial contributions, bonds and covenants in respect of the performance of conditions, and administrative charges (Section 108).*

3. SUBMISSIONS

Submitters raised issues relating the earthworks at the site.

Submitter Detail	Support or Oppose	Summary
Michael Gilbert	Support	All geotech issues can be resolved.
David Waine	Support	T& T have advised all geotech constraints can be overcome.
Peter Anthony Williams and Elizabeth Mary Williams	Oppose	Excessive noise and dust issues due to construction of road.
Duke & Cooke Ltd	Support	The design presented is appropriately responded to the geotechnical, servicing and landscape considerations.
Cotton & Light	Support	The applicant has engaged a firm of engineers that have a reputation for being conservative, and have stated the subdivision is geotechnically feasible.
The Lau Family Trust	Oppose	Strongly oppose until St Leger has complied with the conditions on Stage VI RM030497. Being the adjoining owners to stage VI the adverse effects have been extreme. The geotechnical report has identified slumping (slump block c). The lower end of this slump could interact with our property. In stage VI St Leger have not addressed the underlying slope instability issues to our satisfaction.

Submitter Detail	Support or Oppose	Summary
Andrew and Lynne Robinson	Oppose	Land is question has a high risk of instability with two fault lines running through it. The developer's consultants do not guarantee stability of the areas not tested suggesting that their design is based on inadequate information.
Jean and Derrick Byron	Oppose	<p>Concerns with the technical solutions proposed. The site history has shown:</p> <ul style="list-style-type: none"> - two faults running through it - slope angles exceed the norm for stable ground - Cotton & light have shown ground movements in both 2 and 6 year test periods - Tree removals have precipitated land slides - Section owners face extensive ground stabilisation and drainage costs <p>Recent trends in climate suggest that both wind and rainfall levels not normally envisaged by codes for civil engineering are occurring. These could be compounded by earthquake movements at any time. Extreme diligence is needed by all parties to this development.</p> <p>Survey is not comprehensive and T&T have made a disclaimer on the areas not tested.</p> <p>If consent is granted asking for the following: Adequate nuisance and pollution control measures including hours of work, noise and air pollution monitoring to be put in place.</p>
J C and K E Heslop Family Trust	Support with conditions	<p>No earthworks in our land</p> <p>No substantial stormwater runoff within our land.</p>
Michael Lee Montgomery	Support	Satisfied that it can be developed for residential use.
Sandra Hunter	Support	Geotechnical engineers have investigated this site for many years and are satisfied that the subdivision can take place.

4. PRINCIPAL ISSUES

The principal issues associated with the application that have been raised by the submitters are as follows:

- a) Risk of damage by erosion, falling debris, subsidence, slippage or inundation from any source;
- b) Erosion and sedimentation in run off;
- c) The visual effects of the activity;
- d) Dust from earthworks;
- e) Noise; and
- f) Location and timing of construction.

5. STATUTORY PROVISIONS

The application is a restricted discretionary activity. The Council must consider the application pursuant to Section 104 of the Resource Management Act 1991.

The matters for the Council to address in Section 104 are:

- Part II matters;
- the actual and potential effects on the environment of allowing the activity (Section 104 (1)(a));
- relevant objectives and policies in the Tasman Regional Policy Statement, and the Proposed Tasman Resource Management Plan (Section 104 (1) (b));
- any other matter the Council considers relevant and reasonably necessary to determine the application (Section 104 (1)(c));

5.1 Resource Management Act Part II Matters

In considering an application for resource consent, Council must ensure that if granted, the proposal is consistent with the purpose and principles set out in Part II of the Act.

Section 5 sets out the **purpose** of the Act which is to promote the sustainable management of natural and physical resources. "Sustainable management" means:

"Managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while -

- *sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
- *safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
- *avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

Sections 6, 7 and 8 set out the **principles** of the Act:

Section 6 of the Act refers to matters of national importance that the Council shall recognise and provide for in achieving the purpose of the Act. The matters relevant to this application are:

- The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use and development.
- The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna

Section 7 of the Act identifies other matters that the Council shall have particular regard to in achieving the purpose of the Act. Relevant matters to this application are:

- 7(d) intrinsic values of ecosystems
- 7(f) maintenance and enhancement of the quality of the environment, and
- 7(g) any finite characteristics of natural and physical resources

Section 8 of the Act shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi). I understand that the applicant has consulted with iwi and have accepted an iwi monitor on site. I do not anticipate that there are any relevant issues for this application in respect of Section 8.

If consent is granted, the proposed activity must be deemed to represent the sustainable use and development of a physical resource and any adverse effects of the activity on the environment are avoided, remedied or mitigated. The critical issue of this consent is whether the earthworks can be undertaken so the adverse effects of the earthworks are no more than minor.

These principles underpin all relevant Plans and Policy Statements, which provide more specific guidance for assessing this application.

5.2 Tasman Regional Policy Statement

The Regional Policy Statement seeks to achieve the sustainable management of land, water and coastal environment resources. Objectives and policies of the Policy Statement clearly articulate the importance of protecting land resources from inappropriate land use and development.

Because the Proposed Tasman Resource Management Plan was developed to be consistent with the Regional Policy Statement, it is considered that an assessment under the Plan will satisfy an assessment against Policy Statement principles.

5.3 Tasman Resource Management Plan (TRMP)

The most relevant Objectives and Policies to this application are contained in:

- Chapters 12 and 13

The most relevant Rules which follow from these imperatives are contained in Chapters 18.

Matters of control were stated in section 2 above

6. ASSESSMENT

Pursuant to Section 104(1)(a) of the Resource Management Act, the following effects assessment has been set out:

6.1 Actual and Potential Environmental Effects

6.1.1 Proposal Summary

The applicants propose the development of a 32 lot subdivision with an associated access road and right-of-ways.

The site is located on the hill slope to the south and east of Highland drive and to the south of Champion Road. Parts of the site are in the Slope Instability Risk Area as defined on the maps of the Proposed Tasman Management Plan. An investigation has been undertaken by Tonkin and Taylor (T&T reference 870037.004).

Large areas of the site have been found to be suitable for the subdivision. However there are some areas that pose a higher risk that will require mitigation work to make them suitable for development and the access road will need to traverse some of these high risk areas.

Detailed engineering plans have not been provided at this stage and they will need to be provided before signoff.

6.1.2 Earthworks Assessment

The issues that have been raised in the submission are as follows

- a) Risk of damage by erosion, falling debris, subsidence, slippage or inundation from any source;
- b) Erosion and sedimentation in run off;
- c) The visual effects of the activity;
- d) Dust from earthworks;
- e) Noise; and
- f) Location and timing of construction.

The critical issue that this report need is assess is the risk of damage by erosion, falling debris, subsidence and slippage. The earthworks proposed are significant and carry the highest risk.

The issues listed above b) to f) are important but the risks associated with the adverse effects are lower.

6.1.3 Slope Instability

The following figures 1 and 2 show the slope instability risk area as defined in the planning maps. It can be seen that two slope instability risk areas cover part of the block where the earthworks will be undertaken as part of the subdivision.

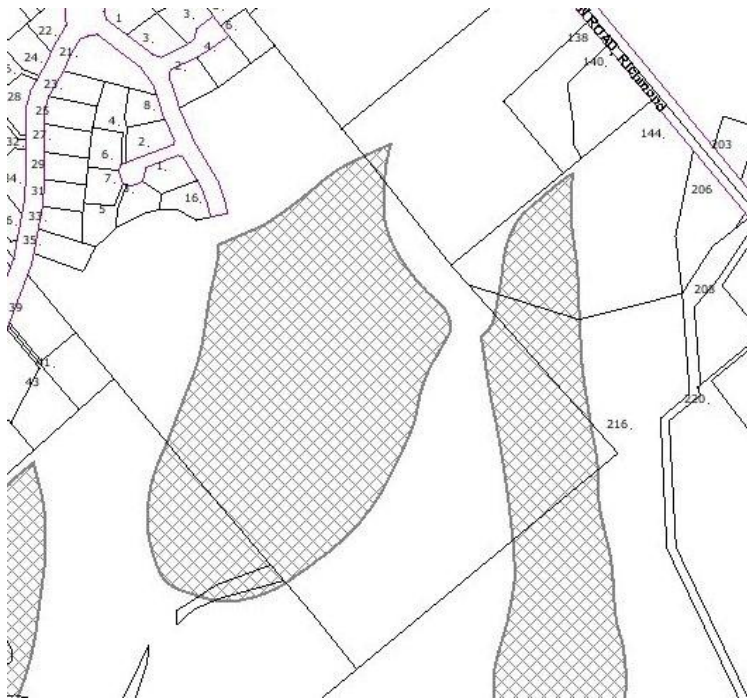


Figure 1 Slope instability risk areas and property boundaries



Figure 2 Slope instability risk areas with aerial photo backdrop

The following summaries the findings of both the T&T information and the review of that information supplied by Mike Johnston.

The geotechnical evidence from the applicant was provided by T&T. Then this geotechnical information was reviewed by the consulting geologist Dr Mike Johnston. He has significant experience and has worked extensively for Nelson City and Tasman District Council.

The proposed subdivision encompasses a northeast trending ridge to the east of Highland Drive and which terminates at the head of Champion Road. To the northwest the ridge is bounded by low gently sloping land that has already been largely subdivided into residential lots. A sharp topographic change separates this land from the moderately steep to steep northwest slope of the ridge which has been extensively planted in exotic trees to reduce the risk of slope movement. Evidence of slope movement ranges from widespread superficial instability to several moderately large failures. A farm track across the slope provides access to the relatively broad crest of the ridge. The southeast side of the ridge slopes steeply towards Trowers Creek.

The proposed subdivision largely envisages residential lots on the crest of the ridge which will be accessed by a new road that curves from the end of Highland Drive across the face of the ridge and which thereby will largely be in Marsden Coal Measures formation. Several residential lots are proposed on either side of the road, including within the coal measures, and several of them will be served by right-of-ways. To assist in planning for the subdivision Tonkin & Taylor has divided the area into five risk zones:

- Zone 1 Low Risk – mostly comprising gently sloping land underlain by Richmond Group rocks. Depending on slope this zone is further divided into NZS 3604 Zone (slope $<15^{\circ}$) or Specific Investigation and Design (SID) Zone where slopes are $>15^{\circ}$).
- Zone 2 SID – low to moderate risk.
- Zone 3A SID/No Build Area – moderate risk but probably economically feasible to develop.
- Zone 3B SID/No Build Area – moderate to high risk, development possible but would require extensive earthworks
- Zone 3C No Build Area – high risk area and probably not suitable for building.

The following map Figure 3 of the slope instability has been provided by T&T. It shows the developmental risk zones.

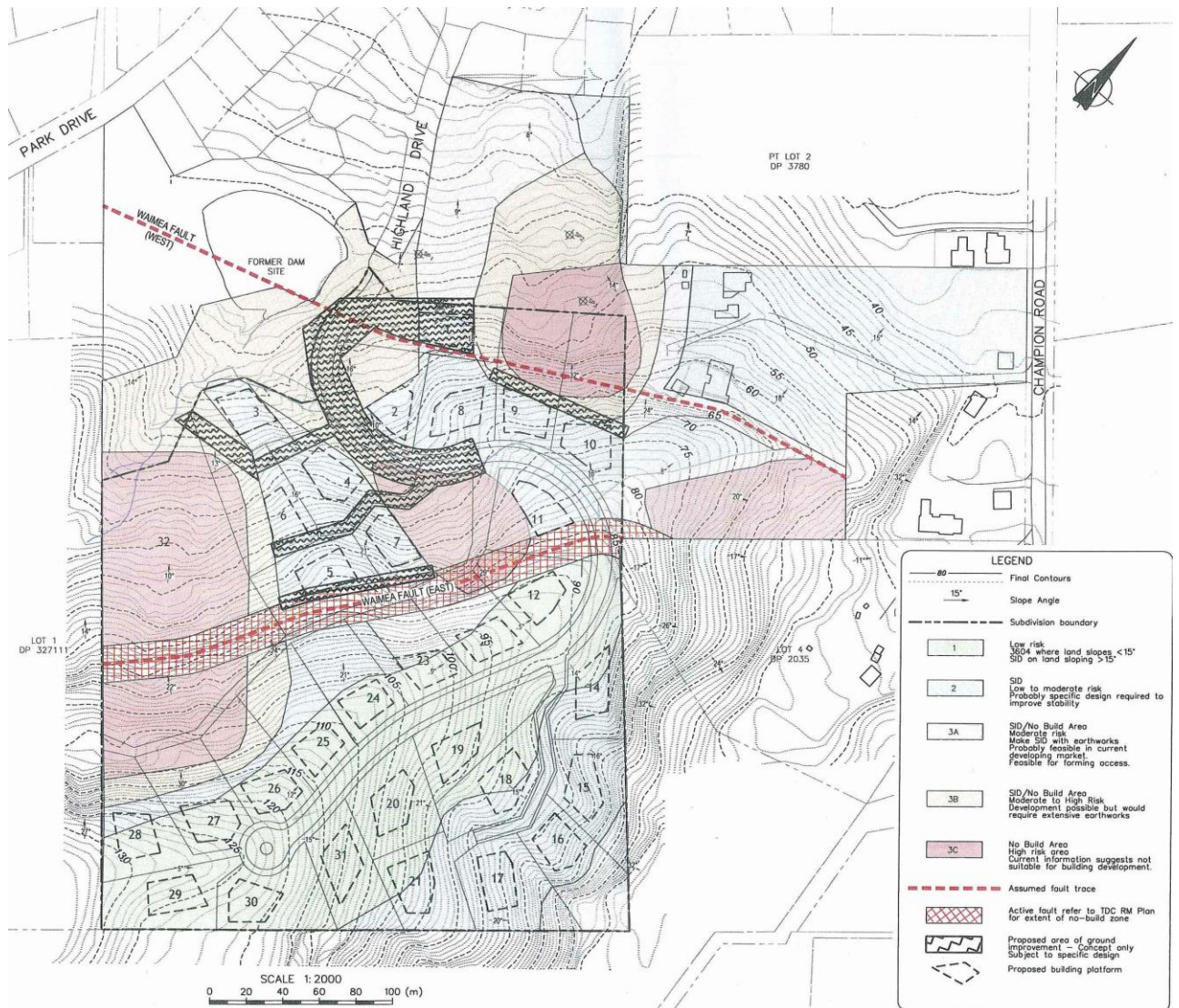


Figure 3 Developmental Risk Zones as defined by T&T.

Tonkin & Taylor recognizes that on the northwest face of the ridge services, such as stormwater, sewer and water, are potentially at risk and the firm has identified mitigation measures that may need to be implemented. These are potentially:

- Specific ground improvements, such as installation of subsoil drainage.
- Ensuring that pipes are buried below zones of creeping soil.
- Utilising routes that avoid high risk areas.
- Flexible couplings and/or high strength pipes.
- Ensure that all stormwater flows are piped or channeled off the hillside and to reduce the risk of water infiltration open channels will need to be lined.
- Secondary flow paths to be within the road formation.

The T&T report makes several recommendations, these include the following:

- The investigation, design and specification of the subdivision earthworks should be carried out or reviewed by a Chartered Professional Engineer practicing in geotechnical engineering.

- All aspects of construction will need to be monitored and reviewed by a Chartered Professional Engineer practising in geotechnical engineering.
- Subdivision earthworks should include construction of ground stabilisation earthworks and subdivision drainage in the moderate to high risk areas of identified on T&T drawing 870037.004-F3. The requirement for additional ground stabilisation works shall be assessed a part of the geotechnical design review and during construction.
- Earthworks and slope re-profiling to provide the subdivision layout should be monitored by a geotechnical engineer and on satisfactory completion of earthworks the engineer should submit a completion report and Statement of Professional Opinion as to suitability of the land for Building Construction, and include any recommendations for the building development on the lots.
- All earthworks shall be carried out in accordance with NZS4431:1989.
- The investigation and design of the excavations in excess of 1.0m deep should be carried out and reviewed by a Chartered Professional Engineer practicing in geotechnical engineering. The effects of all the excavations on global stability should be assessed.
- The investigation and design of fills in excess of 1.0m high or any fill on ground sloping at more than 3H:1V should be carried out and reviewed by a Chartered Professional Engineer practicing in geotechnical engineering. The effects of all the filling on global stability should be assessed.
- All fill should be stripped benched and drained . All fill placed on ground sloping at greater than 1V:4H and all fill to support structures shall be placed in accordance with NZS 4431:1989.
- The investigation and design of retaining walls should be carried out and reviewed by a Chartered Professional Engineer practicing in geotechnical engineering. All walls should be adequately drained.
- Consideration may be given to designation certain areas for stability planting, restricting building in certain areas, and placing conditions on the way the lots are developed.
- All the stormwater flows from hard surfaces shall be piped or channelled off the hillside to ensure that the water does not saturate the slopes.
- An erosion and sediment control plan must be provided prior to the commencement of earthworks and should specify measures to avoid adverse off site effects arising from the subdivision construction works.
- On completion of the subdivision earthworks the certifying geotechnical engineer should provide recommendations to ensure that future development on the lots does not adversely affect slope stability.

Summary of Dr Mike Johnston Review

Dr Mike Johnston's review is at a higher level than the T&T report and it does not recommend detailed geotechnical design engineering. Dr Johnston does make the following key points:

- a) Reducing the risk of movement to an acceptable level will be challenging.
- b) The most critical area is the road formation as it provides access to the lots upslope.
- c) The Council needs to be satisfied that the road and services within it are at low risk from slope movement.
- d) Unless evidence is provided both of the fault branches should be treated as active and setbacks implemented accordingly. Any setback would assist in minimising disruption to dwellings should either branch rupture during earthquake movement
- e) In a severe earthquake slope failure and reactivation of existing land slides and or new ones is an issue but is it very difficult to quantify this. It is best addressed by ensuring that the proposed mitigation measures are implemented to minimise slope movement.
- f) The dewatering of the coal measures formation are likely to require ongoing maintenance and monitoring.
- g) Adequate vegetation cover needs to be maintained and surface and subsoil drains need to remain effective and bunds kept clear of debris.

In summary the instability is largely within, and mostly directly related to, the weak and water saturated Marsden Coal Measures formation. Mitigation measures are proposed and T&T conclude that the subdivision is geotechnically feasible. These measures will require further investigation and design. The construction of the road will require extensive earthworks and adoption of 1:6 gradient is both prudent and sensible. T&T 's investigation has proven that the development is generally feasible. However the report is cautious. It behoves the council to be equally cautious.

Dr Johnston recommends that if resource consent for the subdivision is granted the following geotechnical earthworks conditions should be included:

1. Earthworks
 - a. The earthworks to form the subdivision, including the access road, right-of-ways and all mitigation measures implemented as part of the subdivision shall be designed and constructed under the supervision of the chartered professional engineer practising in geotechnical engineering referred to in Condition 1.

Advisory Note to Consent Holder: The above does not preclude work, such as kerbing, sealing, installation of services, and other finishing touches being supervised by a chartered professional engineer practising in civil engineering provided the work has been specifically assessed by the chartered professional engineer practising in geotechnical engineering referred to in Condition 1.

- b. No earthworks authorised by this consent shall commence unless specifically approved by the chartered professional engineer practising in geotechnical engineering referred to in Condition 1.
 - c. Any cut and fill faces within the lots constructed as part of the subdivision shall be retained unless in the professional opinion of the chartered professional engineer practising in geotechnical engineering referred to in Condition 1 that this is not necessary to ensure the stability of the faces and slopes generally.
 - d. Any cut and fill faces within or bounding the access road and the right-of-ways shall be retained unless considered unnecessary by the Tasman District Council after consultation with a chartered professional engineer practising in geotechnical engineering or an experienced engineering geologist.
 - e. Retaining walls shall be designed and constructed under the supervision of the chartered professional engineer practising in geotechnical engineering referred to in Condition 1.
 - f. At 224 Certification the consent holder shall forward to Council built plans of the earthworks for the subdivision. The plans shall be certified by the chartered professional engineer practising in geotechnical engineering referred to in Condition 1 that the earthworks have been:
 - g. satisfactorily completed
 - h. are appropriate for the prevailing ground conditions and
 - i. that there is a low risk of damage or disruption from slope instability to the access road, right-of-ways, drainage, stormwater works and other services installed as part of the subdivision.
 - j. If any mitigation works undertaken as part of the subdivision require on going monitoring and/or maintenance above that normally undertaken by Council for its roading network and drainage systems then this shall be the responsibility of the owners of all the lots that benefit from the mitigation works. Council will require a consent notice to be entered on the titles of the lots involved. If a consent notice cannot be implemented then Council will not grant 224 certification for the subdivision.
2. Erosion and Sediment Control
- k. Prior to earthworks commencing on site the consent holder shall forward to the Tasman District Council for review and adoption a management plan for the control of soil erosion during earthworks for the subdivision. The plan shall show the limits of areas to be disturbed and the

measures to avoid, remedy or mitigate the effects of erosion and sedimentation to the satisfaction of the Council.

3. Geotechnical Review

- I. Council may at the time of application by the consent holder for 224 Certification for the subdivision obtain a geotechnical peer review of the following:
 - m. Certifications of the building sites.
 - n. Mitigation measures that have been implemented.
 - o. Earthworks, including for the access road and the right-of-ways.

If the review concludes that there is more than a low risk to the building sites and other structures, including the access road and right-of-ways, from slope instability and/or that further mitigation measures are required then Council will not grant 224 Certification until such mitigation measures have been implemented to the satisfaction of the Council. The cost of the review shall be met by the consent holder.

Staff Comment

The recommended consent conditions provided by T&T and Mike Johnston have the same intent. That is all works shall be designed and constructed under the supervision of the Chartered Professional Engineer practising in geotechnical and that the temporary affects of erosion and sediment control shall be will be controlled via a management plan submitted for approval of the Council prior to the works commencing.

The T&T conditions are very specific and prescriptive. If the recommendations are adopted as conditions verbatim they could unduly limit the Chartered Professional Engineer practising in geotechnical engineering. The recommendations may however be modified to provide more freedom to the onsite engineer.

This report is focused on the earthworks in the slope instability zone. The conditions provided by Mike Johnston are wider than the scope of the controlled activity that limits the scope of this report. The wider recommendations provided will form the basis of other hearings reports presented to the committee as part of this suite of applications.

In summary it is possible to undertake the works in the slope instability zone but there will need to be significant effort to manage the risk of damage by erosion, falling debris, subsidence, slippage or inundation. The conditions proposed by T&T and DR Johnston have formed the basis of those recommended by this report.

6.1.4 Other Earthworks Issues

The remaining issues relating to how the works are undertaken and remedied are as follows:

- b) Erosion and sedimentation in run off;
- c) The visual effects of the activity;
- d) Dust from earthworks;

- e) Noise; and
- f) Location and timing of construction.

These issues are discussed in turn below. As a general statement these issues are all controllable through the use of good practice during the construction phase.

6.1.5 Erosion and sedimentation in run off

There will be a need to control the stormwater to minimize any erosion and sedimentation in run off from the entire site during the development. The ongoing stormwater from the site is discussed in detail in Stormwater consent report for Consent RM080191.

There is a risk of significant erosion when water flows over bare earth or stockpile materials. This erosion then produces large volumes of suspended sediment in the runoff and can cause problems either when it enters waterways or where the sediment is deposited.

A management plan needs to be developed to control sedimentation and erosion minimisation measures shall be designed by a Chartered Professional Engineer and these measures shall be implemented before the earthworks start. Additionally any material stockpiled on site will need to have an appropriately sized cut-off drain or bund on the uphill side to minimise the risk of erosion of the stockpile.

6.1.6 Visual Effects of the Activity

The site looks down over the surrounding area and when the earthworks are undertaken the bare earth will result in a visual effect. The visual effect from the earthworks will be temporary in nature and the site will be re-vegetated once each stage of the earthworks is completed. This will also help with reducing the risk of erosion, dust generation and increase the soil stability.

6.1.7 Dust from Earthworks

The applicant may need to control dust from the site. This will be addressed in the management plan for the site and may include watering the site to control any dust nuisance. In the longer term the generation of dust will be reduce by re-vegetating areas once the earth works have been completed.

6.1.8 Noise

The Controlled Activity does not specify noise as one of the matters of control. Thus the noise from the works will have to meet the permitted activity rule for works in the zone.

While noise is not a matter over which the Council has reserved control, the controlled activity rule does allow for the control of the timing of the works and this is discussed below and these will effectively control noise generation.

The site is zoned Rural Residential Serviced and the permitted activity rule 17.8.2.1 (l) specifies the following;

Noise generated by the activity, when measured at or within the notional boundary of any dwelling in a Rural Zone (other than any dwelling on the site from which the noise is being generated), Rural Residential, Papakainga or Tourist Services Zone, or at or within any site within a Residential Zone, does not exceed:

	Day	Night
L10	55 dBA	40 dBA
Lmax		70 dBA

Except that this condition does not apply to all noise from any intermittent or temporary rural activity, including noise from:

- (i) mobile horticultural and agricultural equipment;
- (ii) forest and tree harvesting activities;
- (iii) animals, except when associated with intensive livestock farming and animal boarding activities;
- (iv) bird scarers and hail cannons.

N.B. Day = 7.00 am to 9.00 pm Monday to Friday inclusive and 7.00 am to 6.00 pm Saturday (but excluding public holidays).

Night = all other times plus public holidays.

The measurement and assessment of noise at the notional boundary of a dwelling applies whether the measurement location is within Tasman District or in an adjacent district.

Noise must be measured and assessed in accordance with the provisions on NZS 6801:1991, Measurement of Sound and NZS 6802:1991, Assessment of Environmental Sound.

It should be noted that the use of earthworks machinery is not included in matters (i) to (iv) that are permitted

There is also a duty under Section 16 of the RMA to avoid unreasonable noise.

16. Duty to avoid unreasonable noise

- (1) Every occupier of the land (including any premises and any coastal marine area), and every person carrying out an activity in, on, or under a water body or ... the coastal marine area, shall adopt the best practical option to ensure that the emissions from the land or the water does not exceed a reasonable level

6.1.9 Location and Timing of Construction

A long duration of the consent has been applied for and no specific hours of work have been applied for. Given the nature of the local environment the standard construction hours to help control the offsite affects are proposed to be:

- 7.00 am- 6.00 pm Monday – Friday
- 8.00 am- 1.00 pm Saturday
- No work on Sunday or public holidays.

6.1.10 Summary of Assessment of Effects

In summary, potential adverse effects on the environment from the earthworks in terms of slope instability, and sediment generation at the proposed site are, in my opinion acceptable if they are carried out as per the geotechnical reports. That is under the supervision of a Chartered Professional Engineer practising in geotechnical engineering and in accordance with a management plan for the control of the temporary affects.

The largest risk to the Council is to slope stability in the Slope Instability Risk Area. Both technical reports state that the road will be at a lower risk with smaller cuts in the key unstable areas. This will need to be balanced with other issue raised with a stepper road gradient and these are outside the scope of this report.

The risk to the road stability posed from the development of a 1:6 road is significantly less than the proposed 1:7 road. The Committee will need to determine if this reduction out weighs the other issues associated with a road gradient peaking at 1:6.

Having considered the application in detail, having visited the site, and drawing on the Council's staff experiences of earthworks, it is the writer's view that the adverse environmental effects of the proposed activity can be controlled to minimise them.

6.2 Objective and Policies Assessment

The relevant objectives and policies from chapter 12 and 13 of the Tasman Resource Management Plan are listed below. Each chapter is followed with as assessment of the consistency of the activity is with the objectives and polices.

Chapter 12: Land Disturbance effects

12.1.2 Objective

The avoidance, remedying, or mitigation of adverse effects of land disturbance, including:

- (a) damage to soil;*
- (b) acceleration of the loss of soil;*
- (c) sediment contamination of water and deposition of debris into rivers, streams, lakes, wetlands, karst systems, and the coast;*
- (d) damage to river beds, karst features, land, fisheries or wildlife habitats, or structures through deposition, erosion or inundation;*
- (e) adverse visual effects;*
- (f) damage or destruction of indigenous animal, plant, and trout and salmon habitats, including cave habitats, or of sites or areas of cultural heritage significance.*
- (g) adverse effects on indigenous biodiversity or other intrinsic values of ecosystems.*

Policies

- 12.1.3.1** *To promote land use practices that avoid, remedy, or mitigate the adverse effects of land disturbance on the environment, including avoidance of sediment movement through sinkholes into karst systems*
- 12.1.3.2** *To avoid, remedy, or mitigate the actual or potential soil erosion or damage, sedimentation, and other adverse effects of land disturbance activities consistent with their risks on different terrains in the District, including consideration of:*
- (a) *natural erosion risk, and erosion risk upon disturbance;*
 - (b) *scale, type, and likelihood of land disturbance;*
 - (c) *sensitivity and significance of water bodies and other natural features in relation to sedimentation or movement of debris.*
- 12.1.3.3** *To investigate and monitor the actual or potential adverse effects of soil erosion, other soil damage, sedimentation and damage to river beds, subsurface water bodies and caves in karst, aquatic and other natural habitats, arising from land disturbances.*

The key issues that arise from an analysis of the objectives and policies in chapter 12 are affects of soil erosion and adverse visual effects. In my option the application is consistent with the relevant objectives and policies in this chapter.

Chapter 13: Natural Hazards

13.1.2 Objective

Management of areas subject to natural hazard, particularly flooding, instability, coastal and river erosion, inundation and earthquake hazard, to ensure that development is avoided or mitigated, depending on the degree of risk.

Policies

- 13.1.3.1** *To avoid the effects of natural hazards on land use activities in areas or on sites that have a significant risk of instability, earthquake shaking, flooding, erosion or inundation, or in areas with high groundwater levels.*
- 13.1.3.4** *To avoid or mitigate adverse effects of the interactions between natural hazards and the subdivision, use and development of land.*
- 13.1.3.7** *To maintain or consider the need for protection works to mitigate natural hazard risk where:*
- (a) *there are substantial capital works or infrastructure at risk; or*
 - (b) *it is impracticable to relocate assets; or*
 - (c) *it is an inefficient use of resources to allow natural processes to take their course; or*
 - (d) *protection works will be effective and economic; or*
 - (e) *protection works will not generate further adverse effects on the environment, or transfer effects to another location.*

- 13.1.3.9** *To provide warnings and emergency response systems for areas at risk from or affected by natural hazards.*
- 13.1.3.10** *To regulate land disturbance so that slope instability and other erosion processes are not initiated or accelerated.*
- 13.1.3.11** *To avoid damage by land use activities to flood control structures or works for flood or erosion control.*
- 13.1.3.12** *To prepare a hazard management strategy identifying hazards and hazardous areas, and management options for these areas.*
- 13.1.3.14** *To avoid new subdivision, use or development that would hinder the ability of natural systems and features (such as beaches, dunes, wetlands or barrier islands) to protect existing subdivision, use or development from natural hazards (such as erosion, inundation, storm surge, or sea level rise).*

The key issue that arise from an analysis of the objectives and policies in chapter 13 is the risk of slope instability. Both the initial technical report from T&T and the technical review by Mike Johnston analysis of this issue. The level of risk is the key and this is difficult to qualify. However in my opinion the application is consistent with the relevant objectives and policies in this chapter 13.

7. SUMMARY

7.1 Principal Issues

The principal issues have been divided into two parts. Firstly, whether the earthworks can be undertaken without causing adverse slope instability effects on the environment that are more than minor. The second are the temporary issues associated with the discharges and amenity effects that will occur while undertaking the earthworks.

I have examined the reports for T&T and Mike Johnston and their recommended conditions. The conditions from the T&T report are very specific and prescriptive, the intent of the conditions are the same as those provided by Mike Johnston, that is all works shall be designed and constructed under the supervision of the chartered professional engineer practising in geotechnical. And that the temporary effects of erosion and sediment control shall be controlled via a management plan submitted for approval of the Council prior to the works commencing.

Minimising the temporary discharges from the activity is achievable if the applicant follows industry standard practices.

7.2 Objectives and Policies

The proposal is generally consistent with the objectives and policies in the Tasman Resource Management Plan. The applicant has only demonstrated that the work can be undertaken and significant work will need to be done to control the slope instability risks.

7.3 Statutory Provisions

The application is a controlled activity under the provisions of Chapter 18 of the TRMP at the time the application was lodged.

- Part II matters
- Objectives and Policies of the Proposed Tasman Resource Management Plan
- Actual and Potential Environmental Effects
- Other Matters

7.4 Overall Conclusion

Overall the writer's assessment is that the actual adverse effects on the environment are minor and the proposal is generally consistent with the objectives and policies, and matters of discretion in the Proposed Tasman Resource Management Plan.

8. RECOMMENDATION

The recommendation to grant or decline these applications for the earthworks is dependent upon the Committee's decision whether or not to grant the subdivision consent.

The following conditions are recommended as consent conditions should the committee chose to grant the subdivision consent.

9. RECOMMENDED CONDITIONS

Earthworks

1. The earthworks to form the subdivision, including the access road, right-of-ways and all mitigation measures implemented as part of the subdivision shall be designed and constructed under the supervision of the chartered professional engineer practising in geotechnical engineering.

Advisory Note:

The above does not preclude work, such as kerbing, sealing, installation of services, and other finishing touches being supervised by a chartered professional engineer practising in civil engineering provided the work has been specifically assessed by the chartered professional engineer practising in geotechnical engineering.

2. No earthworks authorised by this consent shall commence unless specifically approved by the chartered professional engineer practising in geotechnical engineering.
3. Any cut and fill faces within the lots constructed as part of the subdivision shall be retained unless in the professional opinion of the chartered professional engineer practising in geotechnical engineering that this is not necessary to ensure the stability of the faces and slopes generally.

4. Any cut and fill faces within or bounding the access road and the right-of-ways shall be retained unless considered unnecessary by the Tasman District Council after consultation with a chartered professional engineer practising in geotechnical engineering or an experienced engineering geologist.
5. Retaining walls shall be designed and constructed under the supervision of the chartered professional engineer practising in geotechnical engineering.
6. The earthworks shall be appropriately staged. The contractor's earthworks program shall be reviewed and approved in advance in writing by a Chartered Professional Engineer practicing in geotechnical engineering.

Erosion, Dust and Sediment Control

7. Prior to earthworks commencing on site the consent holder shall forward to the Tasman District Council for review and certification the management plan for the control of soil erosion during earthworks for the subdivision. The plan shall show the limits of areas to be disturbed and the measures to avoid, remedy or mitigate the effects of erosion and sedimentation to the satisfaction of the Council. The management plan shall include, but is not limited to, the following:
 - Measures to minimise sources of sedimentation from areas disturbed by earthworks activities to achieve compliance with Conditions 10 and 11. Such measures include re-vegetation, cut off drains, bunds, barriers and fences located on the lower side of soil disturbance;
 - Measures to ensure that areas disturbed by earthworks activities are promptly stabilised from localised erosion, using methods such as, but not limited to re-vegetation and landscaping.
 - Measures to minimise sources of dust from areas disturbed by earthworks activities to achieve compliance with Conditions 8 and 9. Such measures include re-vegetation and the use of water carts to damp down the soil;
 - Reporting and auditing
 - Complaints handling and reporting procedure
8. The operation of the facility shall not create a dust nuisance beyond the boundary of the site. A dust nuisance is deemed to have occurred when there is visible evidence of suspended solids in the air or deposited at or beyond the boundary.
9. The applicant is to use all effective measures to ensure that dust is not tracked or otherwise taken off the site. The methods of controlling this shall be addressed in the management plan see Condition 7.
10. The Consent Holder shall take all practical measures to avoid the discharge of sediment with stormwater run-off to water or land where it may enter water during the construction period.

11. Any material stockpiled on site shall have an appropriately sized cut-off drain or bund on the uphill side to minimise the risk of erosion of the stockpile.
12. There shall be no discharge resulting in any of the following effects in any water body:
 - a) The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - b) Any conspicuous change in colour or visual clarity;
 - c) Any emission of objectionable odour;
 - d) The rendering of freshwater unsuitable of consumption by farm animals; and
 - e) Any significant adverse effects on aquatic life.
13. All exposed ground, excluding the roadway and right-of-way, shall be revegetated within six months of the excavation so that erosion/downhill movement of soil is avoided as much as is practical.

General Conditions

14. Earthworks shall only be undertaken between 7.00 am – 6.00 pm Monday – Friday and 8.00 am – 1.00 pm on Saturday. No work shall be undertaken on Sunday or any public holiday.
15. All erosion, sediment and drainage control measures and devices shall be regularly inspected, particularly after high rainfall events to ensure they are maintained in good working order.

Advice Note:

Maintenance works include the cleaning of sediment traps, regular checking of sediment fences etc.

16. The Consent Holder shall contact Council's Co-ordinator Compliance Monitoring at least 24 hours prior to commencing works for monitoring purposes.
17. The Consent Holder shall stop construction in heavy rain when the activity shows sedimentation that is more than minor in the view of the Council Co-ordinator, Compliance Monitoring.
18. All machinery on the work site shall be refuelled, and any maintenance works undertaken, in such a manner as to prevent contamination of land and surface water. Spillage of contaminants into any watercourse or onto land shall be adequately cleaned up so that there is no residual potential for contamination of land and surface water. If a spill of more than 20 litres of fuel or other hazardous substance occurs, the Consent Holder shall immediately inform Council's Co-ordinator Compliance Monitoring.

Review of Consent Conditions

19. The Council may, during the month of April each year, review any or all of the conditions of the consent pursuant to Section 128 of the Resource Management Act 1991 for all or any of the following purposes:
- a) to deal with any adverse effect on the environment which may arise from the exercise of the consent that was not foreseen at the time of granting of the consent, and which is therefore more appropriate to deal with at a later stage; and/or
 - b) to require the Consent Holder to adopt the best practical option to remove or reduce any adverse effects on the environment resulting from the discharge; and/or
 - c) to review the contaminant limits, loading rates and/or discharge volumes and flow rates of this consent if it is appropriate to do so; and/or
 - d) to require consistency with any relevant Regional Plan, District Plan, National Environmental Standard or Act of Parliament.

Expiry

20. This resource consent expires on XXXX.

ADVICE NOTES

1. Officers of the Council may also carry out site visits to monitor compliance with resource consent conditions.
2. The Consent Holder should meet the requirements of the Council with regard to all Building and Health Bylaws, Regulations and Acts.
3. Access by the Council or its officers or agents to the property is reserved pursuant to Section 332 of the Resource Management Act.
4. All reporting required by this consent should be made in the first instance to the Council's Co-ordinator Compliance Monitoring.
5. Council draws your attention to the provisions of the Historic Places Act 1993 that require you in the event of discovering an archaeological find (eg, shell, midden, hangi or ovens, garden soils, pit, depressions, occupation evidence, burials, taonga) to cease works immediately, and tangata whenua, the Tasman District Council and the New Zealand Historic Places Trust should be notified within 24 hours. Works may recommence with the written approval of the Council's Environment & Planning Manager, and the New Zealand Historic Places Trust.
6. This resource consent only authorises the activity described above. Any matters or activities not referred to in this consent or covered by the conditions must either:
 - a) comply with all the criteria of a relevant permitted activity rule in the Proposed Tasman Resource Management Plan (PTRMP);

- b) be allowed by the Resource Management Act; or
 - c) be authorised by a separate resource consent.
7. Plans attached to this consent are (reduced) copies and therefore will not be to scale and may be difficult to read. Originals of the plans referred to are available for viewing at the Richmond office of the Council. Copies of the Council Standards and documents referred to in this consent are available for viewing at the Richmond office of the Council.

Leif Pigott
Consent Planner - Natural Resources